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The effect of information technology-based services, customer trust, and perceived comfort of use on brand switching prepaid electric products

Ni Luh Putu Utari Priangan Sari¹, A. A. Gede Putra Pемыayun²

ABSTRACT

This study aimed to determine the effect of information technology-based services, customer trust, and perceived comfort of use on brand-switching prepaid electricity products. The population in this study was 74,691 prepaid electricity customers and 100 samples were taken. The data in this study were obtained by questionnaire. The data analysis technique used is multiple linear regression analysis. The results of this study indicated that information technology-based services have a positive and significant effect on brand switching of prepaid electrical products with a regression coefficient of 0.265 is positive, a value of 0.006 is less than 0.05 ($0.006 < 0.05$). Customer trust had a positive and significant effect on brand switching of prepaid electrical products with a regression coefficient of 0.414 is positive, and a value of 0,000 is less than 0.05 ($0,000 < 0.05$). Perceived comfort of use had a positive and significant effect on brand switching of prepaid electrical products with a regression coefficient of 0.274 with a positive value, a value of 0.013 less than 0.05 ($0.013 < 0.05$). Then, the information technology-based services, customer trust, and perceived comfort of use together had a positive and significant effect on the brand switching of prepaid electrical products by 0,000 less than 0.05 ($0,000 < 0.05$).

Keywords: Information technology-based services, customer trust, perceived comfort of use

Affiliation

¹Faculty of Economics and Business
Universitas Pendidikan Nasional
Jl. Bedugul No.39 Sidakarya, Denpasar, Indonesia
Email: utaripriangansari@yahoo.com

²Faculty of Economics and Business
Universitas Pendidikan Nasional
Jl. Bedugul No.39 Sidakarya, Denpasar, Indonesia
Email: putrapemayun@undiknas.ac.id

INTRODUCTION

In the current era of globalization, electricity has become a fundamental necessity for human activities, evolving and becoming an integral part of people's lives (Zohuri and Mcdaniel, 2019). With rapid developments in technology, industry, and information, the availability of electricity is crucial and influential in enhancing the socioeconomic growth of communities (Shabalov et al., 2021). PT PLN (Persero) ULP Mengwi is a state-owned enterprise engaged in the provision of electricity services, offering both postpaid and prepaid electricity services (Yasa et al., 2022). In its operations, PT PLN (Persero) ULP Mengwi provides customer service to fulfill the needs of each customer.

PT PLN (Persero) ULP Mengwi, as an electricity agent, is tasked with developing activities related to electricity to improve well-being and stimulate economic growth in communities. Until now, customers of PT PLN (Persero) ULP Mengwi have been provided with postpaid electricity services, where customers use electricity first and pay later in the following month. Prepaid electricity services utilize a specialized device called a Prepaid kWh Meter (electricity meter). Customer service issues have become essential to anticipate the low willingness of customers to switch to prepaid electricity, as perceived by customers (Chinomona and Sandada, 2014).

The quality of service is a key factor in retaining consumers to repurchase products of the same brand (Naini et al., 2022). Despite the advantages of prepaid electricity, such as easier control over electricity usage, avoiding late fees, and maintaining customer privacy, it seems that prepaid electricity, in practice, complicates rather than simplifies things for customers. Some customers complain about malfunctions in their prepaid electricity meters, preventing them from recharging their electricity credits. This has led to customer discomfort with the use of prepaid electricity, making them reluctant to switch.

In the current technological era, achieving the best service for customers is highly possible with the advancement of information technology (Mgunda, 2019). Indah Lestari, Supervisor of Customer Service & Administration at PT PLN (Persero) ULP Mengwi, stated that the prepaid electricity system is less favored by customers due to frequent malfunctions in prepaid meters (MPB), discouraging customers from switching to prepaid electricity.

Based on the obtained data (PLN, 2022), the number of postpaid electricity customers continuously increased from January to December 2018, with no decrease in the number of customers. Similarly, the data for prepaid electricity customers from January 2018, numbering 72,960, increased to 75,821 by July 2018. However, in August 2018, there was a decrease of 231 prepaid electricity customers, and by December, a continuous decrease was observed, reaching 899 prepaid electricity customers.

The modernization of the electrical system with prepaid electricity is expected to improve effective control mechanisms supported by the implementation of technology-based services (Hussain et al., 2017). Good customer service is crucial to instilling confidence in customers and ensuring the continued use of prepaid electricity products (Absori and Ramdani, 2020). Comfort in using prepaid electricity tokens is also essential. Introducing the prepaid electricity system will help reduce the costs and time required for customers to switch to prepaid electricity products. In the following sections, a literature review will be presented, followed by an explanation of the methodology. The research findings will then be presented, discussed, and concluded.

LITERATURE REVIEWS

Information Technology-Based Services

The service received by business customers and customer commitment are two antecedent constructs of customer trust in business-to-business models (Gounaris, 2005). Apart from having an indirect effect on the company's image, customer service and customer relations can also have a direct impact (Suroyo, 2015). This relationship between customer service and trust is strengthened by the research results of Eisingerich & Bell (2008), which showed that customer service is divided into technical and functional, and both play a role in building customer trust.

Service, according to the Indonesian Dictionary (KBBI), is the act of taking care of someone else's needs. (Kotler, 2005/2001) states "On the other hand, service is any action or willingness that can be provided by one party to another, so fundamentally, service does not take a tangible form and does not result in ownership of anything." This implies that service is an act of assisting others without creating tangible ownership.

According to Hardiyansyah (2011), some technologies characterized for delivering public services include e-mail, WAN (Wide Area Network), the internet, mobile computing (such as smartphones, laptops, PDAs), and various other technologies designed to disseminate information and provide electronic services in various forms. The implementation of technology in governance has started to be seen in the process of serving the public.

Customer Trust

Trust is a crucial factor for commitment. Commitment can only be realized if it is based on something meaningful. Additionally, trust is an essential aspect that can be used to overcome obstacles among stakeholders. Thus, trust is an important factor that can be utilized to develop relationships between organizations. According to Nejad et al., (2014), similar to loyalty, trust is a specific psychological state that can only occur in specific relationships. When a customer has trust, they have confidence in the quality of service and the quality of the organization's products. Customers who trust a service or product are more likely to remain loyal to the company.

Trust is generally seen as a fundamental element for the success of a relationship. Without trust, a relationship will not last in the long term. Trust is a company's willingness to rely on business partners (Hidayati and Susanti, 2018). According to Harahap (2023), in maintaining business relationships, consumer trust has always been an important factor in the process. In e-commerce businesses, which typically require consumers to pay before receiving orders, consumers cannot see or touch the actual product offered other than through pictures. Customer

Trust is the customer's response to the evaluation of the perceived discrepancy between expectations and the actual performance of the product for its users (Tjiptono, 2001). Customer trust is a post-sales and purchase evaluation where the alternative chosen is at least the same as or exceeds customer expectations. (Zikmund, 2003).

Perceived Comfort of Use

The concept of comfort is challenging to define because it is more of an individual responsive judgment (Oborne, 1995). According to the Indonesian dictionary (KBBI), comfort is described as refreshing and healthy; on the other hand, comfort is a state of being comfortable, fresh, and cool.

Perception of comfort is the extent to which an individual accepts the reflection of using technology to be enjoyable in themselves, regardless of the anticipated performance consequences (Davis et al., 1989). One cannot precisely define or measure comfort. Comfort tends to be measured based on the level of discomfort (Oborne, 1995). Based on the above explanation, it can be stated that comfort is a feeling measured from at least comfortable to most comfortable. However, the comfort of each individual tends to differ depending on their perspective.

METHODS

This research was conducted at PT PLN (Persero) ULP Mengwi, a company located at Jl. Raya Abianbase, Kapal, Mengwi, Badung - Bali. The reason for choosing this research location was its strategic location with a substantial number of customers and complaints. The population in this study consisted of prepaid electricity customers registered at PT PLN (Persero) ULP Mengwi. The number of prepaid electricity customers at PT PLN (Persero) ULP Mengwi was 100 customers. In this study, quantitative data consisted of the number of registered prepaid electricity users at PT PLN (Persero) ULP Mengwi as well as the scores of questionnaire responses that have been tabulated. The primary data source used in this study was the respondents' answers obtained from the distribution of questionnaires. Meanwhile, the secondary data source in this research was the number of registered prepaid electricity customers at PT PLN (Persero) ULP Mengwi. Data is collected using the questionnaire technique. A questionnaire is a data collection technique that involves asking written questions to respondents for them to answer. The questionnaire contained Likert scales used as a measurement tool. The analysis tool used in this research is multiple linear regression analysis with the SPSS program. The reason for using the multiple linear regression analysis tool is that multiple regression is suitable for analyzing factors. The multiple regression model in this study is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Explanation:

α	= Constant
Y	= Brand Switching on Prepaid Electricity Products
X_1	= Information Technology-Based Services
X_2	= Customer Trust
X_3	= Perceived Comfort of Use
β	= Regression coefficient
ϵ	= Standard error

RESULTS AND DISCUSSION

Results

General History of the Research Location

After World War I, precisely during the Dutch colonial era, there was an electric company in Denpasar named N.V Electricity Bali Lombok (N.V Ebalom Denpasar), established in 1972 and operational in 1978 (Ibrahim, 2019). This company was led by a Dutch national named L de Yong, located in the Banjar Gemeh neighborhood, Jl. Diponogoro No. 17, Denpasar. Around 1956 – 1957, N.V. Ebalom Denpasar was nationalized by the Republic of Indonesia Government. Its name was changed to Perusahaan Listrik Negara (PLN), located under the supervision/guidance of the PLN Surabaya headquarters. In 1992, the PLN office location was moved to Jl. Letda Tantular No. 1, Renon (until now).

In 1994, PLN changed its status to PT. PLN (Persero) with Notary Deed: 169 dated July 30, 1994. After going through several long periods, in 2008, precisely on December 12, PLS announced PLN's commitment to providing world-class service, meaning that PLN would provide the best service to customers in the Bali region. Until 2019, PLN divided its region into 5 parts with a total of 13 rayons.

Classic Assumption Test

Normality Test Results

It was found that the Kolmogorov-Smirnov (K-S) value is 0.061, while the Asymp. Sig (2-tailed) value is 0.200.

These results indicate that the regression equation model is normally distributed because the Asymp. Sig (2-tailed) value is greater than the alpha value of 0.05.

TABLE 1. Normality Test

One-Sample Kolmogorov-Smirnov Test		Unstandardized Residual
N		100
Normal Parameters^{a,b}	Mean	.0000000
	Std. Deviation	1.14221278
Most Extreme Differences	Absolute	.061
	Positive	.061
	Negative	-.059
Kolmogorov-Smirnov Z		.61
Asymp. Sig. (2-tailed)		.200 ^c

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Multicollinearity Test

In the multicollinearity test, it was found that the tolerance and VIF values for the variables of information technology-based services, customer trust, and perceived comfort of use show tolerance values for each variable greater than 0.10 and VIF values smaller than 10, indicating that there is no multicollinearity.

TABLE 2. Multicollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Information Technology-Based Services	.795	1.258
1 Customer Trust	.538	1.860
Perceived Comfort of Use	.507	1.971

a. Dependent Variable: Brand Switching in Prepaid Electricity Products

Heteroscedasticity Test

In the test of heteroscedasticity, it was observed that the significance values for the variables of Information technology-based services, Customer Trust, and Perceived Comfort of Use are 0.468, 0.783, and 0.251, respectively. These values are greater than 0.05, indicating the absence of heteroskedasticity.

TABLE 3. Heteroscedasticity Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.35	.631		3.725	.000
1 Information Technology-Based Services	2	.052	-.081	-.729	.468
Customer Trust	-.038	.043	-.037	-.276	.783
Perceived Comfort of Use	-.012	.060	-.161	-1.155	.251

a. Dependent Variable: ABS_RES1

Results of Data Analysis

Multiple Linear Regression Analysis Results

This multiple linear regression analysis technique is used by researchers to determine the influence of information technology-based services, customer trust, and perceived comfort of use as independent variables on brand switching of prepaid electricity products as the dependent variable. The recapitulation of multiple linear regression analysis results is as follows.

Multiple Regression Test

TABLE 4. Multiple Regression Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
	(Constant)	.833	1.149			
1	Information Technology-Based Services	.265	.094	.207	2.825	.006
	Customer Trust	.414	.078	.475	5.325	.000
	Perceived Comfort of Use	.274	.109	.232	2.524	.013
	R Square	0,588				
	Adjusted R Square	0,576				
	F-count	45,755				
	Sig.	0,000				

Based on the results of the regression analysis as presented in Table 4, the structural equation can be formulated as follows:

$$Y = 0.833 + 0.265X_1 + 0.414X_2 + 0.274X_3$$

- The constant value is assumed that without the addition of technology-based information service variables, customer trust, and perceived comfort of use, the value of brand switching for prepaid electricity products is 0.833.
- If X_1 (Information Technology-Based Services) increases by 1 unit, assuming customer trust and perceived comfort of use remain constant, brand switching for prepaid electricity products will increase by 0.265.
- If X_2 (Customer Trust) increases by 1 unit, assuming information technology-based services and perceived comfort of use remain constant, brand switching for prepaid electricity products will increase by 0.414.
- If X_3 (Perceived Comfort of Use) increases by 1 unit, assuming information technology-based services and customer trust remain constant, brand switching for prepaid electricity products will increase by 0.274.

The regression coefficient values of the Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use variables have a positive effect with a significance level of the t-test less than 0.05. This indicates that information technology-based services, customer trust, and perceived comfort of use each have a significant positive influence on the brand switching variable for prepaid electricity products.

Coefficient of Determination Model Summary^b

The magnitude of the influence of independent variables on the dependent variable, as indicated by the total determination value (Adjusted R Square) of 0.576, means that 57.6% of the variation in brand switching for prepaid electricity products is influenced by the variables of information technology-based services, customer trust, and perceived comfort of use. The remaining 42.4% is explained by other factors not included in the model.

TABLE 5. Coefficient of Determination Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.767 ^a	.588	.576	1.160

Simultaneous Significance Test (Statistical Test F)

Based on the analysis results, the significance value of the variables Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use simultaneously on brand switching for prepaid electricity products is 0.000, which is less than 0.05 ($0.000 < 0.05$). This result indicates that the variables of Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use simultaneously have a positive and significant effect on brand switching for prepaid electricity products.

TABLE 6. Simultaneous F-test

Model		ANOVA ^a				
		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	184.680	3	61.560	45.755	.000 ^b
	Residual	129.160	96	1.345		
	Total	313.840	99			

Statistical Test T

The significance value of the variable information technology-based services on brand switching for prepaid electricity products is 0.006 with a regression coefficient of 0.265, which is less than 0.05 ($0.006 < 0.05$). This result means that information technology-based services have a positive and significant effect on brand switching for prepaid electricity products.

The significance value of the variable customer trust on brand switching for prepaid electricity products is 0.000 with a regression coefficient of 0.414, which is less than 0.05 ($0.000 < 0.05$). This result means that customer trust has a positive and significant effect on brand switching for prepaid electricity products.

The significance value of the variable perceived comfort of use on brand switching for prepaid electricity products is 0.013 with a regression coefficient of 0.274, which is less than 0.05 ($0.013 < 0.05$). This result means that perceived comfort of use has a positive and significant effect on brand switching for prepaid electricity products.

TABLE 7. Partial Regression Test (t-test)

No.	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.833	1.149		2.809	.006
	Information Technology-Based Services	.265	.094	.475	-3.807	.000
	Customer Trust	.414	.078	.475	7.565	.000
	Perceived Comfort of Use	.274	.109	.232	2.475	.015

Discussion

The Influence of Information Technology-Based Services on Brand Switching in Prepaid Electricity Products

Based on the analysis results, the significance value of the variable information technology-based services on brand switching in prepaid electricity products is 0.006 with a regression coefficient value of 0.265, which is positive. The value of 0.006 is less than 0.05 ($0.006 < 0.05$). This result means that information technology-based services have a positive and significant effect on brand switching in prepaid electricity products.

Information technology-based services have a positive and significant effect on brand switching in prepaid electricity products. This means that any improvement in information technology-based services will result in an increase in brand switching in prepaid electricity products, and conversely, any decrease in information technology-based services will lead to a decrease in brand switching in prepaid electricity products.

According to Fajar Suroyo (2015), information technology-based services are fundamentally influenced by individuals themselves, whether they are ready to accept technology, especially in this case, prepaid electricity products. If customers can accept a new technology, they will not hesitate to switch to using prepaid electricity products. Information technology also influences the progress of individual thinking, meaning that the more individuals are ready to accept new technology, the more advanced their thinking becomes, allowing them to adapt to the ever-developing technology. Fajar Suroyo (2015) concludes that information technology-based services have a positive effect on brand switching in prepaid electricity products.

The Influence of Customer Trust on Brand Switching in Prepaid Electricity Products

Based on the analysis, the significance value of the Customer Trust variable on brand switching of prepaid electricity products is 0.000 with a regression coefficient of 0.414, which is positive. The value of 0.000 is less than 0.05 ($0.000 < 0.05$). This result means that customer trust has a positive and significant influence on brand switching of prepaid electricity products.

Customer trust has a positive and significant effect on brand switching of prepaid electricity products. This implies that with each increase in customer trust, there will be an increase in brand switching of prepaid electricity products, and conversely, with each decrease in customer trust, there will be a decrease in brand switching of prepaid electricity products.

Gunawan (2013) concluded that consumer trust in the product significantly influences the brand-switching decision for smartphone products (BlackBerry) among UNP students. This means that customer trust has a significant positive impact on brand switching of prepaid electricity products.

The Influence of Perceived Comfort of Use on Brand Switching of Prepaid Electricity Products

Based on the analysis, the significance value of the Perceived Comfort of Use variable on brand switching of prepaid electricity products is 0.013, with a regression coefficient value of 0.274, which is positive. The value of 0.013 is less than 0.05 ($0.013 < 0.05$). This result signifies that perceived comfort of use has a positive and significant effect on brand switching of prepaid electricity products.

Perceived comfort of use has a positive and significant effect on brand switching of prepaid electricity products. This means that with every increase in perceived comfort of use, there will be an increase in brand switching of prepaid electricity products, and vice versa, any decrease in perceived comfort of use will result in a decrease in brand switching of prepaid electricity products.

Putri (2012) concluded that perceived comfort of use influences the switching intention of household electricity customers to prepaid electricity. This indicates that comfort has a significantly positive influence on brand switching of prepaid electricity products.

The Influence of Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use on Brand Switching of Prepaid Electricity Products

Based on the analysis, the significance value of the variables Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use simultaneously on brand switching of prepaid electricity products is 0.000, which is less than 0.05 ($0.000 < 0.05$). This result signifies that the variables Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use together have a positive and significant effect on brand switching of prepaid electricity products.

Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use together have a positive and significant effect on brand switching of prepaid electricity products. This means that with every increase in Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use simultaneously, there will be an increase in brand switching of prepaid electricity products. Conversely, if there is a decrease in Information Technology-Based Services, Customer Trust, and Perceived Comfort of Use simultaneously, there will be a decrease in brand switching of prepaid electricity products.

Information system security is the management of security measures aimed at preventing, addressing, and protecting various information systems from the risk of incidents. This is also the case with information technology-based services. According to Fajar Suroyo (2015), information technology also influences the progress of an individual's mindset, meaning that the more an individual is ready to accept new technology.

CONCLUSIONS

This study aims to determine the influence of information technology-based services, customer trust, and perceived comfort of use on brand switching. Information technology-based services have a positive and significant effect on the brand switching of prepaid electricity products. This means that with every increase in information technology-based services, there is an increase in brand switching of prepaid electricity products, and conversely, with every decrease in information technology-based services, there is a decrease in brand switching of prepaid electricity products. Customer trust has a positive and significant effect on the brand switching of prepaid electricity products. This implies that with every increase in customer trust, there is an increase in brand switching of prepaid electricity products, and conversely, with every decrease in customer trust, there is a decrease in brand switching of prepaid electricity products. Perceived comfort of use has a positive and significant effect on the brand switching of prepaid electricity products. This means that with every increase in perceived comfort of use, there is an increase in brand switching of prepaid electricity products, and conversely, with every decrease in perceived comfort of use, there is a decrease in brand switching of prepaid electricity products. Information technology-based services, customer trust, and perceived comfort of use together have a positive and significant effect on the brand switching of prepaid electricity products. This implies that with every simultaneous increase in information technology-based services, customer trust, and perceived comfort of use, there is an increase in brand switching of prepaid electricity products. Conversely, if there is a simultaneous decrease in information technology-based services, customer trust, and perceived comfort of use, there is a decrease in brand switching of prepaid electricity products.

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