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Implementation Of Sem Model: Combination Of Tam And Tpb In Using Onshore Power Supply In Ports Of Java Island - Indonesia

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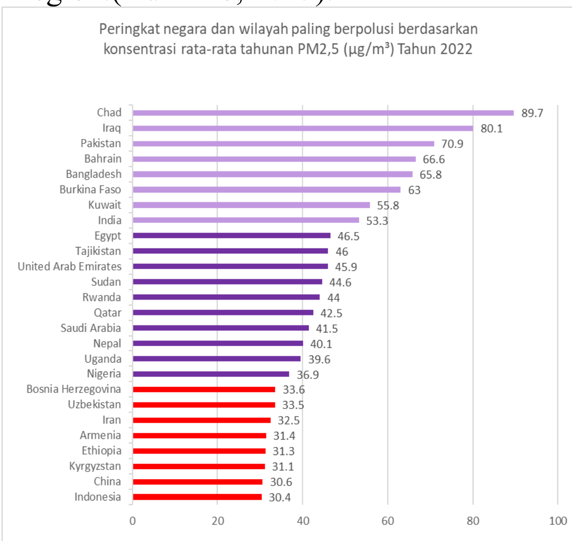
Abstract: This study aims to analyze the influence of variables within the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) on behavioral intention and actual use of Onshore Power Supply (OPS) in Java Island ports, Indonesia. The study employs a quantitative approach with seven constructs: Perceived Ease of Use, Perceived Usefulness, Perceived Risk, Subjective Norm, Attitude Toward Using OPS, Behavioral Intention to Use OPS, and Actual System Use of OPS. The novelty of this research lies in the application of a combined TAM and TPB model to analyze OPS adoption in ports as a strategic step to support environmental sustainability and operational efficiency. Data collection involved a Likert-scale (1-5) questionnaire distributed to 240 OPS users across various ports on Java Island and interviewed with 10 informants from both operators and users. The data were analyzed using the Structural Equation Modeling (SEM) approach with PLS version 4.0.9.6. The results of testing 14 hypotheses show that all variables have a positive and significant influence on behavioral intention and actual use of OPS, with Subjective Norm being the most significant contributor to Attitude Toward Using OPS (coefficient value of 0.378). The study also revealed that the lowest-rated indicators were related to the perceived ease of approval processes for OPS construction (Perceived Ease of Use), user comfort (Perceived Usefulness), and perceived risks of equipment damage (Perceived Risk). To address these issues, strategic steps such as digitizing licensing processes, automating OPS systems, and implementing international safety standards are recommended. The proposed policy implications involve the government providing incentives for environmentally friendly technologies and enabling regulations to strengthen the adoption of OPS in national ports. This research significantly contributes to the development of policies and operational strategies that support the transition of ports in Indonesia toward more sustainable and environmentally efficient practices.

Keywords: Technology Acceptance Model, Theory of Planned Behavior, Onshore Power Supply, Ports

INTRODUCTION

Based on monitoring data from the IQAir website, on Tuesday (22/8/2023), the air quality in DKI Jakarta was recorded as unhealthy with a score of 158. Jakarta recorded a concentration of particulate matter 2.5 (PM2.5) pollutants of 68.5 micrograms per cubic meter. The concentration of PM2.5 in Jakarta is 13.7 times the safety level recommended by the World Health Organization (WHO), which is 5 micrograms per cubic meter. With a pollutant concentration of PM2.5, Jakarta is positioned as the third worst city in the world and number one in the Southeast Asia region.(Yuniarto, 2023).



Source:(IQAir, 2023)

Figure 1. Ranking of the Most Polluted Countries and Territories

KLHK data (2023) shows that the cause of air pollution comes from the transportation sector, contributing 44% of fuel use inJakarta. Followed by the energy industry at 31%, industrial manufacturing at 10%, the housing sector at 14%, and commercial at 1%. In terms of carbon monoxide (CO) emissions, most of them come from the transportation sector, reaching 96.36% or 28,317 tons per year, followed by power plants at 1.76% or 5,252 tons per year, and industry at 1.25% or 3,738 tons per year. Motorcycles are the highest contributors to pollution burden per passenger compared to private gasoline cars, private diesel cars, passenger cars, and buses, with a population reaching 78% of the total motorized vehicles in DKI Jakarta of 24.5 million vehicles, with a growth of 1,046,837 motorcycles per year(Vitalstrategies, 2023).

The use of OPS allows ships to turn off their engines without disrupting port operations, such as loading and unloading, with electrical power supplied from shore.(Pelindo & Maritime, 2024). This process only takes about 15 minutes to connect and disconnect, where the electricity on board is managed by the port operator. This provides significant benefits, both in terms of environment and economy, by minimizing air pollution and noise in the port area.(Kim, 2022)However, the implementation of OPS requires large investments by ship owners and port operators, including the installation of additional electrical switchboards, cables, transformers, and communication systems between ships and shore.(ABB, 2016). Ports also require frequency converters to match the ship's electricity needs with the local grid, which is a major challenge for the adoption of this technology (Pelindo III, 2022). In addition, fluctuations in the prices of marine bunker fuel and land-based electricity affect the calculation of OPS investment returns, especially for ports with different types of ships and arrival patterns.(Kim, 2022)

The actual use of OPS has a real impact, both in terms of environment and economy. In several ports that have adopted Shore Connection, such as Tanjung Perak Port, the efficiency of ship operational costs has increased significantly. In addition, the reduction in exhaust emissions and noise is an added value for ports that want to build an image as an environmentally friendly port. This also increases the competitiveness of ports in attracting more ship operators to use their services.(Pelindo & Maritime, 2024).

This study also utilizes Structural Equation Modeling (SEM) to analyze the causal relationship between variables such as Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Subjective Norms, and behavioral intention towards OPS adoption. This approach broadens the scope of analysis compared to previous studies that only used the basic TAM model. By incorporating the TPB dimensions, this study covers a wider range of social and psychological influences, resulting in a more holistic understanding of OPS acceptance.

The Actual System Use (AU) dimension is an important focus in this study, expanding the technology acceptance model by emphasizing the realization of technology use in everyday practice. Unlike previous studies that stopped at behavioral intention, this study analyzes the extent to which OPS is actually used by ports in Java. This provides a significant contribution to understanding how factors such as attitudes, risk perceptions, and social norms can drive the transition from intention to actual implementation.

Attitude Toward Using OPS is placed as the main mediator in this research model. Positive attitude toward OPS can link various perceptual factors, such as ease of use, usefulness, and perceived risk, with actual use. This approach provides important insights into how attitude changes can affect OPS implementation, while also providing guidance for port managers to design strategies that support positive user attitudes.

This study also replicates the methodologyGao et al. (2021)with adjustments to local Indonesian issues. Subjective norm variables, for example, are measured based on local stakeholders' views on government policies and PLN's support in implementing OPS. This provides practical relevance to support national clean energy policies, taking into account the specific needs and unique challenges faced by ports in Indonesia.

Overall, this study provides practical contributions to the national strategy in developing OPS infrastructure. The findings of this study are expected to assist port authorities and governments in designing effective policies, including providing incentives, reducing risks, and strengthening regulations. By mapping key factors influencing OPS adoption in Indonesia, this study provides a new perspective that is not only relevant for developing countries but also supports the transition towards sustainable green ports.

The novelty of this study lies in the focus on the implementation of Onshore Power Supply (OPS) as part of a climate change mitigation strategy and greenhouse gas emission reduction in ports. By integrating the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) into a Structural Equation Modeling (SEM)-based analysis framework, this study provides a comprehensive approach to evaluate the factors that influence the acceptance and use of OPS. The focus on ports in Java Island provides local relevance, where social, economic, and policy issues have unique roles in the adoption of this technology. Through this study, it is expected to reveal how perceived usefulness, ease of use, perceived risk, subjective norms, and attitudes influence behavioral intentions to the realization of actual use of OPS. Thus, this study not only provides academic insights but also practical solutions to support the development of sustainable green ports in Indonesia. This encourages researchers to compile a dissertation entitled: Implementation of the SEM Model: Combination of TAM and TPB in the Use of Onshore Power Supply in Ports on Java Island - Indonesia.

METHOD

The research stages in this study start from the pre-research survey, namely the process of observing, seeing and hearing all phenomena in the field; reviewing literature studies related to the use of relevant theories related to determining grand theory, middle theory and variable theory and continuing to review the results of previous studies. Then continue to identify research variables accompanied by indicators of each variable, then compile a questionnaire as a research instrument for the data collection process. At this stage, the statement items in the instrument are tested to measure the validity and reliability of each statement item with the basis for decision making using the Pearson product moment correlation test with the help of SmartPLS 4.0.9.6 statistics software. If there are statement items that are invalid or unreliable, improvements are made, but if the items are valid and reliable, the next process is to draw the research design.

The location of this research is located at the Port / Terminal on Java Island, Indonesia because it is a Port that uses Onshore Power Supply and dense port services. This research will begin in August 2024 to October 2024.

The population in this study is the companies that use Port / Terminal services in Java Island. With the target population of each company that uses Onshore Power Supply Port / Terminal services in Java Island, namely:

Table 1. Population of Research Companies

Manager	City	Harbor	Point	Frequency	Power Capacity (kVA)	Voltage (V)	Connection Cable
PT.LEGI	Surabaya	East Diamond	3	50Hz	3,000	380	Bus bar
PT.LEGI		North Diamond	1	50Hz	3,000	380	Bus bar
PT.LEGI		West Diamond	4	50Hz	3,000	380	Bus bar
PT.LEGI		Emerald Terminal	1	50Hz	630	380	Bus bar
PT.LEGI		Domestic TTL	3	50/60 Hz	500	380/440	Bus bar
PT.LEGI		International TTL	3	50/60 Hz	500	380/440	Bus bar
PT.LEGI		Dry Bulk TTL	3	50/60 Hz	500	380/440	Bus bar
PT.LEGI		TUKS Dwimatama	1	50Hz	1,100	380	Bus bar
PT.LEGI	Semarang	TPKS	1	50Hz	1,100	380/440	Bus bar
PT.LEGI	Cilacap	Tanjung Intan	3	50/60 Hz	500	380/440	Bus bar
PT.LEGI	Cilacap	Tanjung Intan	1	50Hz	1,000	400	Bus bar
PT EPI	Jakarta	Terminal 3, Tanjung Priok	2	50/60 Hz	250	380	Bus bar

Table 2. Population of Research Companies (Continued)

Manager	City	Harbor	Synchronizing (Land Electricity to Ship Generator)	Existing OPS Customers		Type of Ship
				Regular Customer	Non-Regular Customers	
PT.LEGI	Surabaya	East Diamond	No	SPL	HUNDRED	Container
PT.LEGI		North Diamond	No	SPL	HUNDRED	Container
PT.LEGI		West Diamond	No	SPL	HUNDRED	Container
PT.LEGI		Emerald Terminal	No	PILOG, TAL	PELNI	Dry Bulk, Container
PT.LEGI		Domestic TTL	Synchronizing	SPL, TANTO, MERATUS	INTERNATIONAL SHIPPING	Container
PT.LEGI		International TTL	Synchronizing	SPL, TANTO, MERATUS	INTERNATIONAL SHIPPING	Container
PT.LEGI		Dry Bulk TTL	Synchronizing	SPL, TANTO, MERATUS	INTERNATIONAL SHIPPING	Container
PT.LEGI		TUKS Dwimatama	No	PILOG	-	Dry Bulk, Container
PT.LEGI	Semarang	TPKS	Synchronizing	SPL	-	Container
PT.LEGI	Cilacap	Tanjung Intan	Synchronizing	SPL, KYK LINES, OCTOPUS CROSS	-	Dry Bulk
PT.LEGI	Cilacap	Tanjung Intan	No	PILOG	-	Dry Bulk

PT EPI	Jakarta	Terminal 3, Tanjung Priok	Synchronizing	MERATUS, SPL	-	Container

Table 3. Population of Terminals, Ships and Companies

Port (Terminal)	Ship Name	Company
Terminal Nilam	KM Pulau Wetar, KM Magellan, KM Pratiwi Satu, KM Bali Kuta, KM Bali Gianyar, KM Pekan Riau, KM Pratiwi Raya, KM Pulau Nunukan, KM Vertikal, KM Pulau Layang	**SPIL**
Terminal Berlian	KM Bali Kuta, KM Akashia, KM Pratiwi Raya, KM Bali Ayu, KM Pulau Layang, KM Bali Gianyar, KM Magellan, KM Vertikal, KM Fortune, KM Pulau Nunukan, KM Wetar, KM Bintuni, KM Oriental Pacific, KM Derajat	**SPIL**
Terminal Teluk Lamong	KM Pratiwi Raya, KM Magellan, KM Bali Kuta, KM Pratiwi Satu, KM Pekan Riau, KM Fortune, KM Multi Anim, KM Akashia	**SPIL**
Terminal Jamrud	KM Ibrahim Zahier, KM Julianto Moelidhardjo, KM Pusri Indonesia, KM Flores Mandiri	**PT Timur Asri Laut**
Tanjung Emas, Dwimatama	KM Pusri Indonesia I, KM Pusri Indonesia II, KM Ibrahim Zahier, KM Julianto Moelidhardjo	**Pupuk Indonesia Logistik**
Tanjung Intan	KM Julianto Moelidhardjo, KM Abu Samah, KM Pusri Indonesia I	**Pupuk Indonesia Logistik**
Terminal 3, Tanjung Priok	KM Meratus Kapuas, KM Meratus Katingan, KM Meratus Jayapura, KM Meratus Kahayan, KM Meratus Kampar, KM Minas Baru, KM Pahala, KM Armada Segara, KM Teluk Berau, KM Derajat, KM Oriental Samudera	**MERATUS**

Sampling Techniques

This research was conducted using the Structural Equation Model (SEM) approach using Partial Least Square (PLS) software, namely Smart PLS software.The reason for using this method is because the number of samples needed in the analysis is relatively small and Smart PLS analysis does not have to have a normal distribution. PLS is a powerful analysis method because it can be applied to all data scales, does not require many assumptions.

Sample size is taken referring to the bookHair et al. (2024)because the population size is not yet known for certain and suggests that the minimum sample size is 5-10 times the indicator.In this study, the number of variables studied was five variables, with a total of 31 indicators. With the following calculation:

n = (5 to 10 x Number of Indicators)
= 10 x 24 indicators
= 240 respondents

so that the minimum sample size in this study is 240 respondents. The sampling criteria where the grouping of OPS Port service users in Java Island looks uniform but internally remains different. Thus, each group of companies divided into administrative area clusters can be randomly selected as samples. Probability Proportional to Size sampling (PPS sampling) is used as a procedure in drawing samples where the chance of selecting a sample unit is proportional to the size of the sample unit(Childe & Soares, 2022). Where the sampling opportunity criteria are:

a. OPS Port service users who have been long-standing subscribers since 2018 at Ports on Java Island.
b. In the research, the service users used as samples were service users on ships, namely ship officers who understand OPS problems when the ship is docked.

This research is quantitative and uses a survey approach, where inferential analysis is carried out using relevant statistical methods. Because the conceptual framework or research model has a high level of complexity with various latent variables or constructs, we chose to use multivariate analysis. This approach was chosen because it is appropriate to the complexity of the research, where there are many latent variables or constructs involved.(Sekaran & Bougie, 2020) (Sarstedt et al., 2021).

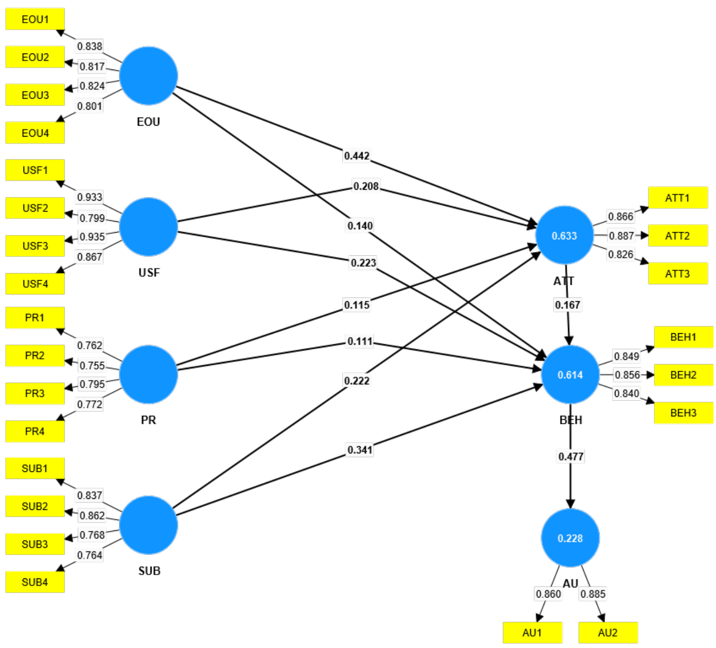
Of the various multivariate analysis methods available, this study uses the Partial Least Square - Structural Equation Modeling (PLS-SEM) method based on variance. PLS-SEM is a second-generation multivariate method that is considered more sophisticated today. (Hair et al., 2019). The selection of the PLS-SEM method is based on several considerations. First, this method is more suitable for exploratory studies, such as the development of new concepts or the adjustment of research models to relatively new variable relationships. This is different from Covariance-Based Structural Equation Modeling (CB-SEM) which is more suitable for confirmatory studies.(Sarstedt et al., 2021) (Hair et al., 2019).

The second consideration is the consistency of the PLS-SEM method with the orientation of predictive research. Therefore, PLS-SEM is relevant to evaluate the ability of the research model to explain and predict. The PLS-SEM method has been widely used in social research that focuses on consumer behavior.(Sarstedt et al., 2021), thus in accordance with the objectives of this study. The fourth consideration is the availability of SmartPLS4 software, which offers advanced analytical features such as IPMA (importance-performance mapping) analysis to sharpen managerial implications. In addition, this software provides FIMIX PLS and PLS-POS analysis tools to address data heterogeneity and improve predictive capabilities.(Hair et al., 2019).

RESULTS AND DISCUSSION

Outer Model Results

The results of data processing with the PLS Algorithm produce an outer model image as shown below.



Source: Results of PLS-SEM research data processing (2024)
Figure 2 Outer Model Results

Reliability Indicator

Table 4. Outer Loading Values

	ATT	AU	BEH	EOU	PR	SUB	USF
ATT1	0.866						
ATT2	0.887						
ATT3	0.826						
AU1		0.860					
AU2		0.885					
BEH1			0.849				
BEH2			0.856				
BEH3			0.840				
EOU1				0.838			
EOU2				0.817			
EOU3				0.824			
EOU4				0.801			
PR1					0.762		
PR2					0.755		
PR3					0.795		
PR4					0.772		
SUB1						0.837	
SUB2						0.862	
SUB3						0.768	
SUB4						0.764	
USF1							0.933
USF2							0.799
USF3							0.935
USF4							0.867

Source: Results of PLS-SEM research data processing (2024)

Based on the outer loading model data from the table, it can be concluded that all indicators in this research model are reliable for measuring their respective constructs.

Construct Reliability

Table 5 Cronbach Alpha and Composite Reliability Values

Variables	Cronbach's alpha	Composite reliability (rho_c)	Results
Attitude Towards Using OPS	0.824	0.895	Reliable
Actual System Use of OPS	0.686	0.864	Reliable
Behavioral Intention to Use OPS	0.806	0.885	Reliable
Perceived Ease of Use	0.838	0.891	Reliable
Perceived Risk	0.773	0.854	Reliable
Subjective Norm	0.823	0.883	Reliable
Perceived Usefulness	0.908	0.935	Reliable

Source: Results of PLS-SEM research data processing (2024)

From the table above, it can be seen that the Cronbach's alpha value for all variables is above 0.6 as required. Furthermore, it can be seen that all variables have a composite reliability value above 0.7 and the highest value found is 0.935. No composite reliability value was found above 0.950 as the upper limit (upper level) so that no redundancy indicators were found that could affect the correlation between indicators (Hair et al., 2022). Therefore, it can be said that the measurement model is reliable, namely all indicators are confirmed to be reliable to be able to consistently measure their respective constructs.

Construct Validity

Table 6 Average Variance Extracted (AVE) Value

Variables	Average variance extracted (AVE)	Results
Attitude Towards Using OPS	0.740	Valid
Actual System Use of OPS	0.761	Valid
Behavioral Intention to Use OPS	0.720	Valid
Perceived Ease of Use	0.672	Valid
Perceived Risk	0.595	Valid
Subjective Norm	0.654	Valid
Perceived Usefulness	0.784	Valid

Source: Results of PLS-SEM research data processing (2021)

In the table above, the average variance extracted (AVE) value of each variable can be seen, where all research variables in this research model have a value of more than 0.50 as required. Based on this, it can be concluded that the indicators in this research model have been considered valid to jointly measure their respective constructs.

Discriminant Validity

Table 7 Heterotrait/Monotrait Ratio Values

	ATT	AU	BEH	EOU	PR	SUB	USF
ATT							
AU	0.777						
BEH	0.812	0.638					
EOU	0.865	0.790	0.740				
PR	0.550	0.379	0.536	0.520			
SUB	0.761	0.791	0.840	0.694	0.381		
USF	0.671	0.477	0.707	0.557	0.410	0.621	

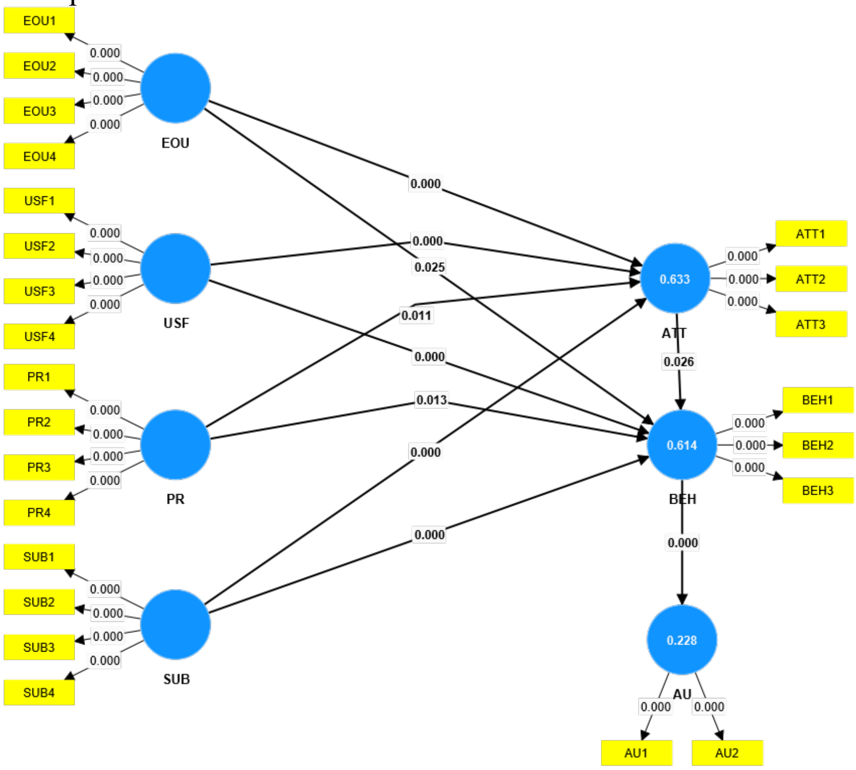
Source: Results of PLS-SEM research data processing (2024)

In the table above, the HT/MT ratio value for the discriminant validity test can be seen, where the ratio value of each variable is found below 0.9. Based on these data, it can be concluded that all indicators in this research model have been discriminated well. These indicators are most appropriate for measuring their own constructs, thus it can be interpreted that the indicators in this research model can specifically measure their respective constructs.

An assessment has been carried out on four statistical parameters of the results of the reliability and validity tests on the outer model as above, namely indicator reliability (outer loading), construct reliability (Cronbach's alpha and composite reliability), construct validity (average variance extracted or AVE), and discriminant validity (HT / MT Ratio). Based on the PLS-SEM outer model data, a statistical conclusion can be determined, namely that in this research model all indicators have been declared reliable and valid to measure each of their constructs specifically. Thus, it is feasible to continue to the next analysis stage, namely the inner model test (structural model).

Inner Model Results (Structural Model)

Below are the results of the inner model image from the PLS-SEM bootstrapping results along with a description:



Source: Results of PLS-SEM research data processing (2024)
Figure 3 Inner Model Results

The results of bootstrapping in the form of an inner model image as above can be seen the structural relationship between variables in this research model. Where in this model there are 4 dependent variables, 3 independent variables. In the inner model image, the T-statistic value of 10 paths or paths in the research model can be seen. All paths in the research model can be seen to have a T-Statistic value above the T-table so that it can be concluded that all paths in the structural research model are significant. The detailed explanation of the results of the inner model test is written sequentially according to the reporting stages recommended by Hair et al. (2019).

Multicollinearity

Table 8 Inner VIF Values

	ATT	AU	BEH	EOU	PR	SUB	USF
ATT			2,722				
AU							
BEH		1,000					
EOU	1,755		2.286				
PR	1.252		1.288				
SUB	1,746		1,880				
USF	1,572		1,690				

Source: Results of PLS-SEM research data processing (2024)

From the table above, it can be seen the Variance Inflation Factor (VIF) value in the results of the research model test where the VIF value in all variables is found to be less than 3. Therefore, it can be interpreted that all variables in the research model have ideal inner VIF values. Based on this, it can be said that between the variables in this research model, there is no multicollinearity problem. This shows that the quality of this research model has been acceptable in terms of not having multicollinearity issues.

Determinant Coefficient (R-Squared)

Table 9 R-Squared Values

	R-square
Attitude Towards Using OPS	0.633
Behavioral Intention to Use OPS	0.614
Actual System Use of OPS	0.228

Source: Results of PLS-SEM research data processing (2024)

In the table above, the R2 (R-squared) value for the Attitude Toward Using OPS variable is 0.633 and is therefore classified as having a moderate to strong category. It can be said that this research model has a moderate to strong ability in predicting Perceived Ease of Use, Perceived Usefulness, Perceived Risk and Subjective Norm. The R2 (R-squared) value for Behavioral Intention to Use OPS is 0.614 or around 61.4% Behavioral Intention to Use OPS can be explained by the variables Perceived Ease of Use, Perceived Usefulness, Perceived Risk, Subjective Norm and Attitude Toward Using OPS. The R2 (R-squared) value for Actual System Use of OPS is 0.228 or around 22.8% Actual System Use of OPS can be explained by the variable Behavioral Intention to Use OPS.

Effect Size (f-Squared)

Table 10 f-Squared Values

Influence	Effect Size Value	Information
Attitude Towards Using OPS-> Behavioral Intention to Use OPS	0.026	Little Influence
Behavioral Intention to Use OPS-> Actual System Use of OPS	0.295	Big Influence
Perceived Ease of Use-> Attitude Towards Using OPS	0.303	Big Influence
Perceived Ease of Use-> Behavioral Intention to Use OPS	0.022	Little Influence
Perceived Risk-> Attitude Towards Using OPS	0.029	Little Influence
Perceived Risk-> Behavioral Intention to Use OPS	0.025	Little Influence
Subjective Norm-> Attitude Towards Using OPS	0.077	Little Influence
Subjective Norm-> Behavioral Intention to Use OPS	0.161	Moderate Influence
Perceived Usefulness-> Attitude Towards Using OPS	0.075	Little Influence
Perceived Usefulness-> Behavioral Intention to Use OPS	0.076	Little Influence

Source: Results of PLS-SEM research data processing (2024)

In the table above, it is found that the Perceived Ease of Use variable has the greatest effect on Attitude Toward Using OPS with an effect size value of 0.303. Thus, it can be said that Perceived Ease of Use has a significant impact on Attitude Toward Using OPS, so that this variable can be used as an important predictor in predicting Attitude Toward Using OPS.

Predictive Relevance Values (Q2 and Q2_predict)

The Q2 value of this study was obtained from the calculation results using the blindfolding menu in PLS-SEM as shown in the table below.

Table 11 Q-Squared and Q-Squared Predict Values

	Q-Square	Q^2predict	Results

Attitude Towards Using OPS	0.452	0.615	Medium Predictive Relevance
Actual System Use of OPS	0.163	0.321	Small Predictive Relevance
Behavioral Intention to Use OPS	0.429	0.585	Medium Predictive Relevance

Source: PLS-SEM data processing results (2024)

In the table above, it can be seen that the calculation results show that the variables Attitude Toward Using OPS and Behavioral Intention to Use OPS have a medium predictive relevance ability with a Q2 value of 0.452 and 0.429, respectively.*Actual System Use of OPS*has a Q2 value of 0.163 which has a relatively small predictive relevance ability. The table presents the value of Q2-predict, which can be compared with the Q2 value of the blindfolding output. The Q2_predict value for Attitude Toward Using OPS, Behavioral Intention to Use OPS and Actual System Use of OPS is known to be higher when compared to the Q2 value as well as for other variables. The Q2-predict value for Attitude Toward Using OPS, Actual System Use of OPS and Behavioral Intention to Use OPS are 0.615, 0.321 and 0.585 respectively and are classified as medium predictive relevance. Therefore, it can be said that this research model has a moderate ability to predict Actual System Use of OPS.

Cross-Validated Predictive Ability Test Results (CVPAT)

Table 12 CVPAT test results

Variables	PLS SEM vs Average Indicator (IA)	PLS SEM vs Liner Model (LM)
	Average loss difference	Average loss difference
Attitude Towards Using OPS	-0.254	-0.035
Actual System Use of OPS	-0.145	0.014
Behavioral Intention to Use OPS	-0.398	0.002
Overall	-0.281	-0.009

Source: Research Results Data (2023)

Based on the table above, the results of the Indicator Average (IA) of the Actual System Use of OPS variable have a negative value, while the Liner Model (LM) is positive, which can be concluded that the Actual System Use of OPS variable has a fairly small error rate and good ability to predict.

Research Hypothesis Test Results

The table below shows the results of PLS-SEM data processing to determine the results of the hypothesis test.

Table 13 Hypothesis Test Results

Hypothesis	Influence	Original sample (O)	T statistics (|O/STDEV|)	P values	Information
H1	*Perceived Ease of Use->* Attitude Towards Using OPS	0.442	7,069	0.000	Hypothesis Supported
H2	*Perceived Usefulness->* Attitude Towards Using OPS	0.208	3.499	0.000	Hypothesis Supported
H3	*Perceived Risk->* Attitude Towards Using OPS	0.115	2.296	0.011	Hypothesis Supported
H4	*Subjective Norm->* Attitude Towards Using OPS	0.222	3.604	0.000	Hypothesis Supported
H5	*Attitude Towards Using OPS->* Behavioral Intention to Use OPS	0.167	1,948	0.026	Hypothesis Supported
H6	*Perceived Ease of Use->* Behavioral Intention to Use OPS	0.140	1,969	0.025	Hypothesis Supported

Hypothesis	Influence	Original sample (O)	T statistics (|O/STDEV|)	P values	Information
H7	*Perceived Usefulness*-> Behavioral Intention to Use OPS	0.223	3.358	0.000	Hypothesis Supported
H8	*Perceived Risk*-> Behavioral Intention to Use OPS	0.111	2.239	0.013	Hypothesis Supported
H9	*Subjective Norm*-> Behavioral Intention to Use OPS	0.341	5.421	0.000	Hypothesis Supported
H10	*Behavioral Intention to Use OPS*-> Actual System Use of OPS	0.477	7.185	0.000	Hypothesis Supported
H11	*Perceived Ease of Use*-> Attitude Toward Using OPS -> Behavioral Intention Toward Using OPS	0.074	1,929	0.027	Hypothesis Supported
H12	*Perceived Usefulness*-> Attitude Toward Using OPS -> Behavioral Intention Toward Using OPS	0.035	1,744	0.041	Hypothesis Supported
H13	*Perceived Risk*-> Attitude Toward Using OPS -> Behavioral Intention Toward Using OPS	0.053	2.134	0.016	Hypothesis Supported
H14	*Subjective Norm*-> Attitude Toward Using OPS -> Behavioral Intention Toward Using OPS	0.163	4.254	0.000	Hypothesis Supported

Source: Results of PLS-SEM research data processing (2024)

Hypothesis 1: The Effect of Perceived Ease of Use on Attitude Toward Using Onshore Power Supply

The results of the study indicate that Perceived Ease of Use has a positive and significant influence on Attitude Toward Using Onshore Power Supply. This is evidenced by the T-statistic value of 7.069, which exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.442. This means that the easier users feel that the Onshore Power Supply system can be used, the more likely they are to have a positive attitude towards this technology. This finding is in accordance with the TAM model developed by Davis (1989), which states that the perception of ease of use of technology greatly influences user attitudes.

The relationship between Perceived Ease of Use and Attitude Toward Using Onshore Power Supply shows that simple and efficient user experience plays an important role in shaping their positive attitude. Users tend to accept technology more enthusiastically if they do not face technical obstacles or complexities in operating the system. In the case of Onshore Power Supply, this is relevant because the technology requires integration with ship and port infrastructure, so easy user experience greatly influences their acceptance.

These results are supported by various previous studies. Gao et al. (2021) found that perceived ease of use significantly improves user attitudes towards Onshore Power Supply technology at the port. Ambak et al. (2016) found that ease of use has a stronger influence than benefits in the adoption of electric cars. Sentosa (2012) emphasized that in the context of online purchases, PEOU remains relevant as a predictor of positive attitudes. Similar findings were also reported by Darsono (2005) and Davis (1989b), which showed that perceived ease of use contributes significantly to technology acceptance. Other support comes from Nguyen et al. (2022), who found that PEOU has a strong influence on the formation of attitudes towards e-learning adoption, and Lee et al. (2003), who emphasized the importance of the ease factor in the TAM model.

Thus, ensuring that the Onshore Power Supply system is designed with an intuitive interface and easy operation is essential to foster positive user attitudes. A comfortable and simple experience in using this technology will facilitate the adoption process, which can ultimately increase the use of the system in various ports. User-friendly design not only encourages technology acceptance, but also strengthens the commitment to operational efficiency and environmental sustainability.

Hypothesis 2: The Influence of Perceived Usefulness on Attitude Toward Using Onshore Power Supply

The results of the study indicate that Perceived Usefulness has a positive and significant influence on Attitude Toward Using Onshore Power Supply. The T-statistic value of 3.499 exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.208, indicating that the higher the benefits perceived by users, the more positive their attitudes towards this technology. This finding is in accordance with the findings of Davis (1989) who stated that perceived benefits are the main factor influencing user attitudes towards technology.

The relationship between Perceived Usefulness and Attitude Toward Using Onshore Power Supply reflects the importance of the functional benefits of the system in shaping positive user attitudes. In the case of Onshore Power Supply, benefits such as reduced emissions, energy efficiency, and reduced operating costs are key factors that increase acceptance attitudes. Users tend to have a more positive view of the technology if they perceive real added value in their operations.

Several studies support these results. Gao et al. (2021) highlighted that the perception of technology benefits greatly influences user attitudes in adopting Onshore Power Supply. Another study by Siregar (2011) showed that PU is a major factor in the acceptance of information technology in companies. MC Lee (2009) emphasized the importance of PU in increasing the intention to use internet banking. Darsono (2005) and Davis (1989b) showed similar results, with PU being more dominant than PEOU in forming attitudes. Additional support is provided by Nguyen et al. (2023), who found that PU is significant in determining attitudes towards online shopping. Salisa et al. (2019) and Ambak et al. (2016) also confirmed these results, especially in the context of e-learning and electric car adoption.

By ensuring that users understand the concrete benefits of Onshore Power Supply, ports can encourage positive attitudes and wider acceptance. Clearly communicating the benefits of the technology, such as energy efficiency and reduced environmental impact, will help increase user acceptance, while accelerating the implementation of the system in the maritime sector.

Hypothesis 3: The Effect of Perceived Risk on Attitude Toward Using Onshore Power Supply

This study shows that Perceived Risk has a significant influence on Attitude Toward Using Onshore Power Supply. This is evidenced by the T-statistic value of 2.296, which exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.115. This finding indicates that despite the perceived risk, users tend to have a positive attitude towards technology if they feel that the risk can be managed.

The relationship between Perceived Risk and Attitude Toward Using Onshore Power Supply highlights the importance of risk management in shaping user attitudes. Perceived risks, such as high initial costs or technical difficulties, can be mitigated by providing clear solutions and adequate technical support. In the case of Onshore Power Supply, ensuring that users understand the risk mitigation measures can increase their confidence in the technology.

Previous studies support these findings. Gao et al. (2021) found that perceived risk can have a significant impact on user attitudes, especially if the risk is not managed properly. Sanayei and Bahmani (2012) showed that security risks have a significant negative impact on attitudes toward internet banking. Jabeen et al. (2019) found that perceived risk reduces positive attitudes toward renewable energy. Similar findings were reported by Xie et al. (2017), who revealed that risk affects perceived behavioral control (PBC). Ikhsan (2020) also found that perceived risk reduces positive attitudes toward mobile applications. Sentosa (2012) emphasized the need for risk mitigation in the TAM and TPB models, while Safeena et al. (2013) and Nadlifatin et al. (2020) showed that perceived risk is often a major barrier to the adoption of new technologies. Research by Darsono (2005) showed that effective communication about technology risks can help increase user acceptance. Therefore, it is important for ports to provide transparent information and technical support to reduce the risk perception associated with Onshore Power Supply. By managing risks effectively, users will feel more confident in using the technology, which ultimately increases positive attitudes and accelerates technology adoption in the maritime sector.

Hypothesis 4: The Influence of Subjective Norm on Attitude Toward Using Onshore Power Supply

The results of the study indicate that Subjective Norm has a positive and significant influence on Attitude Toward Using Onshore Power Supply. This is indicated by the T-statistic value of 3.604, which exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.222. This means that the stronger the social influence of important individuals or groups on the use of Onshore Power Supply, the more positive the user's attitude towards this technology. This finding supports the TPB theory which highlights the role of social norms in shaping individual attitudes and behavior.

The relationship between Subjective Norm and Attitude Toward Using Onshore Power Supply shows that social influence from colleagues, regulators, or institutions plays an important role in fostering positive attitudes toward technology. In the case of Onshore Power Supply, support from port authorities or industrial communities can influence how users assess the benefits and sustainability of this technology. Sentosa's (2012) research highlights that social norms have a significant impact on the formation of attitudes toward technology adoption.

Previous studies support these findings. Gao et al. (2021) found that subjective norms significantly influence user attitudes in Onshore Power Supply. Research by Sentosa (2012) showed that subjective norms are a major predictor of online purchase intention. Nguyen et al. (2022) found similar results in e-learning adoption. Jeffyan Alberto and Fahrul Riza (2023) emphasized the importance of social norms in influencing EV purchase intention. In the study by Nadlifatin et al. (2020), subjective norms played a significant role in encouraging positive attitudes towards blended learning. The study by Salisa et al. (2019) also revealed that social norms are an important determinant in the adoption of the village financial system. Research by Awa et al. (2015) added that social norms can strengthen individual beliefs in technology adoption decisions.

Thus, ports need to leverage social influence to drive positive attitudes towards Onshore Power Supply. Involving key stakeholders such as regulators or the shipping community in technology acceptance campaigns can increase social support and build user trust in the system.

Hypothesis 5: Influence of Attitude Toward Using Onshore Power Supply on Behavioral Intention to Use Onshore Power Supply

This study shows that Attitude Toward Using Onshore Power Supply has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply. The T-statistic value of 1.948, which exceeds the T-table value of 1.64 at a significance level of 0.05, and the positive path coefficient of 0.167, indicate that the more positive a person's attitude is toward technology, the greater their intention to use it. These results support the TAM and TPB theories, which state that attitude is the main predictor of behavioral intention.

The relationship between Attitude Toward Using Onshore Power Supply and Behavioral Intention to Use Onshore Power Supply reflects the importance of positive experiences and perceptions of technology in motivating users to adopt it. In the case of

Onshore Power Supply, users with positive attitudes, such as beliefs about the benefits of technology for operations and the environment, are more likely to have strong intentions to use it.

These results are consistent with previous studies. Gao et al. (2021) highlighted that a positive attitude towards Onshore Power Supply directly affects users' intention to adopt this technology. Research by Nguyen et al. (2022) in e-learning and Ambak et al. (2016) in electric car adoption also found that a positive attitude significantly increases user intention. Research by Davis (1989) showed that attitude plays an important role in shaping behavioral intention. Amaral et al. (2023) found that attitude plays an important role in the behavioral transition to shore power.

Therefore, it is important for ports to continue to promote positive experiences and raise awareness of the benefits of Onshore Power Supply. By building positive attitudes through training, transparent information, and technical support, ports can increase user intentions to widely adopt this technology.

Hypothesis 6: Influence of Perceived Ease of Use on Behavioral Intention to Use Onshore Power Supply

The results of the study indicate that Perceived Ease of Use has a positive and significant effect on Behavioral Intention to Use Onshore Power Supply. This is evidenced by the T-statistic value of 1.969, which exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.140. This means that the easier users feel the system is to use, the greater their intention to use it. These results are consistent with the TAM theory, which shows that ease of use of technology increases users' intention to adopt it.

The relationship between Perceived Ease of Use and Behavioral Intention to Use Onshore Power Supply reflects the importance of intuitive and simple user experience in driving behavioral intention. In the case of Onshore Power Supply, an easy-to-use system can reduce technical barriers and encourage wider adoption among users. Research by Gao et al. (2021) confirmed that ease of use increases user intention in port technology.

These results are supported by other studies. Research by Ambak et al. (2016) and Nguyen et al. (2022) showed that Perceived Ease of Use plays a significant role in shaping the intention to use new technology. Research by Davis (1989) also showed that perceived ease of use increases behavioral intentions, especially in technologies that require user adaptation. Salisa et al. (2019) added that PEOU is significant in forming intentions. Lee et al. (2003) showed the consistency of these results across sectors, including technology acceptance and information systems.

Thus, ensuring that Onshore Power Supply is designed with intuitive features and easy operation is essential to drive user intention to adopt this technology. Ports need to focus on technical training and simple user interfaces to ensure that users feel comfortable using the system.

Hypothesis 7: The Effect of Perceived Usefulness on Behavioral Intention to Use Onshore Power Supply

The results of the study indicate that Perceived Usefulness has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply. The T-statistic value of 3.358, which exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.223, indicate that the greater the benefits perceived by users of this technology, the higher their intention to use it. This finding supports the TAM theory, which states that perceived usefulness is a major factor in shaping behavioral intentions.

The relationship between Perceived Usefulness and Behavioral Intention to Use Onshore Power Supply shows that perceived tangible benefits, such as emission reduction, energy efficiency, and operational cost savings, play a significant role in driving user intentions to adopt this technology. Users are more motivated to use Onshore Power Supply when they see relevant added value for their operations.

Previous studies support these results. Gao et al. (2021) found that perceived usefulness significantly increases user intention in Onshore Power Supply technology. Research by Nguyen et al. (2022) and Ambak et al. (2016) also showed that technology usefulness is a key factor in shaping user behavioral intention. Davis (1989) highlighted that perceived usefulness has a stronger influence than perceived ease of use in enhancing user intention towards new technology. Amaral et al. (2023) added that PU plays a major role in the formation of positive behavioral intention.

Thus, ports need to ensure that the benefits of Onshore Power Supply are clearly communicated to users. Educating users on how this technology can directly help their operations will increase their intention to use the system widely.

Hypothesis 8: The Effect of Perceived Risk on Behavioral Intention to Use Onshore Power Supply

The results of the study indicate that Perceived Risk has a significant influence on Behavioral Intention to Use Onshore Power Supply. The T-statistic value of 2.239, which exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.111, indicate that despite the perceived risk, users still show a strong intention to use this technology, as long as the risk can be managed.

The relationship between Perceived Risk and Behavioral Intention to Use Onshore Power Supply reflects the importance of risk management in driving user behavioral intentions. In the case of Onshore Power Supply, perceived risks such as high initial costs or technical challenges can be addressed by providing clear solutions and adequate technical support. Users are more likely to be motivated to adopt the technology if they feel that these risks are under control.

Previous studies support these findings. Gao et al. (2021) showed that risk perception can affect user intentions, especially if the risks are not well managed. Sentosa (2012) and Nguyen et al. (2022) also found that good risk management increases behavioral intentions towards technology. Awa et al. (2015) emphasized the importance of transparent risk communication in increasing user acceptance.

Perceived Risk can inhibit behavioral intention, as found by Jabeen et al. (2019) in the context of renewable energy. Xie et al. (2017) showed that perceived risk decreases the adoption intention of e-government technology. Therefore, ports need to provide transparent information and adequate support to reduce the perceived risk related to Onshore Power Supply. In this way, users will feel more confident in using the technology, which ultimately increases their intention to adopt it.

Hypothesis 9: The Effect of Subjective Norm on Behavioral Intention to Use Onshore Power Supply

This study shows that Subjective Norm has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply. The T-statistic value of 5.421, which exceeds the T-table value of 1.64 at a significance level of 0.05, and the positive path coefficient of 0.341, indicate that the stronger the social influence, the greater the user's intention to use this technology. These findings support the TPB theory, which highlights the importance of social norms in shaping behavioral intentions.

The relationship between Subjective Norm and Behavioral Intention to Use Onshore Power Supply shows that support from coworkers, port authorities, or regulators plays an important role in encouraging users to adopt this technology. When users feel that important social groups or institutions support Onshore Power Supply, they tend to have a greater intention to use it.

Previous studies are consistent with these findings. Gao et al. (2021) found that social norms significantly influence users' intention to adopt port technology. Sentosa (2012) and Nguyen et al. (2022) also showed that social influence is a major factor in shaping behavioral intentions. Awa et al. (2015) highlighted that social norms strengthen individuals' beliefs in adopting new technologies. Subjective norms have a strong influence on behavioral intentions, as found by Jeffyan Alberto & Fahrul Riza (2023).

Thus, ports need to engage key stakeholders such as regulators and industry communities to create strong social support for Onshore Power Supply. This approach will increase user trust and encourage wider adoption of the technology.

Hypothesis 10: Influence of Behavioral Intention to Use Onshore Power Supply on Actual System Use of Onshore Power Supply

The results of the study indicate that Behavioral Intention to Use Onshore Power Supply has a positive and significant influence on Actual System Use of Onshore Power Supply. The T-statistic value of 7.185, which far exceeds the T-table value of 1.64 at a significance level of 0.05, and the positive path coefficient of 0.477, indicate that the higher the behavioral intention of users, the more likely they are to use this technology in real terms. These results support the TAM and TPB theories, which highlight behavioral intention as the main predictor of actual use.

The relationship between Behavioral Intention to Use Onshore Power Supply and Actual System Use of Onshore Power Supply reflects that users' commitment to the technology strongly influences their decision to use the system routinely. In the case of Onshore Power Supply, strong intention is driven by the belief that the technology provides tangible benefits for operational and environmental sustainability.

Previous studies support this finding. Gao et al. (2021) showed that behavioral intention has a direct relationship with the actual use of port technology. Research by Sentosa (2012) and Ambak et al. (2016) also confirmed that behavioral intention plays an important role in driving the implementation of new technologies. Awa et al. (2015) added that behavioral intention is an important initial step to ensure the success of technology adoption. Behavioral intention is often a major predictor of actual use, as shown by Amaral et al. (2023) and Yustiano (2014). Therefore, it is important for ports to facilitate the transition from intention to actual use through technical support, training, and incentives. By ensuring that users feel confident in operating the system, Onshore Power Supply can be implemented more widely and effectively.

Hypothesis 11: Influence of Perceived Ease of Use on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply

The results of the study indicate that Perceived Ease of Use has a positive and significant effect on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. The T-statistic value of 1.929, which is greater than the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.027, support the indirect relationship between these variables. These results indicate that ease of use not only affects intention directly, but also through its influence on user attitudes toward technology.

This relationship reflects that a simple and efficient user experience increases positive attitudes toward Onshore Power Supply, which in turn strengthens their intention to use it. In this case, a system designed with an intuitive interface can provide a better experience for users, thereby encouraging positive attitudes that ultimately influence behavioral intentions.

Previous studies support this finding. Gao et al. (2021) and Ambak et al. (2016) found that Perceived Ease of Use influences intention through positive attitudes in various technological matters. Research by Nguyen et al. (2022) and Davis (1989) also highlighted that ease of use plays an important role in forming attitudes that ultimately influence behavioral intentions. Studies such as Safeena et al. (2013) confirmed that the combination of TAM and TPB provides better predictive results. Nadlifatin et al. (2020) showed that this combination is suitable for various technological contexts, including blended learning.

Therefore, ports need to focus on user-friendly system design to improve the user experience. By creating an intuitive interface and providing technical training, ports can encourage positive user attitudes towards Onshore Power Supply and ultimately increase their intention to adopt this technology.

Hypothesis 12: Influence of Perceived Usefulness on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply

This study shows that Perceived Usefulness has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. With a T-statistic value of 1.744, which exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.035, this study confirms that the benefits of technology not only affect intentions directly, but also through user attitudes.

This relationship suggests that perceived benefits, such as energy efficiency and reduced operating costs, reinforce positive attitudes toward Onshore Power Supply. These attitudes then drive users' intentions to adopt the technology. In this case, users who perceive tangible benefits from the technology tend to have more positive attitudes, which indirectly increases their intentions to use the technology.

Previous studies support these findings. Gao et al. (2021) and Nguyen et al. (2022) highlighted that the benefits of technology increase positive attitudes of users, which contributes to increased behavioral intentions. Davis (1989) and Ambak et al. (2016) also found similar relationships in the adoption of new technologies in various sectors. Studies such as Safeena et al. (2013) confirmed that the combination of TAM and TPB provides better predictive results. Nadlifatin et al. (2020) showed that this combination is suitable for various technology contexts, including blended learning.

Thus, it is important for ports to convey the concrete benefits of Onshore Power Supply to users. Clear education and communication about the operational and environmental benefits of this technology can strengthen the positive attitude of users and ultimately encourage their intention to use this system.

Hypothesis 13: The Effect of Perceived Risk on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply

The results of the study indicate that Perceived Risk has a significant effect on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. The T-statistic value of 2.134, which is greater than the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.053, indicate that perceived risk can indirectly influence behavioral intention through positive user attitudes.

This relationship suggests that even though users perceive risks, such as high initial costs or technical challenges, positive attitudes toward Onshore Power Supply can mitigate the negative impact of these perceived risks. Users with positive attitudes tend to be more motivated to adopt the technology, even though they are aware of the risks that may be faced. Previous studies support these results. Gao et al. (2021) and Nguyen et al. (2022) showed that positive attitudes can moderate the impact of risk on behavioral intentions. Studies by Sentosa (2012) and Awa et al. (2015) also found that effective risk communication can strengthen positive attitudes and increase users' behavioral intentions. Studies such as Safeena et al. (2013) confirmed that the combination of TAM and TPB provides better predictive results. Nadlifatin et al. (2020) showed that this combination is suitable for various technology contexts, including blended learning. Therefore, ports need to provide transparent information and technical support to help users understand and manage the risks associated with Onshore Power Supply.

This approach can increase users' positive attitudes and indirectly increase their intention to adopt this technology.

Hypothesis 14: The Influence of Subjective Norm on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply

This study shows that Subjective Norm has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. The T-statistic value of 4.254, which far exceeds the T-table value of 1.64 at a significance level of 0.05, and a positive path coefficient of 0.163, indicates that social support from colleagues or important institutions can indirectly influence behavioral intention through positive attitudes.

This relationship indicates that social norms, such as encouragement from regulators or port communities, can increase positive attitudes toward Onshore Power Supply. This attitude then encourages users to have greater intentions to adopt the technology. Users who feel supported by their social groups tend to be more open to new technologies.

Previous studies are consistent with these findings. Gao et al. (2021) and Sentosa (2012) showed that social norms influence attitudes which ultimately increase behavioral intentions. Studies by Awa et al. (2015) and Nguyen et al. (2022) also confirmed that social norms play an important role in driving technology acceptance through positive attitudes. Studies such as Safeena et al. (2013) confirmed that the combination of TAM and TPB provides better predictive results. Nadlifatin et al. (2020) showed that this combination is suitable for various technology contexts, including blended learning. Thus, ports need to create an environment that supports the acceptance of Onshore Power Supply through the involvement of key stakeholders. By building a supportive community and strengthening social norms, positive user attitudes can be enhanced, which ultimately drives their intention to adopt this technology widely.

CONCLUSION

*Perceived Ease of Use*has a positive and significant influence on Attitude Toward Using Onshore Power Supply. This means that if the perception of ease of use increases, then the attitude towards using Onshore Power Supply will also increase. *Perceived Usefulness*has a positive and significant influence on Attitude Toward Using Onshore Power Supply. This means that the greater the perception of usefulness, the more positive the attitude towards using Onshore Power Supply. *Perceived Risk*has a significant influence on Attitude Toward Using Onshore Power Supply. This means that if the perception of risk increases, then the attitude towards using Onshore Power Supply will also increase. *Subjective Norm*has a positive and significant influence on Attitude Toward Using Onshore Power Supply. This means that if subjective norms (perception of the influence of others) increase, then the attitude towards using Onshore Power Supply will also increase.

*Attitude Toward Using Onshore Power Supply*has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply. This means that the more positive the attitude towards using Onshore Power Supply, the higher the intention to use it. *Perceived Ease of Use*has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply. This means that the higher the perception of ease of use, the greater the intention to use Onshore Power Supply. *Perceived Usefulness*has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply. This means that if the perception of usefulness increases, the intention to use Onshore Power Supply will also increase. *Perceived Risk*has a significant influence on Behavioral Intention to Use Onshore Power Supply. This means that if the perception of risk increases, the intention to use Onshore Power Supply will also increase.

*Subjective Norm*has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply. This means that if the perception of subjective norms increases, the intention to use Onshore Power Supply will also increase. *Behavioral Intention to Use Onshore Power Supply*has a positive and significant influence on the Actual System Use of Onshore Power Supply. This means that if the intention to use Onshore Power Supply increases, the actual use of the system will also increase. *Perceived Ease of Use*has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. This means that the influence of perceived ease of use on the intention to use Onshore Power Supply is mediated by attitudes toward its use. *Perceived Usefulness*has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. This means that the influence of perceived usefulness on the intention to use Onshore Power Supply is mediated by attitudes toward its use. *Perceived Risk*has a significant influence on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. This means that the influence of risk perception on the intention to use Onshore Power Supply is mediated by attitude towards its use. Subjective Norm has a positive and significant influence on Behavioral Intention to Use Onshore Power Supply through Attitude Toward Using Onshore Power Supply. This means that the influence of subjective norm perception on the intention to use Onshore Power Supply is mediated by attitude toward its use.

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