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Enhancing Customer E-Loyalty and E-WOM: The Role of Electronic and Non-Electronic Service Quality and Customer Satisfaction (PLN Mobile Application)

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Abstract

This study examines the relationships between six constructs: e-service quality, customer e-satisfaction service quality, customer satisfaction, customer e-loyalty, and electronic word-of-mouth (EWOM). The study collected data from 452 respondents who are customers of PLN and have used the PLN Mobile application. The study found that customer e-loyalty can be directly and indirectly influenced by service and e-service quality. Both customer satisfaction and e-satisfaction can mediate the influence of service quality and e-service quality on customer e-loyalty. Therefore, PLN needs to ensure service quality (both through the application and field personnel) and customer satisfaction with the services provided to enhance customer satisfaction and foster electronic loyalty, encouraging customers to continue using the PLN Mobile application. The study also reveals that customer e-loyalty positively and significantly influences EWOM.

Keywords: electronic, EWOM, loyalty, satisfaction, service quality.

1. Introduction

PT. PLN (Persero) is a state-owned enterprise in Indonesia that provides electricity services. Electricity is beneficial for advancing public welfare, enhancing national education, and improving the economy to realize an equitable and prosperous society. PLN (Persero) is responsible for all aspects of electricity in Indonesia. As of the end of 2021, PT. PLN recorded an increase in customers, reaching 82.54 million electricity consumers, a 4.35% increase compared to the previous year (UID JAWA BARAT, 2022). Most customers, 91.71%, are household consumers, while the rest consist of entrepreneurs and businesses (5.21%), social groups (2.23%), government (0.28%), industry (0.19%), and Public Street lighting (0.04%). In line with digital business developments, PT. PLN (Persero) is trying to provide easily accessible service quality through the PLN mobile application, which can be easily downloaded from application stores. By using one application, customers can access comprehensive and up-to-date services. Service providers heavily rely on service quality to determine whether customers will continue using their services. The characteristics of services, as explained, encompass what is offered and the quality received by consumers. With the evolving consumer behavior, internet access is commonly used to search for information related to service quality, making electronic service quality an important consideration for management and businesses (UID JAWA BARAT, 2022).

As of December 31, 2022, PT. PLN West Java Distribution Unit recorded 16.2 million registered customers, with a total transaction value of 226.5 billion. The West Java Distribution Unit is one of the units with the largest total transactions in Indonesia. With so many customers, it has received more than 2 million complaints related to its service. PLN Mobile has the highest service request reports, exceeding one million, while the call center 123 channel has the highest reports. However, it can be seen that reviews on the PLN Mobile application are relatively low. Therefore, it can be assumed that there is uncertainty about customer satisfaction with the digital services provided because one sign of customer satisfaction is giving a positive response to the service (UID JAWA BARAT, 2022).

In 2022, *"other" complaints and Service O2O* (Online to Offline) became the most common reviews on the PLN Mobile application. This concerns the PT PLN UID West Java management because the number of user IDs does not match the number of active users. In addition, reviews and ratings of the PLN Mobile application must also

be a significant focus, as they are part of Electronic Word-of-Mouth (EWOM). Therefore,

there is a need for a strategy to improve both online and offline service quality to enhance customer satisfaction in UID West Java, to increase loyalty, and to impact EWOM.

EWOM could be a significant potential factor in influencing three crucial aspects of the PLN Mobile application business. First, EWOM can significantly increase the number of users or downloads of the PLN Mobile application. Second, EWOM can also enhance user interaction with the PLN Mobile application. Third, EWOM also has the potential to boost service sales through the PLN Mobile application. Positive reviews and recommendations from satisfied users through EWOM can build trust and confidence among potential service users. The positive influence of EWOM can affect users' decisions to use services through this application, increasing their interest in taking advantage of the convenience and benefits offered.

Thus, EWOM is expected to become a decisive driving factor in increasing service sales through the PLN Mobile application. In order to leverage the positive potential of EWOM, PT. PLN needs to pay attention to and manage EWOM effectively, promote the excellence and benefits of the PLN Mobile application through satisfied users, and create active and supportive interactions among users of this application.

The research revolves around understanding the factors driving customer electronic loyalty and Electronic Word-of-Mouth (EWOM) within the PLN Mobile application. The exploration is structured around pivotal questions that shed light on the positive aspects of user engagement. Firstly, the study aims to identify the direct factors that positively impact customer loyalty in PLN Mobile. Secondly, it investigates the positive indirect influencers contributing to customer loyalty within the PLN Mobile user base. Lastly, the research explores the positive correlation between customer loyalty within PLN Mobile and the positive formation of Electronic Word-of-Mouth (E-WOM). These questions serve as a positive framework guiding the investigation into the intricate dynamics of user loyalty, emphasizing its positive potential ripple effects on digital word-of-mouth.

2. Literature Review

2.1. E-Service Quality and Service Quality

E-Service Quality refers to the assessment of customers regarding the quality of services provided through electronic or online platforms, such as websites, applications, or online customer services. The dimensions of E-Service Quality include information quality, usefulness, and e-trust, which have positively affected e-satisfaction in the online system (Herington & Weaven, 2009). From a non-electronic point of view, Service quality also strongly influences customer satisfaction (Asiyanbi & Ishola, 2018). Service Quality, more broadly, encompasses the satisfaction level of customers with the quality of services a company provides face-to-face to the customers (Fornell et al., 1994). The competence of support staff, system availability, features, responsiveness, and explanations were found to have a significant impact on assessing service quality(Alkraiji & Ameen, 2022). The relationship between service quality and customer satisfaction is more robust for less complex services (Leninkumar, 2017). In such conditions, customers with technological skills can easily use online services, leading to higher levels of satisfaction compared to others (Omar et al., 2016). Good e-service quality affects the level of customer e-satisfaction; conversely, the level of customer e-satisfaction influences the e-service quality received by customers (Özkan et al.,.

2.2. E-Loyalty

E-Loyalty refers to customers' loyalty toward a company in the context of electronic or online interactions in the business process (Ahrens et al., 2013). It represents customers' commitment and willingness to continue using the company's products or services electronically.

2.3. Electronic Word of Mouth (EWOM)

Electronic Word-of-mouth (EWOM) is the online sharing of customers' opinions, recommendations, and experiences about a product or service (Ahrens et al., 2013). In the context of this study, it involves customers spreading information through electronic channels, such as social media, review websites, or online forums, which can significantly impact the reputation and perception of a company.

2.4. Hypothesis

E-service quality has a positive and significant impact on customer satisfaction in the telecommunication industry, and it proves the close and interconnected relationship between e-service

quality and customer satisfaction (Gefen, 2002). A good e-service quality significantly influences the level of customer e-satisfaction; conversely, the level of customer e-satisfaction affects the perceived e-service quality. Customer e-satisfaction has a positive correlation with e-loyalty and is known to influence the affective perceptions developed by consumers toward a retailer (Gefen, 2002). In an online context, the quality of the customer's relationship with an e-retailer affects e-affective commitment. Customer e-satisfaction itself has received much attention in e-marketing literature. Satisfaction is considered a response to consumer fulfillment. E-satisfaction is customer satisfaction concerning their previous purchasing experience with a specific electronic or digital platform. Research indicates that satisfied customers engage in repeat purchase behavior, thus becoming loyal customers (Hur et al., 2011).

The result of an investigation of data from 201 respondents to test the relationship found that electronic service quality and the customer e-loyalty relationship are mediated by customer e-satisfaction (Omar et al., 2016). Similarly, a previous study on technology-enabled banking services found that customer loyalty is determined by service quality, functional quality, perceived satisfaction, employee-customer engagement, perceived usefulness, and perceived risk (Mbama et al., 2018).

The analysis confirms the positive relationship between e-service quality, customer e-satisfaction, and e-loyalty (Mbama et al., 2018). Additionally, e-service quality is identified as the core predictor of customer satisfaction and customer loyalty, with customer satisfaction emerging as the strongest predictor of customer loyalty. Furthermore, e-service quality affects customer loyalty, and company image influences customer loyalty (Kaya et al., 2019). By using a sample of 266 customers in shopping centers, the research found that customer e-satisfaction could mediate the influence of e-service quality on customer e-loyalty (Joseph & Stone, 2003).

Similarly, customer e-satisfaction also reinforces the relationship between online services and customer loyalty (Asiyanbi & Ishola, 2018). Based on the results of previous studies, this study proposes the following hypotheses are:

H_1: E-service quality has a positive and significant impact on customer e-satisfaction.

H_2: Customer e-satisfaction has a positive and significant impact on customer e-loyalty.

H_3: E-service quality has a positive and significant impact on customer e-loyalty.

H_4: Customer e-satisfaction mediates the relationship between e-service quality and customer e-loyalty.

In this study, the field service provided by PLN officers is expected to provide customer e-satisfaction and impact PLN customer e-loyalty, leading to customer loyalty in using PLN Mobile. Therefore, this study proposes the following hypothesis are:

H_5 : Service quality has a positive and significant impact on customer satisfaction.

H_6 : Customer satisfaction has a positive and significant impact on customer loyalty.

According to Alkraiji & Ameen (2022), the factors such as service quality, trust in the government, trust in e-government services, and citizen satisfaction play a crucial role in developing citizen loyalty towards e-government services, resulting in e-loyalty. Trust in the government has the strongest direct influence on citizen loyalty towards e-government services, while service quality has the strongest total influence on citizen loyalty. Conversely, citizen satisfaction has the most significant impact on citizen loyalty toward e-government services. The foundation of true loyalty lies in customer satisfaction (Fornell et al., 1994), where service quality is the main input in both electronic and direct services. Based on the findings of these studies, the researcher formulates the following hypotheses for this study:

H_7: Service quality has a positive and significant impact on customer e-loyalty.

H_8: Customer satisfaction mediates the relationship between service quality and customer e-loyalty.

This study examines two concurrent services, service quality and e-service quality, in the context of PLN Mobile's business processes. Customers can request services, such as complaints or other services, through the application and receive field services from the officers. However, limited research describes the simultaneous occurrence of both service quality aspects. Therefore, the researcher formulates hypotheses based on existing business processes:

H_9: E-service quality has a positive impact on service quality.

The more loyal customers a brand has, the more they can recommend it to others and create positive word-of-mouth (Chang et al. 2015). After being satisfied, customers will try to share their

experiences with others by speaking positively about a brand and is considered a consequence of loyalty behavior, while recommending a brand is a component of loyalty attitude (Hur et al., 2011; Srinivasan et al., 2002). The positive effect of e-loyalty on e-WOM can explain how loyal clients can recommend services to other (Chang et al., 2015). Additionally, in developing markets, people are more likely to exchange information with others and can act as advisors to their friends and family circle. Based on the findings of these studies, the formulation of the following hypothesis for this study:

H_{10}: Customer e-loyalty has a positive and significant impact on e-WOM.

This study proposes a research model modified in Figure 1 for the hypotheses.

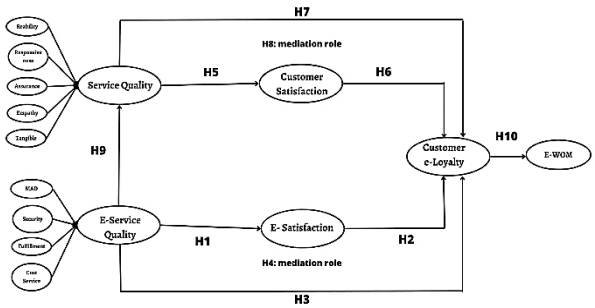

Figure 1. Research model
(Source: Based on Kaya, 2019; Gopi, 2019; Zoghlami et al., 2020)

3. Methods

3.1. The Measurement Model

This research was conducted using a formative approach. The first-order constructs include Reliability, Responsiveness, Assurance, Empathy, Tangible, MAD (Mobile App Design), Security, Fulfillment, and Customer Service. Meanwhile, the second-order constructs encompass E-service Quality (ESQ) and Service Quality (SQ). The item for each constructs can be seen in Tables presented in the Result Section of this paper.

The software SmartPLS is used to analyze and assess the relationships between the constructs in the model. By employing the PLS analysis with SmartPLS, this research aims to provide quantitative insights into the factors influencing customer loyalty in PT. PLN's services are based on Service Quality, both offline and online.

3.2. Sample

The sampling method used is purposive sampling from the target population, which consists of PLN customers who have used or are using the PLN Mobile application and reside under the operational office of the West Answer Unit. Purposive sampling is based on the research objectives and specific characteristics relevant to the research topic. In this case, the researcher intentionally selects the samples based on predetermined criteria. The aim is to select respondents with the most relevant knowledge and experience regarding using the PLN Mobile application and PLN services.

3.3. Data Collection

This research collected primary data through questionnaires distributed via WhatsApp and during field technician visits to customers' homes. This study involves 6 constructs with 58 questions, consisting of 14 questions for 4 dimensions of E-service quality, 5 questions for Customer E-satisfaction, 20 questions for 5 dimensions of Service Quality, 5 questions for customer satisfaction, 5 questions for customer e-loyalty, and 6 questions for e-WOM. Afterward, 452 respondents were collected, and the data will be analyzed to test the hypotheses.

3.4. Measurement

A structural equation model with Partial Least Squares (PLS) analysis is employed to analyze the data and test the research model. PLS is a statistical technique suitable for analyzing complex models with latent variables, and it allows for assessing both measurement and structural models (Rahman et al. 2003). The statistical analysis will help validate the relationships between the constructs and provide a deeper understanding of the impact of each construct on customer loyalty. The research model developed in this study aims to determine the factors that influence customer loyalty in PT. PLN (Persero) services are based on offline and online Service Quality through the PLN Mobile application.

4. Result

This study successfully gathered 452 respondents through an online survey and direct from field technician. More than half of the respondents were male (94%), and most were between 28 and 38 (41%). The educational background of most respondents was senior high school (75.17%). The profile of the respondents is presented in Table 1. This study also employed 58 questionnaire items to measure 28 first-order latent variables and two second-order latent variables (Service Quality and E-Service Quality). As mentioned earlier, Service

Quality consists of five dimensions, while E-Service Quality consists of four dimensions.

Convergent validity, discriminant validity, and composite reliability values are used to test the loading model measurement. For convergent validity, the value should be greater than 0.7 (Hair et al., 2018). Table 2 shows that all indicators have loading factors in the outer model greater than 0.7, indicating that no indicators are removed in further testing. Additionally, the Fornell-Lacker criterion is used to assess discriminant validity, and each latent variable has a maximum loading factor on its corresponding latent variable, as seen in Table 3. Lastly, the average variance extracted (AVE) and composite reliability values are above 0.5 (Hair et al., 2018), as shown in Table 4. The results of the second-order service quality are represented by five dimensions: tangible, assurance, reliability, responsiveness, and empathy. For e-service quality, it is constructed by four dimensions: mobile application design (MAD), security, fulfillment, and customer service. The results of the second-order analysis can be seen in Table 5. All the second-order variables have values greater than 0.5, indicating that all dimensions can confirm and measure the corresponding latent variables.

The hypotheses were tested using the structural model, and the R-square values and model fit were examined. According to Table 6, the dependent variable exhibited R-square values ranging from 0.600 to 0.765. The highest R-square value was observed for Customer E-Satisfaction, indicating that E-service Quality influences 76.4% of Customer E-Satisfaction. EWOM is influenced by Customer E-loyalty by 72.6%. Additionally, Table 7 indicates that the model fits well, as evidenced by a standardized root mean square residual below 0.08 and a norm fit index close to 1.

There are two main parts of hypothesis testing: enhancing Customer e-loyalty through service quality and e-service quality, and the impact of customer e-loyalty towards EWOM. The hypotheses were examined using a bootstrapping procedure, with significance determined by T-statistic values greater than 1.96 and p-values of 0.05 or lower. The results indicate that nine hypotheses were found to be significant. While respondents acknowledged that E-service quality has a positive and significant effect on Customer e-satisfaction (supported H1) and customer e-satisfaction has a positive and significant effect on customer e-loyalty (supported H2). Customer e-satisfaction mediates the influence of e-service quality on customer e-loyalty (supported H4). Service quality positively and significantly affects customer satisfaction (supported H5). At the same time, customer satisfaction also positively and significantly affects customer e-loyalty (supported H6). Directly, customer satisfaction has a positive and significant effect on customer e-loyalty (supported H7); customer satisfaction also mediates the influence of service quality on customer e-loyalty (Supported H8). The relation between e-service quality and service quality could be seen from a positive and significant effect of e-service quality on service quality (supported H9). Customer e-loyalty positively and significantly affects EWOM (supported H10). However, direct e-service quality did not positively and significantly affect customer e-loyalty (not supported H3). The results of the hypothesis testing can be found in Table 8.

This research demonstrates the existence of a synergy between electronic and non-electronic service quality, with different dimensions. The combination of Service Quality and Electronic Service Quality proves that building customer loyalty is important from electronic and non-electronic perspectives (Gopi & Samat, 2020; Herington & Weaven, 2009). E-service quality plays a crucial initial role in the interaction between companies and customers in this study, capturing customer issues or needs quickly and efficiently (Aly Shared, 2019). However, the direct impact on customer loyalty does not occur solely through e-service quality (Desiyanti et al., 2018), emphasizing the importance of non-electronic service quality. Field technicians are vital in resolving issues identified through e-service quality by providing responsive feedback and satisfying customer service experiences. Therefore, integrating e-service quality and service quality provided by field agents is necessary to create strong customer satisfaction that will impact customer e-loyalty (Zoghlami et al., 2018). In this framework, e-service quality is a driving force that helps identify initial problems and facilitates effective interactions.

In contrast, service quality by field agents contributes to problem-solving and directly providing satisfying services to customers, ultimately impacting e-customer loyalty. Combining these two concepts can develop a more comprehensive framework to enhance customer loyalty and stimulate electronic word-of-mouth (EWOM) (Ahrens et al., 2013; Zoghlami et al., 2018). This research provides a more holistic perspective on how electronic and non-electronic service quality influences customer loyalty and EWOM.

Table 1. Respondents' profile

No	Demography	Category	Freq.	%
1	Gender	Male	427	94.68%
		Female	24	5.32%
2	Age	18-28 years old	61	13.00%
		28 -38 years old	185	41.00%
		38 – 48 years old	158	35.00%
		>48 years old	48	11.00%
3	Domicile	Cianjur Regency	60	13.30%
		Bekasi Regency	55	12.20%
		Tasikmalaya Regency	50	11.09%
		Bandung Regency	43	9.53%
		Cirebon Regency	35	7.76%
		Others	209	46.00%
4	Education Background	D1	3	0.67%
		D3	30	6.65%
		S1	54	11.97%
		S2	2	0.44%
		S3	2	0.44%
		SMA	339	75.17%
		SMP	21	4.66%
5	Occupation	Workers	13	2.88%
		Traders	1	0.22%
		Government Employees/SOEs/Government Institutions	69	15.30%
		Non-Civil Servant Government Employees	8	1.77%
		Private Sector Employees	293	64.97%
		Professionals	6	1.33%
		Entrepreneurs	61	13.53%
6	Use Case	Information related to electricity supply	1	0.22%
		Reporting Disruptions	384	85.14%
		New Installation	8	1.77%
		Mobile Credit Purchase	6	1.33%
		Electric Token Purchase	34	7.54%
		Power Addition	18	3.99%
7	Last Usage	< 1 week ago	310	68.74%
		1 - 3 months ago	76	16.85%
		1 year ago	37	8.20%
		3 - 6 months ago	19	4.21%
		6-12 months ago	9	2.00%
8	Electricity Bill	< Rp100.000	161	35.70%
		> Rp100.000 - Rp500.000	253	56.10%
		> Rp1000.000	5	1.11%
		> Rp500.000 - Rp1000.000	32	7.10%

Table 2. Outer loading factor

Outer Loading	E-WOM	Cust E-Loyalty	Cust E-Satisfaction	Cust Satis-faction	MAD	Cust Service	Fulfill-ment	Securi-ty	Assuran-ce	Tangible	Respon-siveness	Relia-bility	Empa-thy
CEL 1		0.789											
CEL 2		0.908											
CEL 3		0.907											
CEL 4		0.902											
CEL 5		0.890											
CES 1			0.851										
CES 2			0.894										
CES 3			0.887										
CES 4			0.911										
CES 5			0.895										
CS 1				0.898									
CS 2				0.929									

Outer Loading	E-WOM	Cust E-Loyalty	Cust E-Satisfaction	Cust Satis-faction	MAD	Cust Service	Fulfill-ment	Securi-ty	Assuran-ce	Tangible	Respon-siveness	Relia-bility	Empa-thy
CS 3				0.919									
CS 4				0.936									
CS 5				0.905									
CSR 1						0.890							
CSR 2						0.914							
CSR 3						0.919							
CSR 4						0.873							
EW 1	0.883												
EW 2	0.916												
EW 3	0.904												
EW 4	0.893												
EW 5	0.880												
EW 6	0.908												
FULL 1							0.877						
FULL 2							0.913						
FULL 3							0.884						
FULL 4							0.869						
MAD 1					0.743								
MAD 2					0.774								
MAD 3					0.860								
MAD 4					0.858								
MAD 5					0.808								
SEC 1								0.918					
SEC 2								0.925					
SEC 3								0.926					
SEC 4								0.901					
SQA 1									0.898				
SQA 2									0.891				
SQA 3									0.900				
SQA 4									0.789				
SQE 1													0.856
SQE 2													0.903
SQE 3													0.844
SQE 4													0.887
SQP 1											0.922		
SQP 2											0.914		
SQP 3											0.894		
SQP 4											0.906		
SQR 1												0.871	
SQR 2												0.906	
SQR 3												0.883	
SQR 4												0.857	
SQT 1										0.896			
SQT 2										0.914			
SQT 3										0.892			
SQT 4										0.876			

Table 3. Fornell-Lacker Criterion

	Assurance	Cust E-Loyalty	Cust E-Satis-faction	Cust Satis-faction	Cust Service	EWOM	Empa-thy	Fulfill-ment	MAD	Relia-bility	Respon-siveness	Secu-rity	Tangible
Assurance	0.871												
Cust E-Loyalty	0.773	0.880											
Cust E-Satisfaction	0.700	0.773	0.888										
Cust Satisfaction	0.827	0.799	0.686	0.917									
Customer Service	0.705	0.713	0.826	0.667	0.899								
EWOM	0.718	0.873	0.745	0.742	0.683	0.897							
Empathy	0.860	0.796	0.737	0.831	0.744	0.774	0.873						
Fulfillment	0.671	0.709	0.832	0.657	0.872	0.685	0.724	0.886					
MAD	0.626	0.662	0.761	0.598	0.795	0.673	0.645	0.820	0.810				

	Assurance	Cust E-Loyalty	Cust E-Satis-faction	Cust Satis-faction	Cust Service	EWOM	Empa-thy	Fulfill-ment	MAD	Relia-bility	Respon-siveness	Secu-rity	Tangible
Reliability	0.810	0.683	0.675	0.787	0.670	0.643	0.786	0.668	0.601	0.879			
Responsive-ness	0.871	0.736	0.684	0.828	0.683	0.706	0.872	0.653	0.571	0.846	0.909		
Security	0.615	0.648	0.749	0.595	0.780	0.629	0.649	0.781	0.734	0.551	0.579	0.917	
Tangible	0.700	0.648	0.630	0.724	0.627	0.602	0.701	0.612	0.570	0.825	0.769	0.501	0.895

Table 4. Validity and reliability

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Assurance	0.893	0.926	0.758
Cust E-Loyalty	0.927	0.945	0.775
Cust E-Satisfaction	0.933	0.949	0.788
Cust Satisfaction	0.953	0.964	0.841
Customer Service	0.921	0.944	0.808
E-SQ	0.966	0.969	0.648
EWOM	0.952	0.961	0.805
Emphaty	0.896	0.928	0.762
Fulfillment	0.908	0.936	0.784
MAD	0.868	0.905	0.656
Reliability	0.902	0.932	0.773
Responsiveness	0.930	0.950	0.827
Security	0.937	0.955	0.842
Service Quality	0.973	0.975	0.662
Tangible	0.917	0.941	0.801

Table 5. Second order result

Second Order	First Order	Outer Loading	P Values
Electronic Service Quality (ESQ)	MAD	0.876	0.000
	Security	0.860	0.000
	Fulfillment	0.955	0.000
	Customer Service	0.965	0.000
Service Quality (SQ)	Assurance	0.935	0.000
	Reliability	0.877	0.000
	Responsiveness	0.911	0.000
	Tangible	0.818	0.000
	Empathy	0.967	0.000

Table 6. Model fit [1]

	R Square	R Square Adjusted
Cust E-Loyalty	0.749	0.746
Cust E-Satisfaction	0.765	0.764
Cust Satisfaction	0.758	0.757
EWOM	0.762	0.762
SQ	0.611	0.61

Table 7. Model Fit [2]

	Saturated Model	Estimated Model
SRMR	0.037	0.044
NFI	0.905	0.904

Table 8. Hypothesis result

No	Hypothesis	Path Coefficient	T-Value	P-Value	Result
1	E-service quality has a positive and significant influence on customer e-satisfaction.	0.693	13.541	0.000	Supported
2	Customer e-satisfaction has a positive and significant influence on customer e-loyalty.	0.312	4.033	0.000	Supported

No	Hypothesis	Path Coefficient	T-Value	P-Value	Result
3	E-service quality has a positive and significant influence on customer e-loyalty.	0.048	0.666	0.506	Not Supported
4	Customer e-satisfaction mediates the influence of e-service quality on customer e-loyalty.	0.216	3.664	0.000	Supported
5	Service quality has a positive and significant influence on customer satisfaction.	0.853	16.536	0.000	Supported
6	Customer satisfaction has a positive and significant influence on customer e-loyalty.	0.332	4.247	0.000	Supported
7	Service quality has a positive and significant influence on customer e-loyalty.	0.253	2.812	0.005	Supported
8	Customer satisfaction mediates the influence of service quality on customer e-loyalty.	0.283	4.195	0.000	Supported
9	E-service quality has a positive influence on service quality.	0.781	32.516	0.000	Supported
10	Customer e-loyalty has a positive and significant influence on e-WOM (electronic word-of-mouth).	0.873	47.960	0.000	Supported

5. Discussion

In this study, it was found that E-Service Quality does not have a positive and significant impact on Customer E-Loyalty. In this context, with a P-value of 0.335 exceeding the significance level of 0.05, it means there is not enough statistical evidence to support a significant influence between the original value and the variable under investigation (see Table 8). This result aligns with studies by (Juwaini et al., 2022), states that E-Service Quality does not significantly affect E-Loyalty, contrasting with the findings of (Permana & Djatmiko, 2018), claimed that E-Service Quality significantly impacts customer loyalty. This might be due to a lack of awareness or motivation, some customers may not fully realize or care about E-Loyalty as a mechanism for sharing their experiences, as they may only use the PLN mobile app occasionally or for specific needs, such as reporting tickets. Thus, when there are no disruptions at all, the PLN mobile app may not be used or may even be uninstalled. Additionally, although PLN Mobile provides various features, most usage is limited to reporting disruptions. Therefore, there is a need for branding regarding other advantages of PLN Mobile so that customers can use it regularly or not only for a specific purpose. In some cases, customers may also be less active online or lack adequate access to social media platforms, which can affect their likelihood of sharing reviews or recommendations with others.

PT PLN Persero can strive to enhance and maintain Service Quality both electronically and in field services to improve customer loyalty, particularly when using the PLN Mobile application. This study provides an overview of the crucial role of E-Service Quality in the digital business process through its four dimensions. Upon closer examination, it is evident that the Fulfillment and Customer Service dimensions have a significant impact on E-Service Quality. Therefore, improvement efforts can be focused on strengthening these two dimensions to enhance E-Service Quality.

Furthermore, a more detailed analysis reveals that these items emphasize the alignment between PLN Mobile and the on-field experiences (field officers) and highlight the importance of customer complaints as considerations for decision-making. Therefore, PLN should strive to maintain the quality of Fulfillment and Customer Satisfaction, particularly regarding Service Level Agreements (SLA), handling reporting tickets, confirmation, alignment between the app and what customers experience or receive, and being open to customer suggestions. As for the aspect of Service Quality (field services), the dominant dimensions are Empathy, Assurance, and Responsiveness, attention can be directed toward maintaining the credibility of field officers for PLN West Java Distribution Unit.

In this study, Electronic Word-of-Mouth (EWOM) is chosen as the primary focus because the enhancement of E-Loyalty is expected to influence the dissemination of information, recommendations, or positive reviews by customers to others through electronic platforms such as social media and online reviews (Gottschalk & Mafael 2017). In the context of PLN Mobile, after customers run through the journey of using the application and interacting with PLN Mobile services and field technician, the ultimate goal is for customers to feel satisfied with their experience, become loyal customers, and be willing to share their positive experiences with others. Thus, EWOM becomes the expected endpoint in the journey of PLN Mobile customers as it can contribute to increased customer loyalty, growth in application usage, and enhancement of the image and trust in PLN Mobile.

6. Conclusions

This study reveals that Electronic Service Quality does not significantly affect Customer e-loyalty, whereas Service Quality has a positive and significant impact on Customer e-loyalty. Customer Satisfaction and Customer e-satisfaction mediate the relationship between Service Quality (electronic and non-electronic) and Customer e-loyalty, emphasizing the importance of ensuring customer satisfaction to drive electronic loyalty. Additionally, Customer e-Loyalty positively and significantly influences EWOM, indicating that satisfied and loyal customers are more likely to share their positive experiences through electronic platforms, influencing potential customers' perceptions and purchase decisions. Thus, enhancing Service Quality and fostering Customer e-loyalty can lead to increased EWOM and contribute to the success of digital businesses. In conclusion, this study reveals that Electronic Service Quality does not significantly affect Customer e-loyalty, whereas Service Quality has a positive and significant impact on Customer e-loyalty. Customer Satisfaction and Customer e-satisfaction mediate the relationship between Service Quality (electronic and non-electronic) and Customer e-loyalty, emphasizing the importance of ensuring customer satisfaction to drive electronic loyalty. Additionally, Customer e-Loyalty positively and significantly influences EWOM, indicating that satisfied and loyal customers are more likely to share their positive experiences through electronic platforms, influencing potential customers' perceptions and purchase decisions. Thus, enhancing Service Quality and fostering Customer e-loyalty can lead to increased EWOM and contribute to the success of digital businesses.

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APPENDIX

E-Service Quality (ESQ):

- Mobile Apps Design (MAD):
  MAD1: PLN Mobile provides comprehensive information.
  MAD2: Using PLN Mobile does not take much time.
  MAD3: The PLN Mobile service I use can quickly handle transactions/complaints.
  MAD4: The PLN Mobile service I use can easily handle transactions/complaints.
  MAD4: The user interface of PLN Mobile is good and not excessive.
- Security (SEC)
  SEC1: I am confident that the PLN Mobile application ensures the security of my data.
  SEC2: I feel secure when using PLN Mobile.
  SEC3: I am confident in the security of PLN Mobile.
  SEC4: PLN Mobile has adequate protection to reassure customers during the application usage process.
- Fulfillment (FULL)
  FULL1: The PLN Mobile application offers service options that suit my needs.
  FULL2: After using the PLN Mobile application, I receive the promised service.
  FULL3: I receive services according to my needs.
  FULL4: Field services are scheduled as notified in the PLN Mobile application.
- Customer Service (CSR)
  CSR1: PLN is willing and ready to respond to customer needs.
  CSR2: PLN Mobile responds accurately to my questions.
  CSR3: PLN Mobile responds quickly to my questions.
  CSR4: Customer complaints and suggestions are taken into consideration to improve service quality. (Kaya et al. 2019)

Customer Electronic Satisfaction (CES):

CES1: I am satisfied with the service provided through the PLN Mobile application.
CES2: PLN Mobile meets my expectations.
CES3: The PLN Mobile application is satisfying.
CES4: I am happy with the service provided by PLN Mobile.
CES4: Overall, I am satisfied with electronic services through PLN Mobile. (Kaya et al. 2019)

Service Quality (SQ):

- Tangible (SQT)

SQT1: Field officer appearance is neat.
SQT2: Field officers use equipment appropriate for the service.
SQT3: Service officers visually appear attractive.
SQT4: Field officers have modern-looking tools.

- Reliability (SQR)
  SQR1: Field officers complete tasks according to the schedule.
  SQR2: Field officers make an effort to solve problems.
  SQR3: Field officers have the ability to complete tasks.
  SQR4: Field officers arrive as promised.
- Responsiveness (SQP)
  SQP1: Field officers provide services according to my requests conveyed through the Application.
  SQP2: Field officers can complete their tasks by adjusting to customer preferences.
  SQP3: Field officers provide information (via phone) about the time of field visits.
  SQP4: Field officers can perform their duties responsibly.
- Assurance (SQA)
  SQA1: Field officers serve while maintaining security and safety.
  SQA2: I believe that field officers are competent individuals.
  SQA3: Field officers can solve my problems.
  SQA4: PLN services are secure when making transactions.
- Empathy (SQE)
  SQE1: PLN maintains the services it provides.
  SQE2: Field officers are experienced individuals and can meet my specific needs.
  SQE3: Field officers can solve my problems even outside regular working hours.
  SQE4: Field officers listen well when I complain. (Alkraiji and Ameen 2022; Gefen 2002)

Customer Satisfaction (CS):

CS1: I am satisfied with the service provided by field officers.
CS2: Field officers meet my expectations.
CS3: Field officer services are satisfactory.
CS4: I am happy with the service provided by field officers.
CS5: Overall, I am satisfied with field officer services. (Özkan et al. 2020)

Customer Electronic Loyalty (CEL)

CEL1: I will not consider switching to other similar applications.
CEL2: I will provide positive feedback about PLN on internet-based messaging services.
CEL3: I will remain loyal to using PLN Mobile.
CEL4: I will recommend PLN Mobile to friends and family.
CEL5: I will speak positively about the PLN Mobile application to others. (Alkraiji and Ameen 2022; Kaya et al. 2019)

Electronic Word of Mouth (EW):

EW1: I suggest PLN Mobile to friends and family through social media (Facebook, Twitter, etc.).
EW2: I speak positively about the PLN Mobile application.
EW3: I trust positive reviews written by my friends on social media.
EW4: When I talk about PLN Mobile, I tend to provide details.
EW5: I occasionally mention the PLN Mobile application in social media posts (Facebook, Twitter, etc.).
EW6: I suggest PLN Mobile to someone when asked for advice through social media platforms (Facebook, Twitter, etc.). (Kaya et al. 2019; Özkan et al. 2020)