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The Effect of Need Recognition, Perceived Ease of Use, Perceived Usefulness, and Discount on Customer Intent Using the PLN Mobile Application

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ABSTRACT

This research was motivated by the gap between the high potential of digital transformation in electricity services and the relatively low level of active usage of the PLN Mobile application. Although PLN Mobile provides various digital services, such as bill payments, electricity token purchases, and service complaint submissions, its utilization has not fully aligned with the large number of PLN customers and the increasing availability of digital infrastructure. This study aims to analyze the influence of Need Recognition, Perceived Ease of Use, Perceived Usefulness, and Discount on customers' intention to use the PLN Mobile application and to examine the moderating role of Perceived Usefulness in the relationship between Perceived Ease of Use and customers' intention to use the application. This study employed a quantitative approach using a survey method. Data were collected through questionnaires distributed to 150 respondents domiciled in East Java Province who were aware of the PLN Mobile application but had never downloaded or used the application. The data were analyzed using Partial Least Square Structural Equation Modeling (PLS-SEM) with SmartPLS through outer model evaluation, inner model evaluation, and bootstrapping analysis to examine the relationships among research variables. The results showed that Need Recognition had a positive and significant effect on customers' intention to use the PLN Mobile application, with a p-value of 0.015. Perceived Ease of Use did not have a significant effect on customers' intention to use PLN Mobile, with a p-value of 0.659. However, Perceived Ease of Use had a positive and significant effect on Perceived Usefulness, with a p-value of 0.000. Furthermore, Perceived Usefulness had a positive and significant effect on customers' intention to use PLN Mobile, with a p-value of 0.004. Meanwhile, Discount did not have a significant effect on customers' intention to use PLN Mobile, with a p-value of 0.394. In addition, Perceived Usefulness was not found to moderate the relationship between Perceived Ease of Use and customers' intention to use the PLN Mobile application (p-value = 0.429). In conclusion, customers' intention to use the PLN Mobile application is primarily influenced by their awareness of digital service needs (Need Recognition) and the perceived usefulness of the application. Perceived Ease of Use contributes to increasing Perceived Usefulness but does not directly encourage customers' intention to use the application. Furthermore, Discount has not become a dominant factor in shaping customers' intention to use the PLN Mobile application. Moreover, Perceived Usefulness was not found to moderate the relationship between Perceived Ease of Use and customers' intention to use the PLN Mobile application.

Keywords: Need Recognition, Perceived Ease of Use, Perceived Usefulness, Discount, Behavioral Intention to Use, PLN Mobile.

1. INTRODUCTION

Digital transformation has encouraged various public service agencies to improve the quality of services through the use of information technology. As an electricity provider for around 96.2 million customers, PT PLN (Persero) developed PLN Mobile as an integrated self-service platform that provides services such as checking bills, purchasing tokens, complaint disturbances, and requesting power additions in real-time (Suarmiriadi & Putra, 2025). The implementation of this application supports the national digital transformation agenda with quite good achievements, as shown by around 55 million downloads, a rating of 4.9 on the Google Play Store, 5.0 on the App Store, and a customer satisfaction rate of 88% (Harianto, 2024).

However, this success has not fully reflected the level of adoption

that is evenly distributed throughout Indonesia. East Java, as the province with the second largest number of PLN customers after West Java, has around 14.2 million customers in 2024 or around 15.29% of the total national customers, and is expected to increase to around 14.6 million customers by 2025 (PT PLN (Persero), 2025). With an internet penetration rate of 82.19%, this region has adequate digital infrastructure to support the use of application-based services (Indonesian Internet Service Providers Association, 2025). However, research by Mulyono and Premananto (2022) shows that the utilization of PLN Mobile in one of the East Java regions is still low, so the high internet access has not been fully followed by an increase in application usage.

The gap can be seen from the low level of active usage compared to the number of customers. In ULP Banyuwangi, for example, only around 520 customers or 0.4% of the 129,978 customers downloaded PLN Mobile (Mulyono & Premananto, 2022). East Java UID internal data in 2025 also shows that active users of PLN Mobile are only around 23.91% of the total customers in the region. Research by Ardiansyah et al. (2025) involving 466 active users out of an estimated 3.49 million active users in East Java further indicates that there are problems in the application adoption process. This condition shows that the challenges faced are not only related to the availability of technology, but also the failure to convert potential users into sustainable use of applications.

Similar problems are also found in other regions. Umar and Pasaribu (2024) reported that in the North, Central, and Gorontalo regions, although the application installation rate reached 52%, the utilization of service features was still not optimal. The use of the service request feature is only around 67%, while the complaint and interference reporting feature is in the range of 66–67%. The findings suggest that app installations don't necessarily result in regular active use. This condition is strengthened by APJII data which shows national internet penetration of 80.66% and reaches 84.69% on the island of Java, so that the low use of PLN Mobile is more accurately explained through aspects of user behavior and perception rather than infrastructure limitations (Indonesian Internet Service Providers Association, 2025).

In addition to the behavioral aspect, the quality of usability is also a challenge in the use of applications. Research by Suarmiriadi and Putra (2025) found that the value of PLN Mobile's System Usability Scale (SUS) is still below standard due to navigation and interface consistency problems. Various user reviews on the Google Play Store also complain about the complexity of the interface and obstacles in the login process (K. P. Putra & Barusman, 2024). On the other hand, technical glitches that occurred during the implementation of the discount promo program in early 2025 also affected users' perception of the reliability of the application (Fikri, 2025). Other research shows that digital literacy, quality of electronic services, and user trust levels also play an important role in increasing intention to use public service applications (Afrizal et al., 2024).

From a theoretical perspective, the Technology Acceptance Model (TAM) explains that technology acceptance is influenced by Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) (Davis, 1989). Several studies show that these two variables have an effect on the intention to use PLN Mobile (Prasamya et al., 2023). However, in public services that are mandatory services, the influence of the two variables is not always consistent because they are also influenced by service quality, system reliability, and regulatory factors (Pradipta & Aruan, 2024). Meanwhile, the UTAUT2 model adds economic and habit factors, where performance expectancy, price value, habit, and social influence are proven to have a stronger influence than effort expectancy (Umar & Pasaribu, 2024).

Based on these conditions, this study focuses on four main variables, namely Need Recognition, Perceived Ease of Use, Perceived Usefulness, and Discount. Need Recognition describes customer awareness of the need for fast, easy, and flexible electricity services (Kotler & Keller, 2016), while Discount acts as an economic stimulus that can encourage the use of applications through various PLN promotional programs (Safitri, 2025). Previous research has shown that the need for services affects the use of PLN Mobile (Dewi et al., 2023) and Discount affects usage decisions (Ahsan et al., 2024), although it does not always have an impact on customer satisfaction (Hidayati, 2018). The difference in results shows that there is a research gap, especially in the context of East Java which has high digital potential but the level of PLN Mobile usage is still relatively low. This research is expected to provide a more comprehensive understanding of the factors influencing the adoption of PLN Mobile as well as provide input for PT PLN (Persero) in developing a more effective, inclusive, and customer-oriented public service digitization strategy.

This study aims to analyze the effect of Need Recognition, Perceived Ease of Use, Perceived Usefulness, and Discount on Behavioral Intention to Use of the PLN Mobile application. In addition, this study also aims to test the influence of Perceived Ease of Use on Perceived Usefulness so that it can provide a more comprehensive picture of the factors that affect customer intention to use PLN Mobile in East Java.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Davis (1989) based on the Theory of Reasoned Action introduced by Fishbein and Ajzen (1975) to explain the individual's acceptance of information technology. This model explains that Behavioral Intention to Use (BI) is influenced by Perceived Ease of Use (PEOU) and Perceived Usefulness (PU), where PEOU also affects PU. In the context of digital-based public services such as the PLN Mobile application, TAM explained that user perception of ease of use and the benefits obtained will increase the intention to use the application. In this study, the extended TAM framework was used by adding Need Recognition (NR) and Discount as external factors that directly affect BI. Need Recognition describes user awareness of the need for practical electrical services, while Discount is an economic stimulus that can strengthen application usage decisions. Therefore, the research model places NR, PEOU, PU, and Discount as the primary determinants of BI, while maintaining the relationship of PEOU to PU as described in the original TAM (Fishbein & Ajzen, 1975).

2.2 Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) is the main construct in the Technology Acceptance Model (TAM) which is defined as an individual's level of confidence that a system can be used without requiring great effort (Davis, 1989). This concept is related to the ease of learning, understanding, and operating technology. In the PLN Mobile application, PEOU describes user perception of the ease of understanding features, navigating, and using electrical services through the application. The higher the perception of convenience, the more likely the user is to have a Behavioral Intention to Use, either directly or through an increase in Perceived Usefulness (Davis, 1989).

The PEOU indicator in this study refers to the original instrument of Davis (1989) because it has been widely used and proven to be valid in technology adoption research. These indicators include Learning to operate the system is easy for me, Interacting with the system is clear and understandable, I find the system to be flexible to interact with, It is easy to become skillful at using the system, and The system is easy to use. In addition, previous research in the context of PLN Mobile states that PEOU is also reflected in ease of learning, flexible interaction, and uncomplicated use (Aditya, 2022). Meanwhile, Astuti et al. (2025) added that the ease of use of PLN Mobile can be measured through easy-to-understand features, intuitive navigation, and fast transaction processes (Davis, 1989).

2.3 Perceived Usefulness (PU)

Perceived Usefulness (PU) is the main construct in the Technology Acceptance Model (TAM) which is defined as the degree to which an individual believes that using a particular system would enhance his or her job performance, namely the belief that the use of a system is able to improve individual performance (Davis, 1989). This construct represents the functional benefits felt by the user while reflecting the relative advantage over conventional methods. In the context of PLN Mobile, PU shows the extent to which the application is considered to be able to provide convenience, efficiency, and effectiveness in accessing electricity services so as to encourage the acceptance of technology by users (Andrews & Shimp, 2017).

The PU measurement in this study uses indicators developed by Davis (1989), namely Using the system improves my job performance, Using the system increases my productivity, Using the system enhances my effectiveness on the job, Using the system makes it easier to do my job, I would find the system useful, and The system is appropriate for my job. In the context of using PLN Mobile, Astuti et al. (2025) adapted these indicators into the benefits felt by users, such as faster fulfillment of needs, more effective monitoring of electricity consumption, and more practical application services (Davis, 1989).

2.4 Online/Digital Consumer Behavior

Online/digital consumer behavior is an individual decision-making process in choosing, buying, using, and evaluating products or services through information technology-based media. In an increasingly competitive business environment, understanding consumer behavior is the basis for companies to develop marketing strategies, develop products, and improve the quality of services to suit user needs (Turban et al., 2015). The consumer behavior model explains that purchase decisions are influenced by various factors, namely consumer factors, the environment, traders and intermediaries, products or services and marketing stimulus, and electronic sales systems. Product factors and sales systems are relatively controllable by the company, while other factors are beyond the direct control of the organization, but all contribute to shaping consumer decisions (Turban et al., 2015).

In individual consumers, the decision-making process starts from the emergence of needs to the formation of purchasing attitudes and behaviors. A positive attitude towards a product or service will increase the tendency of consumers to buy or reuse the service (Turban et al., 2015). According to Engel et al. (1995), the first stage in the process is Need Recognition, which is consumer awareness of the gap between the actual state and the expected condition (ideal state). This awareness is a trigger for consumers to seek information, evaluate various alternatives, and then make decisions.

In the context of digital services, Need Recognition arises when consumers need a faster, more practical, and more efficient solution than conventional services. In the use of the PLN Mobile application, this need arises due to various limitations of physical services, such as long queues, limited operational hours, or inefficient manual service processes. This condition encourages customers to consider digital technology by evaluating Perceived Ease of Use and Perceived Usefulness as the main factors before forming a Behavioral Intention to Use. Therefore, this study places Need Recognition as a direct antecedent to the intention to use the application without establishing a complex mediation relationship so that the research model remains parsimonious (Engel et al., 1995).

The consumer decision-making process in the digital environment refers to five stages adapted from Engel et al. (1995) and reexplained by Schiffman and Wisenblit (2015), namely Need Recognition (Identification), Information Search, Evaluation of Alternatives, Purchase and Delivery, and Post-Usage Evaluation. Consumers first realize the need, then look for information through various digital media, compare alternative services, decide to use applications based on benefits, convenience, and marketing stimuli such as discounts, and finally evaluate the user experience. A satisfactory experience will increase continuance intention, while a negative experience has the potential to decrease the intention to use in the future (Schiffman & Wisenblit, 2015).

Overall, the digital consumer behavior framework shows that Need Recognition is the starting point of the decision-making process that prepares consumers to embrace technology. Furthermore, the perception of Perceived Ease of Use, Perceived Usefulness, and Discount plays a role in strengthening the Behavioral Intention to Use of the PLN Mobile application (Schiffman & Wisenblit, 2015).

2.5 Need Recognition

Need Recognition is the earliest stage in the consumer decision-making process because it marks the emergence of awareness of the existence of needs that must be met. This stage occurs when the consumer feels the difference between the actual condition and the expected condition, so that there is an impulse to look for a suitable solution (Engel et al., 1995). Schiffman and Kanuk (2007) explain that the recognition of needs begins with an individual's sense of dissatisfaction or inadequacy, while

Hawkins and Mothersbaugh (2010) state that the greater the perceived gap, the stronger the consumer's motivation to take action. In addition to being influenced by internal factors, Need Recognition can also be triggered by external factors such as promotions, social recommendations, and digital information (Belch & Belch, 2012).

In this study, Need Recognition is defined as user awareness of the need for faster, easier, and more efficient electricity services through the PLN Mobile application. This awareness arises when consumers experience a mismatch between the quality of conventional services, such as queues, limited operating hours, and difficulty obtaining information, with the ideal service expected. This condition encourages consumers to consider digital-based solutions so as to increase the Behavioral Intention to Use of the PLN Mobile application. Thus, the higher the level of Need Recognition, the greater the tendency of users to adopt the application (Kotler, 2002).

The Need Recognition process begins with a gap between the actual state and the desired state. Belch and Belch (2012) explained that this condition is generally triggered by two factors, namely out of stock, when the required services or resources are not available, and dissatisfaction, which is dissatisfaction with services used previously so as to encourage the search for better alternatives. Hoyer et al. (2021) added that this need will develop into action if consumers have the motivation to solve problems and are supported by the ability to access technology and digital literacy. The combination of these two factors increases consumer readiness to adopt digital services such as PLN Mobile.

Need Recognition measurement has been widely developed in consumer behavior research. Mishra (2018) put forward several indicators such as dissatisfaction with the current product, change in needs, need for related products, need to stay fashionable, need for innovative product, visible benefits from product, status improvement, peer interaction, offers, deals and discounts, and celebrity endorsement. Meanwhile, Engel et al. (1995) emphasized three main indicators, namely perceived discrepancy, importance of the need, and need arousal. Based on the synthesis of the two approaches, this study adopted four indicators that are considered most relevant to the context of using the PLN Mobile application, namely dissatisfaction with the current product (Mishra, 2018), perceived discrepancy, need arousal, and importance of the need (Engel et al., 1995). The indicator was chosen because it was able to describe the user's initial awareness of the need for digital services while explaining the motivation that shaped the intention to use the application.

2.6 Discount

Consumer behavior shows that attitudes, purchase intentions, and actual purchasing behavior are interrelated, so the factors that influence the decision to use digital services need to be comprehensively understood (Turban et al., 2015). According to Turban et al. (2015), consumer behavior is influenced by consumer characteristics, environmental factors, traders and intermediaries, product/service factors, and electronic sales systems. Among these factors, product/service factors are the aspects that companies can control the most because they are directly related to consumer evaluation of services. These factors include the type of service, quality, variety, brand, and price, which play an important role in shaping the perception of value and cost-benefit considerations before consumers decide to use a service.

In digital services, the price strategy is widely implemented through Discounts as part of the sales promotion mix. Discount is a standard price reduction that aims to encourage consumer response in the short term and can be realized in the form of direct discounts, cashback, or vouchers (Chaffey, 2015). In addition to providing financial benefits, Discounts also serve as incentives that speed up the decision-making process, increase the perception of value, reduce the perception of financial risk, and encourage consumers to try digital services, especially in the early stages of adoption. Therefore, the integration of Discount strategies with a good user experience is one of the important approaches in digital marketing to increase user adoption and engagement (Chaffey, 2015).

In the PLN Mobile application, the implementation of Discount is realized through various promotional programs such as service fee discounts, cashback through digital wallet partners, and electricity token purchase vouchers. The program not only aims to increase transactions in the short term, but also introduce applications to new users, accelerate adoption, and increase the frequency of use of services. Thus, Discount is positioned as a price factor in product/service factors which acts as an economic incentive to strengthen the Behavioral Intention to Use PLN Mobile application through increasing the perception of benefits and reducing the cost burden (Turban et al., 2015).

Kotler and Keller (2016) explained that Discount as a price-based sales promotion is realized through price-off, cashback, coupons/vouchers, and promotional pricing which aims to reduce effective prices so as to encourage the use of services. Because the concept is not compiled in the form of questionnaire indicators, this study adapts it into an indicator of user perception according to the context of PLN Mobile. Adaptation also refers to research by Andika and Hayadi (2023) which emphasizes that Discounts increase the appeal of apps, provide economic incentives, and encourage user loyalty.

2.7 Behavioral Intention to Use

Davis (1989) stated that this construct is a direct predictor of actual usage behavior, so it is widely used to explain the likelihood of a person adopting a new technology. In digital services research, Behavioral Intention to Use describes an individual's desire to try, use, and utilize the features of the application in the future so that it is often used as a proxy for actual usage behavior (Venkatesh et al., 2012).

Although the Theory of Planned Behavior explains that intention is influenced by attitudes, subjective norms, and perceptions of behavior control (Ajzen, 1991), this study uses the TAM approach by placing Behavioral Intention to Use as the main dependent variable. In the context of this study, the construct is defined as an individual's intention to download, try, and use the PLN Mobile application sustainably as a digital-based electricity service medium in the future.

The Behavioral Intention to Use indicators in this study were adapted from Nazhifatunnisa et al. (2025) and Naji et al. (2024). Nazhifatunnisa et al. (2025) emphasized the sustainability aspect of use, the willingness to use applications in various services, and the willingness to recommend applications to others. Meanwhile, Naji et al. (2024) measured the intention to use technology

through continuance intention, usage intention, and likelihood of use. Based on the two studies, the indicators used include the intention to continue using the PLN Mobile application in the future (continuance intention), plan to use the application sustainably for electricity services (usage intention), high likelihood of using the application in the future (likelihood of use), and willingness to recommend the PLN Mobile application to others (recommendation intention) (Nazhifatunnisa et al., 2025).

3. RESEARCH MEHODOLOGY

This study uses a quantitative approach with the aim of testing the relationship between variables through numerical measurement and statistical analysis. This approach was chosen because it is able to test conceptual models and hypotheses objectively and produce generalizations that are limited to the research population (Creswell, 2014). The design applied is explanatory research, which is research that aims to explain the relationship between variables based on a predetermined theoretical framework (Sekaran & Bougie, 2016).

In the research model, Need Recognition is positioned as an exogenous variable that directly affects Behavioral Intention to Use.

Data collection was carried out using a cross-sectional survey method through a Likert scale questionnaire to PT PLN (Persero) customers who knew about the existence of the PLN Mobile application but had never used it. Respondents were selected using purposive sampling because it was in accordance with the characteristics of the technology adoption research and was effective for measuring perceptual constructs within a single observation period. The data were then analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS), which was chosen because it does not require strict multivariate normality and is able to test the relationship between latent constructs simultaneously with an orientation on the model's predictive ability (Naji et al., 2024).

The research was carried out in East Java Province with the target of PT PLN (Persero) customers who already know the PLN Mobile application but have never downloaded or used it. The election of East Java is based on the large potential of users as well as the paradox of digital public service adoption, namely the high digital readiness of the community which has not been fully followed by the use of public service applications.

The research was carried out in May-July 2026. The initial stage is focused on the preparation of the research design, determination of variables, development of conceptual models, and the preparation of questionnaire instruments adapted from previous research. The instrument was then tested through a pilot test in early June 2026 involving 36 respondents to assess the clarity of the questions and the suitability of the indicators. After improvements, the main data collection was carried out from the end of June to the beginning of July 2026 online using Google Form to respondents who met the research criteria until 150 respondents were obtained.

In this study, the target population is PT PLN (Persero) customers in East Java Province who have known about the existence of the PLN Mobile application, but have never downloaded or used it. Based on data from PT PLN (Persero) East Java Distribution Main Unit, the number of customers in 2025 will reach around 14.6 million customers (PT PLN, 2026). However, there is no official data available on the number of customers who meet these characteristics, so the size of the target population cannot be determined definitively. Therefore, the study applied non-probability sampling with a purposive sampling approach.

This study uses primary data obtained directly from respondents through an online questionnaire based on Google Form (Malhotra et al., 2017). The research instrument is in the form of a closed questionnaire in which all alternative answers have been predetermined so that it makes it easier for respondents to provide answers and produce structured data for quantitative analysis. Data analysis was carried out using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with the help of SmartPLS 4 software (Kurniawan & Puspitaningtyas, 2016).

4. RESULTS AND DISCUSSION

4.1 Research Results

The characteristics of the respondents in this study were based on data from 150 customers of PT PLN (Persero) in East Java Province who met the research criteria. Respondents' profiles were analyzed based on age, gender, occupation, domicile, classification of residential area, and role in electricity payments to provide an overview of the background of the research sample.

Based on age, the majority of respondents were in the 17-24 year old group of 85 people (56.67%), followed by the 25-34 year old group of 48 people (32.00%), the 35-44 year group of 16 people (10.67%), and the 45-54 year group as many as 1 person (0.67%). The age grouping refers to the concept of youth from the World Health Organization (WHO, 2026) and the concept of emerging adulthood proposed by Arnett (2000). The dominance of young respondents shows that the research sample is dominated by individuals who are relatively familiar with digital technology so that they have greater potential in understanding application-based services, including PLN Mobile.

Judging from gender, female respondents amounted to 92 people (61.33%), while male respondents were 58 people (38.67%). The composition indicates that women's participation in research is higher than that of men. Nevertheless, the representation of the two groups still provides a variety of perceptions regarding the intention to use the PLN Mobile application.

Based on work, respondents were dominated by 74 students/students (49.33%). Furthermore, private/public employees amounted to 35 people (23.33%), entrepreneurs/entrepreneurs as many as 32 people (21.33%), housewives as many as 8 people (5.33%), and retirees as many as 1 person (0.67%). This pattern is in line with the dominance of respondents in the young age group, but the presence of respondents from different types of jobs shows that this study still reflects the diversity of professional backgrounds.

In terms of domicile, respondents came from various districts/cities in East Java Province with the highest number coming from Surabaya with 41 people (27.33%), followed by Malang as many as 20 people (13.33%) and Jombang as many as 12 people (8.00%). If grouped based on the Gerbangkertosusila area as stipulated in Presidential Regulation Number 66 of 2022 (Republic of Indonesia, 2022), there were 59 respondents or 39.33% from the area. This condition shows that most of the respondents come from areas with relatively high economic

activity and use of digital services, although the sample still covers various other regions in East Java so that it has a fairly diverse geographical distribution.

Based on the classification of residential areas, as many as 99 respondents (66.00%) were domiciled in urban areas, while 51 respondents (34.00%) came from rural areas. The dominance of urban respondents shows that most of the sample has better access to digital infrastructure and mobile app usage. However, the involvement of respondents from rural areas still provides a variety of perspectives regarding the intention to use PLN Mobile in different regional characteristics.

Judging from the role in electricity payments, as many as 91 respondents (60.67%) stated that they paid electricity bills or purchased tokens independently, while 59 respondents (39.33%) said that payments were made by other family members. These findings show that most respondents have direct involvement in the use of household electrical services. Meanwhile, respondents who did not make payments independently remained relevant as the object of research because they knew the existence of the PLN Mobile application, even though they had never downloaded or used it.

Descriptive statistical analysis was carried out to describe the tendency of respondents' answers to each research variable through mean values, standard deviations, and the distribution of answers in each indicator. The interpretation of the mean refers to the categories of 1.00–1.80 (very low), 1.81–2.60 (low), 2.61–3.40 (medium), 3.41–4.20 (high), and 4.21–5.00 (very high). The results of the analysis showed that all variables were in the very high category, which indicated a positive assessment of respondents on the use of the PLN Mobile application. The Perceived Usefulness variable obtained the highest mean value (4.32), followed by Perceived Ease of Use (4.30), Discount (4.26), Behavioral Intention to Use (4.24), and Need Recognition (4.22). In addition, the entire standard deviation value was below 1.00, indicating that respondents' answers were relatively homogeneous or consistent. However, the Discount variable has a slightly larger variation of the answer than the other variable with a standard deviation of 0.53. The classification of the assessment level refers to the descriptive analysis approach commonly used in quantitative research.

At the indicator level, almost all items also received a score in the very high category, which shows the positive perception of respondents towards various aspects of the PLN Mobile application. The X3.2 indicator on the Perceived Usefulness variable obtained the highest mean value (4.44), which shows that respondents believe that the PLN Mobile application is able to increase the effectiveness of electricity services. On the other hand, the X1.1 indicator in the Need Recognition variable obtained the lowest mean value (4.11), but it was still included in the high category. The distribution of answers is dominated by the choice of agree and strongly agree on almost all indicators, thus reflecting good acceptance of the application. However, there are still a small number of respondents who strongly disagree or disagree, especially on the Need Recognition and Discount indicators. This condition indicates that not all respondents have the same level of awareness of the need for digital services or view the provision of discounts as the main factor that affects the Behavioral Intention to Use of the PLN Mobile application.

The evaluation of the outer model aims to assess the ability of the indicator to represent each latent construct through testing for convergent validity, discriminant validity, and construct reliability. The convergent validity assessment was carried out using the outer loading value and Average Variance Extracted (AVE), with the criteria of outer loading ≥ 0.70 and AVE ≥ 0.50. Indicators that have an outer loading between 0.40–0.70 can still be maintained if they are supported by AVE and Composite Reliability values that meet the requirements.

The test results show that most of the indicators have met the criteria of convergent validity. A total of ten indicators, namely NR1, NR4, PEOU2, PEOU5, PU1, PU6, DIS2, DIS4, BIU1, and BIU3, have an outer loading value above 0.70 so that they are declared valid. Meanwhile, the PU3 (0.672), DIS5 (0.612), and BIU5 (0.637) indicators were maintained because they were still above the minimum limit of 0.40, had a strong theoretical basis, and were supported by an adequate Composite Reliability value. In contrast, indicators with low outer loading values in the initial test (NR2, NR3, PEOU1, PEOU3, PEOU4, PU2, PU4, PU5, DIS1, DIS3, BIU2, and BIU4) were gradually eliminated to improve the quality of the measurement model.

Table 1. Average Variance Extracted (AVE) Results Table

Construct	AVE Value	Remarks
Need Recognition	0,667	Meet
Perceived Ease of Use	0,602	Meet
Perceived Usefulness	0,492	Approaching criteria
Discount	0,536	Meet
Behavioral Intention to Use	0,534	Meet

Based on the AVE value, four constructs have met the minimum limit of 0.50, namely Need Recognition (0.667), Perceived Ease of Use (0.602), Discount (0.536), and Behavioral Intention to Use (0.534). Meanwhile, Perceived Usefulness earned an AVE value of 0.492, slightly below the recommended value. Nevertheless, the construct is still maintained because it has a Composite Reliability value above 0.70 and the indicators are still relevant in explaining the perception of the benefits of using PLN Mobile. Therefore, the generalized validity of the model has been met, although the interpretation of the Perceived Usefulness construct needs to be done more carefully.

Table 2. Fornell-Larcker Criterion Results Table

Construct	X1	X2	X3	X4	Y
X1	0,817				

X2	0,187	0,776			
X3	0,242	0,394	0,701		
X4	0,134	0,198	0,215	0,732	
Y	0,338	0,208	0,356	0,181	0,731

Discriminant validity was evaluated using three approaches, namely the Fornell-Larcker Criterion, Cross Loading, and Heterotrait-Monotrait Ratio (HTMT). The results of the Fornell-Larcker Criterion show that the entire root value of AVE in each construct is higher than the correlation between other constructs, so that each construct has a good ability to distinguish itself from other constructs.

Table 3. Cross Loading Results Table

Indicator	X1	X2	X3	X4	Y	X2 x X3
X1.1	0.771	0.192	0.125	0.065	0.244	-0.225
X1.4	0.860	0.123	0.257	0.145	0.304	-0.193
X2.2	0.193	0.753	0.298	0.101	0.143	-0.168
X2.5	0.101	0.798	0.314	0.202	0.179	-0.147
X3.1	0.137	0.227	0.719	0.206	0.271	-0.045
X3.3	0.214	0.224	0.672	0.136	0.268	-0.191
X3.6	0.161	0.362	0.711	0.117	0.216	-0.177
X4.2	0.131	0.135	0.147	0.858	0.182	-0.135
X4.4	0.029	0.101	0.200	0.706	0.072	-0.149
X4.5	0.099	0.211	0.166	0.612	0.100	-0.113
Y.1	0.288	0.238	0.276	0.175	0.803	-0.109
Y.3	0.234	0.062	0.273	0.172	0.743	-0.097
Y.5	0.212	0.146	0.229	0.027	0.637	0.050
X2 x X3	-0.253	-0.202	-0.199	-0.174	-0.082	1.000

This finding is strengthened by the results of Cross Loading, where all indicators have the highest loading value on the construct they measure, so that each indicator represents its own construct more than the other.

Testing using HTMT was carried out as a complement because it was considered more sensitive in detecting discriminant validity than conventional methods.

Table 4. Table of Results of Discriminant Validity Test Based on HTMT

Construct Relationships	HTMT Value	Remarks
X1 – X2	0,470	Meet
X1 – X3	0,473	Meet
X2 – X3	0,949	Need attention
X1 – X4	0,204	Meet
X2 – X4	0,464	Meet
X3 – X4	0,426	Meet
X1 – Y	0,622	Meet
X2 – Y	0,464	Meet
X3 – Y	0,683	Meet
X4 – Y	0,275	Meet
X1 – X2 × X3	0,360	Meet
X2 – X2 × X3	0,348	Meet
X3 – X2 × X3	0,281	Meet
X4 – X2 × X3	0,227	Meet
Y – X2 × X3	0,156	Meet

The results showed that fourteen out of fifteen construct relationships had HTMT values below the recommended threshold of 0.90, indicating adequate discriminant validity. The only construct pair requiring attention was Perceived Ease of Use and Perceived Usefulness, which obtained an HTMT value of 0.949, slightly exceeding the recommended threshold (Henseler et al., 2015). This result is still considered acceptable because these two constructs are theoretically closely related within the

Technology Acceptance Model (Davis, 1989). Moreover, the Fornell–Larcker criterion and cross-loading results also demonstrated adequate discriminant validity. Therefore, the measurement model can be considered to have achieved adequate discriminant validity overall, although the relatively high HTMT value between Perceived Ease of Use and Perceived Usefulness should be taken into consideration when interpreting the findings

Table 5. Table of Construct Reliability Test Results

Construct	*Cronbach's Alpha*	*Composite Reliability* (rho_a)	*Composite Reliability* (*rho_c*)	Remarks
Need Recognition (X1)	0,505	0,521	0,800	Reliabel
Perceived Ease of Use (X2)	0,340	0,341	0,751	Reliabel
Perceived Usefulness (X3)	0,487	0,485	0,744	Reliabel
Discount (X4)	0,608	0,691	0,773	Reliabel
Behavioral Intention to Use (Y)	0,563	0,583	0,773	Reliabel

The results of the construct reliability test showed that all constructs had met the reliability criteria based on the Composite Reliability (rho_c) value which was above 0.70, which ranged from 0.744 to 0.800. Although Cronbach's Alpha values on some constructs are still below 0.70, they are still acceptable in the PLS-SEM approach because Cronbach's Alpha assumes tau-equivalence resulting in more conservative estimates, especially after the elimination process of indicators at the convergent validity stage. Therefore, Composite Reliability (rho_c) is more appropriate as a reference because it considers the contribution of each indicator to latent constructs.

Table 6. Table of Indicator Multicollinearity Test Results (Outer VIF)

Indicator	LIVE
X1.1	1,129
X1.4	1,129
X2.2	1,044
X2.5	1,044
X3.1	1,160
X3.3	1,122
X3.6	1,071
X4.2	1,201
X4.4	1,425
X4.5	1,228
Y.1	1,221
Y.3	1,191
Y.5	1,114

Outer VIF testing is carried out to ensure that there is no excessive correlation between indicators in measuring latent constructs. The results of the analysis showed that all indicators had a VIF value between 1.044 and 1.425, well below the maximum limit of 5. Thus, all indicators are proven to be free from multicollinearity problems and are suitable for use at the structural model evaluation stage.

Table 7. Table of Multicollinearity Test Results Between Constructs (Inner VIF Values)

Construct Relationships	VIF	Remarks
Need Recognition → *Behavioral Intention to Use*	1,123	Multicollinearity does not occur
Perceived Ease of Use → *Perceived Usefulness*	1,000	Multicollinearity does not occur
Perceived Ease of Use → *Behavioral Intention to Use*	1,227	Multicollinearity does not occur
Perceived Usefulness → *Behavioral Intention to Use*	1,258	Multicollinearity does not occur
Discount → *Behavioral Intention to Use*	1,084	Multicollinearity does not occur
Perceived Ease of Use × *Perceived Usefulness* →	1,121	Multicollinearity does not occur

Behavioral Intention to Use		

Inner VIF testing showed that all relationships between constructs had VIF values ranging from 1.000 to 1.258. These values are well below the recommended threshold, indicating that no multicollinearity issues exist in the structural model. Therefore, the relationships among the latent constructs can be estimated reliably without bias caused by high correlations among the predictor variables.

Table 8. R-Square Test Results Table

Variable endogenous	*R-Square*	*R-Square Adjusted*	Remarks
Perceived Usefulness (X3)	0,155	0,150	Weak
Behavioral Intention to Use (Y)	0,202	0,178	Weak

The R-Square results indicate that Perceived Ease of Use explains 15.5% of the variance in Perceived Usefulness (R^2 = 0.155). Meanwhile, Need Recognition, Perceived Ease of Use, Perceived Usefulness, and Discount jointly explain 20.2% of the variance in Behavioral Intention to Use (R^2 = 0.202). Both R^2 values indicate relatively low explanatory power, suggesting that a considerable proportion of the variance in Perceived Usefulness and Behavioral Intention to Use is explained by other factors outside the proposed model. This finding reflects the complexity of users' behavioral intentions, which may also be influenced by additional contextual, psychological, and environmental factors. According to Hair et al. (2022), these R^2 values indicate weak explanatory power.

Table 9. f-Square Test Results Table

Variable Relationships	Value f^2	Remarks
Need Recognition (X1) → *Behavioral Intention to Use* (Y)	0,081	Small
Perceived Ease of Use (X2) → *Perceived Usefulness* (X3)	0,184	Medium
Perceived Ease of Use (X2) → *Behavioral Intention to Use* (Y)	0,002	Has no effect
Perceived Usefulness (X3) → *Behavioral Intention to Use* (Y)	0.070	Small
Discount (X4) → *Behavioral Intention to Use* (Y)	0.009	Has no effect
Perceived Ease of Use × Perceived Usefulness (X2 × X3) → Behavioral Intention to Use (Y)	0.005	Has no effect

The effect size (f^2) results indicate that the strongest effect was observed in the relationship between Perceived Ease of Use and Perceived Usefulness (f^2 = 0.184), which falls within the medium effect size category. Meanwhile, Need Recognition (f^2 = 0.081) and Perceived Usefulness (f^2 = 0.070) exerted small effects on Behavioral Intention to Use. In contrast, Perceived Ease of Use (f^2 = 0.002), Discount (f^2 = 0.009), and the interaction term Perceived Ease of Use × Perceived Usefulness (f^2 = 0.005) showed no substantive effect on Behavioral Intention to Use because their effect sizes were below the recommended threshold of 0.02 (Cohen, 1988). These findings suggest that Perceived Ease of Use contributes more strongly to increasing Perceived Usefulness than to directly influencing Behavioral Intention to Use. Moreover, the interaction between Perceived Ease of Use and Perceived Usefulness provides a negligible additional contribution to explaining customers' intention to use the PLN Mobile application.

Table 10. Q-Square Test Results Table

Variabel	SSO	SSE	Q^2 (= 1 - SSE/SSO)	Remarks
Need Recognition (X1)	300,000	300,000	0,000	Not interpreted
Perceived Ease of Use (X2)	300,000	300,000	0,000	Not interpreted
Perceived	450,000	424,339	0,057	Have *predictive relevance*

Usefulness (X3)				
Discount (X4)	450,000	450,000	0,000	Not interpreted
Behavioral Intention to Use (Y)	450,000	420,536	0,065	Have *predictive relevance*

The Predictive Relevance (Q^2) evaluation showed that Perceived Usefulness ($Q^2 = 0.057$) and Behavioral Intention to Use ($Q^2 = 0.065$) had values greater than zero, so the model had predictive ability for both endogenous variables although it was still relatively low. Meanwhile, the Q^2 values in Need Recognition, Perceived Ease of Use, and Discount are not interpreted because the three constructs are exogenous variables that are not predicted by other variables in the model.

Hypothesis testing using the bootstrapping procedure on SmartPLS 4 with 5,000 subsamples was carried out based on Original Sample, T Statistics, P Values, and Confidence Interval, with hypothesis acceptance criteria if T Statistics > 1.96 and P Values < 0.05.

The results of the analysis showed that Need Recognition had a positive and significant effect on Behavioral Intention to Use (H1 received), which means that the higher the customer's awareness of the need for digital electricity services, the greater the intention to use the PLN Mobile application. Perceived Usefulness has also been shown to have a positive and significant influence on Behavioral Intention to Use (H3 received), so that perceived benefits are an important factor in increasing use intention. In addition, Perceived Ease of Use has a positive and significant effect on Perceived Usefulness (H5 accepted), which shows that ease of use is able to increase the perception of application benefits.

In contrast, Perceived Ease of Use has no direct effect on Behavioral Intention to Use (H2 is rejected), so the perception of ease alone is not enough to encourage application usage intention. Similar results were also found in the Discount variable, which had no significant effect on Behavioral Intention to Use (H4 declined). Thus, of the five hypotheses proposed, three hypotheses were declared accepted (H1, H3, and H5), while the other two hypotheses were rejected (H2 and H4). These findings indicate that customers' intentions to use the PLN Mobile application are more influenced by Need Recognition and Perceived Usefulness, while Perceived Ease of Use plays a role as a factor in shaping the perception of benefits, not as a direct driver of use intention. The Discount has not been proven to be the main factor that affects customer intentions in using the PLN Mobile application.

4.2 Discussion

1. The Effect of Need Recognition on Behavioral Intention to Use

The results of the study showed that Need Recognition had a positive and significant effect on Behavioral Intention to Use, so that H1 was accepted. These findings show that the higher the awareness of customers about the needs of digital electricity services, the greater their intention to use the PLN Mobile application. Thus, awareness of needs is the initial stage that encourages the formation of usage intentions before customers evaluate the application. According to Engel et al. (1995), the recognition of needs arises when there is a gap between actual conditions and expected conditions. In the context of this study, the gap can be seen in the limitations of conventional services compared to customers' expectations for faster, more practical, and accessible services at any time through applications. This opinion is reinforced by Belch and Belch (2012) who state that needs can arise due to differences between expectations and previous experiences.

The characteristics of respondents who have known about the existence of PLN Mobile but have never downloaded or used it make Need Recognition a very relevant factor. This group is still in the early stages of the decision-making process so that awareness of the benefits of digital services is a determinant of the intention to use applications. This condition is also in line with the phenomenon of using PLN Mobile in East Java, where the active usage rate is still around 23.91% even though the application has a very wide range of users nationwide. This indicates that some customers are not fully aware that various electricity service needs can be met more efficiently through PLN Mobile.

The results of this study are consistent with the findings of Dewi et al. (2023) which show that meeting customer needs through PLN Mobile increases the use of digital services. The findings are also supported by Mulyono and Premananto (2022) who explain that understanding the benefits of applications can increase use intention. In addition, research by Puspita and Noer (2025), Adha et al. (2025), and Ilham and Zarnelly (2021) also proves that the acceptance of technology plays a role in shaping the behavior of using digital applications. However, this research contributes by placing Need Recognition as the initial stage before customers evaluate the technology. Therefore, PT PLN (Persero) needs to prioritize educational strategies that emphasize the relevance of PLN Mobile to customers' daily needs, such as bill payments, noise reporting, and service access without having to come to the PLN office, so that customers are encouraged to switch from just knowing the application to actually using it.

2. The Effect of Perceived Ease of Use on Behavioral Intention to Use

The test results showed that Perceived Ease of Use had no significant effect on Behavioral Intention to Use, so H2 was rejected. These findings indicate that the perception of ease of use has not been able to directly increase customer intention to use PLN Mobile. These results are different from the concept of Technology Acceptance Model (TAM) proposed by Davis (1989), where Perceived Ease of Use is one of the main factors that affect technology acceptance.

This difference can be explained by the characteristics of respondents who have never used PLN Mobile. In this group, the perception of convenience is still based on the information or images obtained, not the actual experience of using the application. As a result, the perception of convenience is not strong enough to form the intention of use if it is not accompanied by a clear need or belief in the benefits of the application. In these conditions, ease of use functions more as a supporting factor after customers understand the benefits of the application than as an initial trigger for the intention to use.

This finding is also in accordance with the conditions of use of

PLN Mobile in East Java which is still relatively low, so most of the potential users do not have direct experience using the application. In addition, the results of the study show that in the TAM framework, Perceived Ease of Use has more indirect influence through the formation of Perceived Usefulness, as evidenced in H5, than has a direct influence on Behavioral Intention to Use.

The results of this study are in line with Ilham and Zarnelly (2021) who found that Perceived Ease of Use does not have a significant effect on PLN Mobile acceptance, and is supported by Umar and Pasaribu (2024) who show that Effort Expectancy in the UTAUT2 model also does not have a significant effect on Behavioral Intention. On the other hand, research by Puspita and Noer (2025) and Ratnawati and Malik (2024) found that Perceived Ease of Use has a positive effect on the intention and sustainable use of applications. The difference is thought to be influenced by the characteristics of the respondents, as the research involving active users allows respondents to assess convenience based on real experiences, while the study focuses on potential users who consider the needs and benefits more than the convenience aspect.

Based on these findings, PT PLN (Persero) should not only highlight the ease of use of the application, but also strengthen communication regarding the concrete benefits that customers can obtain through PLN Mobile. Information delivery can be done through usage simulations and real-life situation examples that demonstrate the efficiency of the service. Thus, Perceived Ease of Use remains an important factor that strengthens Perceived Usefulness, although it is not yet the main factor that drives the customer's initial intention to download and use the app.

3. The Effect of Perceived Usefulness on Behavioral Intention to Use

The test results showed that Perceived Usefulness had a positive and significant effect on Behavioral Intention to Use, so H3 was accepted. These findings show that the greater the benefits that customers feel from PLN Mobile, the higher their intention to use the application. The perception that applications are able to save time, facilitate service access, and reduce dependence on conventional services are the main factors that shape the intention of use. For respondents who have never used an app before, the decision to try it is based more on belief in the benefits it will gain than on experience, habits, or emotional aspects. This condition also explains the low level of active use of PLN Mobile in East Java (23.91%), where increasing the perception of benefits has the potential to be the main driver of change from just knowing to using the application. The results of this study support the Technology Acceptance Model which states that Perceived Usefulness is a direct determinant of the intention to use technology (Davis, 1989).

These findings are consistent with the research of Ilham and Zarnelly (2021), Mulyono and Premananto (2022), Adha et al. (2025), and Umar and Pasaribu (2024) who both found a positive influence of Perceived Usefulness or Performance Expectancy on the intention to use PLN Mobile. On the other hand, these results are different from Rosyada and Alie (2025) who did not find a significant effect of Perceived Benefits on Customer Satisfaction. The difference is thought to have arisen because previous research focused on satisfaction after use, while this study examined intentions before use. Therefore, PT PLN (Persero) needs to strengthen communication regarding the real benefits of the application, such as time efficiency, ease of transactions, 24-hour service, and the solution of electricity needs without having to come to the PLN office, because this approach is expected to be more effective in increasing the use of the application than simply introducing features.

4. The Effect of Discount on Behavioral Intention to Use

The H4 test showed that Discount had no significant effect on Behavioral Intention to Use, so the hypothesis was rejected. Even though the relationship formed is positive, the discount program has not been able to encourage customer intentions to use PLN Mobile in a real way. This can be explained because PLN Mobile is a public service application that is oriented towards fulfilling daily electricity needs, so that customers prioritize the function and ease of service rather than financial incentives. In addition, most of the respondents have never used the application so they have no direct experience of the promotional programs, cashback, or discounts offered.

These findings also reflect the characteristics of electricity services as a basic need, where reliability and ease of access are more important than price stimulus. This explanation is in line with the concept of sales promotion put forward by Kotler and Keller (2016), that the effectiveness of discounts is influenced by product characteristics and the level of consumer needs. The results of this study support the findings of Hidayati (2018) and Ahsan et al. (2024) who stated that promotion does not have a significant effect on PLN services. However, these results are different from Umar and Pasaribu (2024), who found a positive influence of Price Value on Behavioral Intention, as well as Andika and Hayadi (2023) and Ritonga et al. (2019) who proved the significant influence of Discount on commercial applications. This difference shows that price incentives are more effective in consumptive services than public services. Therefore, PT PLN (Persero) is advised to prioritize education about the needs and benefits of the application, while the discount program should be positioned as a supporting strategy.

5. The Effect of Perceived Ease of Use on Perceived Usefulness

The results of the H5 test proved that Perceived Ease of Use had a positive and significant effect on Perceived Usefulness (Original Sample = 0.394; T Statistics = 5,063; P Values = 0.000), until H5 is accepted. This relationship is the strongest in the research model. The findings show that the easier PLN Mobile is to understand and operate, the greater the benefits felt by customers. The ease of learning the application, the clarity of the display, and the simple flow of use can reduce cognitive barriers so that users can more easily recognize the functional benefits of the application. Although ease of use does not directly encourage the intention to use the application, this factor acts as a link that increases the perception of benefits, especially for prospective users who do not have experience using PLN Mobile.

These results reinforce the main structure of the Technology Acceptance Model, which places Perceived Ease of Use as an antecedent to Perceived Usefulness (Davis, 1989). The findings are also consistent with the research of Mulyono and Premananto (2022), Aditya (2022), and Ningsih and Putra (2025), which show that ease of use consistently increases the perception of benefits in various contexts of using PLN Mobile. Therefore, PT PLN (Persero) needs to continue to improve the interface, service menu, and transaction flow to make it simpler and easier to understand. These efforts not only increase the convenience of use, but also reinforce the perception of the benefits of the app which ultimately contributes to the increase of Behavioral Intention to Use through indirect channels.

6. The Moderating Effect of Perceived Usefulness on the

Relationship between Perceived Ease of Use and Behavioral Intention to Use

The results of the H6 test showed that the interaction between Perceived Ease of Use and Perceived Usefulness did not have a significant effect on Behavioral Intention to Use (Original Sample = 0.051; T Statistics = 0.791; P Values = 0.429); therefore, H6 was rejected. These findings indicate that Perceived Usefulness does not moderate the relationship between Perceived Ease of Use and Behavioral Intention to Use. In other words, the perceived benefits of the PLN Mobile application neither strengthen nor weaken the influence of perceived ease of use on customers' intention to use the application. Instead, Perceived Ease of Use and Perceived Usefulness act as independent determinants of Behavioral Intention to Use. Although ease of use contributes to increasing perceived usefulness, the influence of ease of use on customers' intention to use the application does not become stronger when the perceived usefulness increases.

These findings are consistent with the original Technology Acceptance Model (TAM) proposed by Davis (1989), which conceptualizes Perceived Ease of Use as an antecedent of Perceived Usefulness, followed by the influence of Perceived Usefulness on Behavioral Intention to Use, rather than as an interaction effect. The findings are also in line with the studies of Ramadya (2022) and Ningsih and Putra (2024), which reported that Perceived Ease of Use and Perceived Usefulness function as direct predictors within the TAM framework. Furthermore, Adha et al. (2025) found that Subjective Norm, rather than Perceived Usefulness, served as the moderating variable in the adoption of PLN Mobile. Therefore, PT PLN (Persero) should continue improving the ease of use and the functional benefits of the PLN Mobile application as complementary strategies. These improvements are expected to enhance customers' acceptance of the application by strengthening each construct independently rather than through a moderating relationship.

Conclusion

Based on the results of this study, Need Recognition and Perceived Usefulness were found to have a positive and significant effect on Behavioral Intention to Use the PLN Mobile application. These findings indicate that customers' intention to use the application increases when they recognize the need for digital electricity services and perceive the application as beneficial in fulfilling those needs. In contrast, Perceived Ease of Use and Discount did not have a significant direct effect on Behavioral Intention to Use. However, Perceived Ease of Use had a positive and significant effect on Perceived Usefulness, indicating that ease of use contributes indirectly by enhancing customers' perceptions of the application's usefulness. Furthermore, Perceived Usefulness was not found to moderate the relationship between Perceived Ease of Use and Behavioral Intention to Use, suggesting that perceived usefulness functions as an independent determinant rather than strengthening or weakening the influence of ease of use on customers' intention to use the application. Overall, customers' intention to use PLN Mobile is primarily driven by Need Recognition and Perceived Usefulness, while Perceived Ease of Use contributes indirectly through its positive effect on Perceived Usefulness, and Discount does not constitute a major determinant of usage intention.

PT PLN (Persero) should prioritize strategies that enhance customers' awareness of the need for digital electricity services and emphasize the practical benefits of the PLN Mobile application. Communication and promotional activities should focus on highlighting key features, such as electricity bill payments, prepaid electricity token purchases, self-meter reading, service complaint submission, and access to other digital electricity services. Although Perceived Ease of Use does not directly influence Behavioral Intention to Use, improving the application's interface, navigation, and service information remains important because it strengthens Perceived Usefulness. Furthermore, the company should develop ease of use and perceived usefulness as complementary strategies rather than expecting a synergistic interaction between the two constructs. Finally, promotional efforts should not rely primarily on discount programs but instead emphasize the functional value and long-term benefits of using the PLN Mobile application.

REFERENCES

Adha, A., Dwita, V., & Siregar, T. R. Y. (2025). Understanding The Intention to Use PLN Mobile Application: The Moderated Mediation Analysis. *Jurnal Aplikasi Bisnis Dan Manajemen, 11*(2), 704. https://doi.org/10.17358/jabm.11.2.704

Aditya, M. Z. (2022). ANALISIS PENERIMAAN PELANGGAN TERHADAP APLIKASI PLN MOBILE DENGAN METODE TECHNOLOGY ACCEPTANCE MODEL (TAM). *JuSiTik: Jurnal Sistem Dan Teknologi Informasi Komunikasi, 3*(1), 37–45. https://doi.org/10.32524/jusitik.v3i1.490

Afrizal, D., Luthfi, A., Bin Wallang, M., Hildawati, H., & Ekareesakul, K. (2024). Citizens' Intention to Use E-Government Services in Local Government by Integrating UTAUT, TPB, and TAM Model. *Journal of Local Government Issues, 7*(2), 129–143. https://doi.org/10.22219/logos.v7i2.32437

Ahsan, M., Assagaf, A., & Prabowo, E. (2024). Analisis Faktor-Faktor yang Mempengaruhi Kepuasan Pelanggan dan Keputusan Pembelian Tenaga Listrik Pada PT.PLN (Persero) Jawa Bali. *SUTET, 13*(2). https://doi.org/10.33322/sutet.v13i2.1962

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

Andika, D. W., & Hayadi, I. (2023). Pengaruh Diskon, Kemudahan Penggunaan, dan User Interface (UI) Terhadap Niat Menggunakan Aplikasi McDonald's (Studi Kasus di Kota Bengkulu). *REVITALISASI*, *12*(2), 412. https://doi.org/10.32503/revitalisasi.v12i2.4606

Andrews, J. C., & Shimp, T. A. (2017). *Advertising, promotion, and other aspects of integrated marketing communications* (10th edition). Cengage Learning.

Ardiansyah, T., Teofilus, & Padmalia, M. (2025). Kualitas Layanan Digital Perspektif E-S-Qual Dan E-Recs-Qual: Studi Empiris Pada Aplikasi PLN Mobile di PT PLN (Persero) Distribusi Jawa Timur.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Asosiasi Penyelenggara Jasa Internet Indonesia. (2025). Survei internet APJII 2025. APJI. https://survei.apjii.or.id/survei?emailSent=1

Belch, G. E., & Belch, M. A. (2012). *Advertising and promotion: An integrated marketing communications perspective* (9th ed). McGraw-Hill [distributor].

Chaffey, D. (2015). *Digital business and e-commerce management*. Pearson.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches (4. ed)*. SAGE.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

Dewi, R., Arfan, H., Nasir, M., & H A, I. (2023). Peran Kualitas Layanan Elektronik Mobile dalam Meningkatkan Penjualan: Kerangka Konseptual dan Evaluasi Empiris. *Jurnal Manajemen dan Bisnis Indonesia, 9*(1), 29–44. https://doi.org/10.32528/jmbi.v9i1.467

Engel, J. F., Blackwell, R. D., & Miniard, P. W. (1995). *Consumer Behavior*. Dryden Press., 8th Ed.

Engel, J. F., Blackwell, R. D., & Miniard, P. W. (1995). *Consumer Behavior.* Dryden Press., 8th Ed.

Fikri, M. (2025). PLN Mobile Down Imbas Pelanggan Serbu Diskon Listrik 50%. Bloomberg Technoz. https://www.bloombergtechnoz.com/detail-news/59123/pln-mobile-down-imbas-pelanggan-serbu-diskon-listrik-50

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior*. Addison-Wesley.

Harianto, M. (2024). PLN catat 55 juta pengguna PLN Mobile dan jadi percontohan Malaysia. ANTARA News. https://www.antaranews.com/berita/4507445/pln-catat-55-juta-pengguna-pln-mobile-dan-jadi-percontohan-malaysia

Hawkins, D. I., & Mothersbaugh, D. L. (2010). *Consumer behavior: Building marketing strategy* (11. ed). McGraw-Hill Irwin.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hidayati, I. R. (2018). PENGARUH KEPERCAYAAN PELANGGAN, KUALITAS PELAYANAN ELEKTRONIK, DAN PROMOSI PADA APLIKASI PLN MOBILE TERHADAP KEPUASAN PELANGGAN PT. PLN DISTRIBUSI JAWA TIMUR DI SURABAYA. *JEM17: Jurnal Ekonomi Manajemen, 3*(2). https://doi.org/10.30996/jem17.v3i2.3459

Hoyer, W. D., MacInnis, D. J., Pieters, R., Chan, E., & Northey, G. (2021). *Consumer behaviour* (Second Asia-Pacific edition). Cengage Learning Australia.

Ilham, M., & Zarnelly, Z. (2021). ANALISIS PENERIMAAN APLIKASI PLN MOBILE MENGGUNAKAN TECHNOLOGY ACCPETANCE MODEL (TAM). *Jurnal Ilmiah Rekayasa dan Manajemen Sistem Informasi, 7*(1), 58. https://doi.org/10.24014/rmsi.v7i1.11549

Kotler, P. (2002). *Marketing Management* ((11th ed.)). Prentice Hall.

Kotler, P., & Keller, K. L. (2016). *Marketing Management*. Pearson Education.

Kurniawan, A. W., & Puspitaningtyas, Z. (2016). *Metode penelitian kuantitatif.* Pandiva Buku.

Malhotra, N. K., Nunan, D., & Birks, D. F. (2017). *Marketing research: An applied approach (Fifth edition).* Pearson.

Mishra, O. (2018). A STUDY ON THE PURCHASE AND POST PURCHASE STAGE OF CONSUMERS' BUYING DECISION MAKING PROCESS. *5*, 96–98.

Mulyono, D., & Premananto, G. C. (2022). ANALISIS FAKTOR YANG MEMPENGARUHI PENERIMAAN PELANGGAN PLN ULP BANYUWANGI KOTA TERHADAP APLIKASI NEW PLN MOBILE. *Ekonis: Jurnal Ekonomi dan Bisnis, 24*(1). https://doi.org/10.30811/ekonis.v24i1.3240

Naji, G. M. A., Kalid, K. S., & Savita, K. S. (2024). The Moderating Effect of App Trustworthiness and User Attitudes on Intention to Use Adopt Mobile Applications Among Employees in The Oil and Gas Industry. *Sage Open, 14*(4), 21582440241286300. https://doi.org/10.1177/21582440241286300

Ningsih, A., & Putra, H. B. (2025). SWACAM and the Future of Self-Service: A TAM Study of Perceptions, Attitudes, and Intentions to Use. *Journal of Social Commerce, 5*(3), 440–452. https://doi.org/10.56209/jommerce.v5i3.181

PLN. (2026). Portal Layanan Pelanggan PLN. https://layanan.pln.co.id/partnership-spklu

Pradipta, F., & Aruan, D. T. H. (2024). Powering Up User Loyalty: Exploring Multidimensional Platform Value and Service Quality in the PLN Mobile Electricity Service Application Platform. *Syntax Literate: Jurnal Ilmiah Indonesia, 9*(12), 7211–7229. https://doi.org/10.36418/syntax-literate.v9i12.55140

Prasamya, S., Asdar, M., Hakim, H., & Hasanuddin, U. (2023). TECHNOLOGY ACCEPTANCE OF THE POWER OUTAGE COMPLAINT REPORTING FEATURE ON "NEW PLN MOBILE" APPLICATION. *4*(2).

Puspita, D., & Noer, L. R. (2025). The Effect of the Technology Acceptance Model and Theory of Planned Behavior on the Use of the New PLN Mobile Application. *Dinasti International Journal of Education Management And Social Science, 7*(1), 56–68. https://doi.org/10.38035/dijemss.v7i1.5198

Putra, K. P., & Barusman, T. M. (2024). The Effect of Using the PLN Mobile Application on PLN Customer Satisfaction (Case Study at PT PLN ULP Teluk Betung). *Formosa Journal of Multidisciplinary Research, 3*(3), 25–34. https://doi.org/10.55927/fjmr.v3i3.8557

Ramadya, I. R. (2022). PENGARUH PERCEIVED EASE OF USE DAN PERCEIVED USEFULNESS TERHADAP ATTITUDE TOWARD USING SERTA DAMPAKNYA TERHADAP BEHAVIORAL INTENTION. *Jurnal Manajemen Pemasaran dan*

Perilaku Konsumen, *1*(4), 553–561. https://doi.org/10.21776/jmppk.2022.01.4.14

Ratnawati, A. T., & Malik, A. (2024). The Effect of Perceived Ease of Use, Benefits, and Risks on Intention in Using the Quick Response Code Indonesian Standard. *GLOBAL BUSINESS FINANCE REVIEW, 29*(7), 110–125. https://doi.org/10.17549/gbfr.2024.29.7.110

Republik Indonesia. (2022). *Peraturan Presiden Republik Indonesia Nomor 66 Tahun 2022 tentang Rencana Tata Ruang Kawasan Strategis Nasional Kawasan Perkotaan Gresik, Bangkalan, Mojokerto, Surabaya, Sidoarjo, dan Lamongan*. Lembaran Negara Republik Indonesia Tahun 2022 Nomor 106.

Ritonga, N., Astuti, E. S., & -, S. (2019). THE INFLUENCE OF PERCEIVED EASE OF USE, DISCOUNT, AND PERCEIVED USEFULNESS ON INTENTION TO USE GRAB APLICATION AND ITâ€TMs IMPACT ON PURCHASE DECISION OF GRAB SERVICES. *The International Journal of Accounting and Business Society, 27*(2), 55–70. https://doi.org/10.21776/ub.ijabs.2019.27.2.3

Rosyada, A., & Alie, J. (2025). Influence of Perceived Benefits, Perceived Ease of Use, and Service Features on Customer Satisfaction with the Use of the PLN Mobile Application at PT PLN (PERSERO) UP3 Palembang. *JEM17: Jurnal Ekonomi Manajemen, 10*(1), 161–172. https://doi.org/10.30996/jem17.v10i1.132066

Safitri, R. D. (2025). Aplikasi PLN Mobile Sulit Diakses saat Promo Diskon Listrik 50%. Tirto.Id. https://tirto.id/aplikasi-pln-mobile-sulit-diakses-saat-promo-diskon-listrik-50-g65Y

Schiffman, L. G., & Kanuk, L. L. (2007). *Consumer behavior* (9. ed). Pearson/Prentice Hall.

Schiffman, L. G., & Wisenblit, J. L. (2015). *Consumer Behavior* (11th ed.). Pearson.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill-building approach (Seventh edition)*. John Wiley & Sons.

Suarmiriadi, P. D., & Putra, I. N. T. A. (2025). Optimasi UI Aplikasi PLN Mobile untuk Meningkatkan Kepuasan Pengguna dengan Metode SUS. *Jurnal Ilmiah Media Sisfo, 19*(1), 1–6. https://doi.org/10.33998/mediasisfo.2025.19.1.2284

Turban, E., King, D., Lee, J. K., Liang, T.-P., & Turban, D. C. (2015). *Electronic Commerce: A Managerial and Social Networks Perspective*. Springer International Publishing. https://doi.org/10.1007/978-3-319-10091-3

Umar, A., & Pasaribu, R. D. (2024). Study on the Usage Behavior of PLN Mobile Application using UTAUT 2 Model among PLN Customers in North Sulawesi, Central Sulawesi, and Gorontalo. *International Journal of Social Science and Human Research, 07*(03). https://doi.org/10.47191/ijsshr/v7-i03-41

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology1. *MIS Quarterly, 36*(1), 157–178. https://doi.org/10.2307/41410412

World Health Organization. (2026). Adolescent Health. World Health Organization. https://www.who.int/health-topics/adolescent-health#tab=tab_1