The Role of Attitude, Subjective Norms, And Perceived Behavioral Control in Shaping the Intention to Implement Asset Management

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ABSTRACT: This study aims to analyze the influence of the Theory of Planned Behavior by examining the roles of attitude, subjective norms, and perceived behavioral control on the intention to implement asset management. Employing a quantitative approach through a survey method, data were collected from 130 respondents working at PT PLN Nusantara Power UP Sebalang. The research gap lies in the scarcity of studies that explicitly link knowledge with the intention to implement asset management within Indonesia's power generation industry. Using a quantitative method, this study investigates the relationship between attitude, subjective norms, and perceived behavioral control and their effect on the intention to implement asset management. Data analysis was conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The results indicate that attitude and perceived behavioral control significantly influence the intention to implement asset management. However, subjective norms do not significantly affect implementation intention, suggesting that social pressure does not directly motivate individuals to apply asset management practices. These findings highlight that attitude and behavioral control strengthen psychological factors that effectively drive asset management implementation. The study provides policy recommendations to enhance training and education in asset management to support more optimal implementation.

KEYWORDS: Attitude, Subjective Norms, Perceived Behavioral Control, Implementation Intention, Asset Management, Theory of Planned Behavior

I. INTRODUCTION

Lampung province has recorded an electricity power surplus of 15.3% from its total capacity of 1,429.2 MW, while consumption continues to rise with an average annual growth rate of 8.56%, reaching 1,301 MW in 2024. This situation underscores the critical importance of power generation system reliability, which can be significantly enhanced through the implementation of asset management practices (PT PLN UID Lampung, 2024). According to ISO 55000:2014, asset management is defined as a systematic process of managing assets to optimize their value, utilizing a risk-based approach that supports the efficiency of operations and maintenance (O&M) activities in power generation facilities. The implementation of an Asset Management Strategy enables efficient asset-related decision-making, including investment and divestment, to meet the demands of sustainable service delivery (ISO 55000, 2014). Key activities include the development of a Business Management System (BMS) and the management of competent personnel through security role mapping processes. Human resource competence is a critical success factor in asset management (ISO 55001), as asset management relies heavily on the capabilities of the individuals executing it. Studies have shown that poor asset management can lead to significant losses: up to 20% productivity loss (Deloitte, 2021), 50% machinery downtime due to failed maintenance (McKinsey, 2020), and global losses amounting to USD 50 billion (ARC Advisory Group, 2020). Meanwhile, the use of IoT-based technologies remains limited, despite their potential to reduce downtime by up to 25% (Gartner, 2020). The adoption of asset lifecycle management practices can reduce Total Cost of Ownership (TCO) by up to 15% and increase Return on Investment (ROI) by 12% (McKinsey, 2019; Harvard Business Review, 2020). This study aims to further explore how the Theory of Planned Behavior (TPB) influences individuals' intentions within the context of asset management implementation. The research is expected to contribute both theoretically and practically to the understanding of how knowledge influences the intention to utilize asset management systems. It also seeks to provide guidance to policymakers in enhancing technology adoption rates through improved user knowledge and awareness (Davis et al., 1989). According to the TPB framework, human behavior does not occur spontaneously but rather through a process involving beliefs, attitudes, social pressure, and self-control.

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Individuals begin by forming attitudes toward a behavior based on their beliefs about its consequences. They also consider expectations and pressures from their social environment and assess their ability to perform the behavior. These three factors combine to form intention, which subsequently becomes the main driver of actual behavior. However, the success of behavioral execution remains dependent on the extent to which individuals can overcome barriers or leverage available opportunities.

II. METHODOLOGY

This research employs an explanatory approach, aiming to explain causal relationships among variables through a quantitative design and statistical analysis. The primary objective is to understand how and why certain phenomena occur, as well as to test existing theories to offer practical and scientific recommendations (Sugiyono, 2018; Noor, 2014). The analytical method used is Structural Equation Modeling–Partial Least Squares (SEM-PLS), a statistical technique for constructing and evaluating causal models (Siswoyo & Parwoto, 2012; Noor, 2014). SEM consists of two main approaches: Covariance-Based SEM (CB-SEM) and Variance-Based SEM (VB-SEM). This study adopts the PLS approach due to its ability to handle non-normal data distributions, small sample sizes, and issues such as multicollinearity and autocorrelation (Abdillah & Hartono, 2014). According to Hair et al. (2019), SEM includes two key components: the Outer Model (Measurement Model), which measures the relationship between indicators and constructs, and the Inner Model (Structural Model), which measures the relationships between latent constructs.

This study employs two types of variables. Independent Variables (X) are the causal variables that affect other variables (Sugiyono, 2018). In this study, three independent variables are used: Attitude (X_1), Subjective Norm (X_2), and Behavioral Control (X_3). Dependent Variable (Y) refers to the variable that is influenced by the independent variables, which in this case is the Asset Management Implementation Intention (Y)

The theoretical framework refers to the Theory of Planned Behavior model (Achmad, Zakarija, 2008), which is as follows:
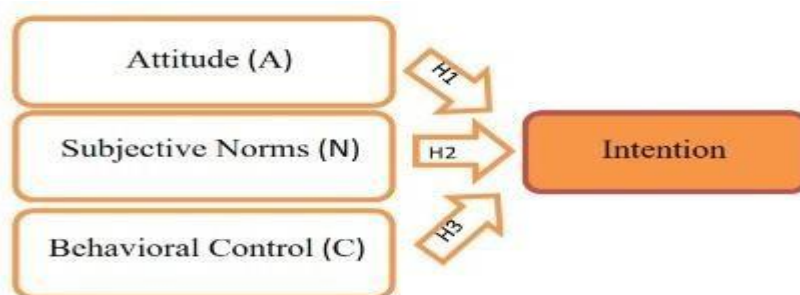

Figure 1. Framework

III. RESULT AND DISCUSSION

A. *Validity and Reliability Test Result*

The data obtained through the questionnaire underwent a validity test using Structural Equation Modeling-Partial Least Squares (SEM-PLS) to ensure that the indicators used in the study genuinely measure the intended latent variables. The parameters used include Standard Loading Factors (SLF), which should be greater than or equal to 0.70, and Average Variance Extracted (AVE), which should be greater than or equal to 0.50. The Fornell-Larcker criterion, where the diagonal values represent the square root of the AVE for each construct, showed the following diagonal values (0.897; 0.912; 0.906; 0.933; and 0.866), which are higher than the correlations between constructs in the same row and column, thus confirming discriminant validity. Both Cronbach's Alpha and Composite Reliability (rho_c) values were above 0.9, indicating that the variables meet the reliability criteria, as a variable is considered reliable if both Cronbach's Alpha and Composite Reliability (rho_c) exceed 0.6.

Table 1. Validity and Reliability Test Result

Variabel		SLF	AVE	F-L	CA	Decision
Attitude	X1.1	0,772	0,751	0,866	0,933	Valid & Reliable
Attitude	X1.2	0,915				
Attitude	X1.3	0,898				
Attitude	X1.4	0,879				
Attitude	X1.5	0,869				
Attitude	X1.6	0,859				

Variabel		SLF	AVE	F-L	CA	Decision
Subjective Norms	X2.1	0,903	0,820	0,906	0,956	Valid & Reliable
Subjective Norms	X2.2	0,917				
Subjective Norms	X2.3	0,922				
Subjective Norms	X2.4	0,888				
Subjective Norms	X2.5	0,876				
Subjective Norms	X2.6	0,927				
Behavioral Control	X3.1	0,888	0,804	0,897	0,951	Valid & Reliable
Behavioral Control	X3.2	0,896				
Behavioral Control	X3.3	0,897				
Behavioral Control	X3.4	0,843				
Behavioral Control	X3.5	0,917				
Behavioral Control	X3.6	0,936				
Intention	Y.1	0,896	0,831	0,912	0,959	Valid & Reliable
Intention	Y.2	0,924				
Intention	Y.3	0,909				
Intention	Y.4	0,929				
Intention	Y.5	0,924				
Intention	Y.6	0,887				

Sources: Processed data by SEM-PLS v4 (2025)

B. Inner Model

The data obtained R Square (R^2) measures the extent to which independent variables can explain the variance in the dependent variable. The values range from 0 to 1, with higher R^2 values indicating a greater ability of independent variables to explain the dependent variable's variance.

Table 2. Inner Model Result

	R-square	R-square adjusted	Q2
Behavioral Control	0,488	0,484	0,384
Intention	0,574	0,564	0,455
Subjective Norms	0,556	0,553	0,449
Attitude	0,358	0,353	0,240

The R^2 table indicates that the Control Behavior variable (0.488) accounts for 48.8% of the variance in Control Behavior, while the remaining 51.2% is explained by other factors outside the model. The Intention variable (0.574) accounts for 57.4% of the variance, and the Subjective Norms variable (0.556) accounts for 55.6% of its variance. The Attitude variable (0.358) accounts for 35.8% of the variance explained by its influencing factors.

The Adjusted R^2 column shows that the Adjusted R^2 values are slightly lower than the R^2 values, indicating that the model is stable, with the addition of independent variables not significantly reducing the accuracy of the model. The highest Adjusted R^2 value is found in the Intention variable (0.564), suggesting that the model explains the variation in intention better than other constructs.

Based on the data analysis results, the model demonstrates good predictive relevance for Intention and Subjective Norms (Q^2 > 0.25). Control Behavior also shows reasonable predictive relevance, while Attitude demonstrates lower but still acceptable relevance. Knowledge does not have predictive relevance in the model, possibly indicating that it is an exogenous variable or not well predicted by the model. Subsequently, the f^2 test will be used to evaluate the impact of each variable.

C. Discussion

Based on the data analysis using the Partial Least Squares-Structural Equation Modeling (PLS-SEM) method, this study tests six hypotheses explaining the relationships between Knowledge, Attitude, Subjective Norms, Control Behavior, and Intention in Asset

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Management implementation. The path coefficients indicate the strength of the relationships between variables in the model. Interpretation is based on the p-value and T-statistics. Below are the data results from the SEM PLS processing:

Table 3. Hypothesis Test

	Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t statistics (|O/STDE V|)	P values	Decision
H1	Attitude -> Intention	0,347	0,343	0,113	3,057	0,002~~3587 430446~~	**Accepted**
H2	Subjective Norm -> Intention	0,136	0,126	0,174	0,78	0,4357544 525629	**Rejected**
H3	Behavioral Control -> Intention	0,379	0,381	0,143	2,653	0,008~~2318 382170~~	**Accepted**

Influence of Attitude on the Intention to Implement Asset Management

The study shows that attitude towards asset management implementation has a positive and significant effect on the intention to implement it at PT PLN Nusantara Power Unit Pembangkitan Sebalang, with a path coefficient of 0.347 and a p- value of 0.002. This means that the more positive an individual's attitude towards asset management, the stronger their intention to apply it. These findings support the theory of Joanne R. Smith (2007), which states that a positive attitude can lead to intention and action, especially when supported by subjective norms and behavior control. Therefore, it is recommended that the company strengthen employees' positive attitudes through training and awareness campaigns.

Influence of Subjective Norms on the Intention to Implement Asset Management

Unlike attitude, subjective norms did not have a significant effect on the intention to implement asset management, as evidenced by the path coefficient of 0.136 and p-value of 0.436. This contradicts the study by Tuyet-Mai Nguyen (2019), which suggests that subjective norms play a strong role in the intention to share knowledge. However, research by Adib Saeroji (2015) also indicates that subjective norms do not always influence intentions, depending on the context.

In the context of PLN, which has a hierarchical and formal organizational structure, employees are more influenced by instructions from superiors and official policies rather than social pressure from colleagues. Additionally, top-down policies such as the implementation of ISO 55000, asset management guidelines, and standard operating procedures (SOPs) encourage employees to follow these policies due to formal requirements, rather than social norms.

Moreover, control behavior and personal attitudes have proven to be more dominant. Employees are aware of the importance of asset management for efficiency and workplace safety, and feel supported by systems such as training and the Asset Management System (AMS) platform. Internal guidelines such as the 2022 PT PJB Asset Management Implementation Guidelines highlight that PLN's work culture prioritizes formal instructions and system controls over informal social influence.

Influence of Behavior Control on the Intention to Implement Asset Management

The analysis shows that behavior control has a positive and significant effect on the intention to implement asset management, with a path coefficient of 0.379 and a p-value of 0.008. The higher an individual's belief in their ability and control over asset management implementation, the higher their intention to proceed. This finding aligns with Ardvin Kester S. Ong (2021), who states that behavior control significantly influences decision-making intention. At PT PLN Nusantara Power Unit Pembangkitan Sebalang, behavior control is reflected in the presence of training, supporting tools, and strong management support for asset management implementation.

IV. CONCLUSIONS

This study examines the influence of knowledge on the intention to implement asset management using the Theory of Planned Behavior (TPB) approach at PT PLN Nusantara Power Unit Pembangkitan Sebalang. Based on the analysis, six key conclusions are drawn:
1. Attitude towards asset management positively and significantly influences intention, with a positive attitude leading to higher intention to implement this practice.

2. Subjective norms do not significantly influence intention. The social factors of the work environment were not found to directly encourage implementation intention in the context of PLN Sebalang.

3. Perceived behavior control has a positive and significant effect on intention. Employees who feel able to control the implementation process are more motivated to carry it out.

Based on the findings, several recommendations are made to improve the success of asset management implementation, such as strengthening positive attitudes by fostering a work culture that supports asset management through internal campaigns, rewards, and leadership support. Additionally, subjective norms can be reinforced, and perceived behavior control enhanced.

Further research could explore additional factors, such as work experience, incentive systems, or organizational culture, and employ qualitative approaches to gain deeper insights. Future research could also extend to other industries to determine if similar results apply outside the PLN context or investigate the long-term impact of asset management implementation on organizational performance. Furthermore, the role of subjective norms could be reassessed in different contexts, such as in non- hierarchical organizations, to explore the potential for a more significant influence.

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