

Optimizing Asset Utilization is a Mediating Variable in the Influence of Information Systems, Competence, and Internal Control

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ABSTRACT

This study aims to investigate the impact of information systems, competencies, and internal controls on asset management effectiveness, as well as the mediating role of asset utilization optimization in this relationship. The research method used an explanatory survey approach. Respondents in this study were 98 employees assigned to state asset management at the Directorate General of State Assets. Quantitative data were collected through a questionnaire survey. The data analysis technique used was Partial Least Squares (PLS) with calculations assisted by the Smart PLS 4.1.1.4 application program. The results of the study indicate that asset utilization optimization acts as a mediator in the relationship between information systems, human resource competency, and internal control on asset management effectiveness. Based on the bootstrapping results in the PLS-SEM structural model, the specific indirect effect of each independent variable through asset utilization optimization is proven to be significant, while its direct effect remains significant. This finding suggests that the mediation mechanism at work is partial, as evidenced by the coexistence of significant direct and indirect effects on each path. Thus, asset management effectiveness is not only influenced by the quality of information systems, internal competency, and internal control directly, but also by the organization's ability to convert these factors into optimal, productive, and accountable asset utilization practices.

Keywords: competence; effectiveness of asset management; information systems; internal control; optimization of asset utilization.

INTRODUCTION

At the national level, the acquisition value of State-Owned Assets (Barang Milik Negara/BMN) has increased from IDR 6,652.5 trillion in 2021 to IDR 6,769.6 trillion in 2023 (DJKN, 2023). However, this increase has not been accompanied by optimal asset utilization (Hartono & Budiarsih, 2022), as reflected in the still high number of BMN that are not used to support tasks and functions or are idle assets (Harfianah & Faisal, 2023). This condition suggests that asset management problems extend beyond the quantity of assets to include the quality of their management. In this context, the effectiveness of the asset information system, the competence of human resources managing BMN, and the strength of internal controls are key factors influencing the ability of work units to identify, secure, and utilize assets optimally. Furthermore, these three variables are estimated to not only directly influence the effectiveness of asset management but also indirectly through the mediating role of optimizing asset utilization in increasing the added value and contribution of BMN to state revenue.

This phenomenon illustrates a gap between the growth in asset value and the effectiveness of asset management – particularly in terms of state revenue and the value of idle assets. Several factors, such as

information systems, competency, and internal control, influence the effectiveness of asset management. Information systems have a significant impact on the effectiveness of asset management within local government institutions, especially in terms of the speed and accuracy of reporting (Syarifudin, Ritchi, and Avianti, 2020). Furthermore, qualified competencies directly contribute to achieving efficiency and transparency in asset management within local governments (Kusnawati, Sari, and Supriyanto, 2019). Meanwhile, weak internal control is one of the leading causes of suboptimal asset management (Pakpahan *et al.*, 2023). Based on these conditions, the problem of this research lies in the less than optimal effectiveness of asset management even though the value of assets continues to increase, so this research tests the hypothesis that information systems, competence, and internal control influence the effectiveness of asset management both directly and indirectly through optimizing asset utilization as a mediating variable. This study examines the role of asset utilization optimization as a mediator.

Agency Theory

Agency Theory, initially introduced by Jensen & Meckling (1976), describes the relationship between the principal (in the public context: the state or society as the asset owner) and the agent (employees, government institutions, or public asset managers), which can potentially lead to conflicts of interest due to differing objectives and information asymmetry. In the public sector context, society – through the state – delegates authority to the government or specific institutions to manage public resources, including state-owned assets. Within the framework of agency theory, public accountability serves as a key mechanism to reduce conflicts of interest and ensure transparency. Public sector accounting systems, transparent financial reporting, and auditing mechanisms play crucial roles in maintaining alignment between the principal and the agent, ensuring that both parties remain focused on shared goals (Hehanussa, 2024).

Public Sector Accounting

Public sector accounting is a system used to identify, measure, record, and report economic transactions and relevant events within public entities – such as central government, local governments, and non-profit organizations – with the primary aim of providing valuable information for decision-making and public accountability (Mardiasmo, 2021). The management of state assets – referred to in public sector accounting terminology as *Barang Milik Negara* (BMN) or State-Owned Assets – cannot be separated from the applicable regulatory framework (Suzitra, Hamzani and Fahmi, 2024). Through the synergy between regulations, accounting frameworks, and technical practices in the field, the management of state assets can be carried out in a more structured and strategic manner (Rachman *et al.*, 2025). This, in turn, supports the optimization of asset utilization as well as the improvement of asset management effectiveness.

The Effectiveness of Asset Management

The effectiveness of asset management in the public sector reflects how well government organizations utilize their assets to support public service delivery and achieve strategic objectives. Effectiveness is measured through accountability, compliance with regulations, administrative efficiency, and timeliness in decision-making and reporting (DJKN, 2023b). The effectiveness of state

asset management can be assessed by the organization's ability to meet asset performance targets, such as increasing non-tax state revenue (PNBP), reducing maintenance costs, improving asset utilization, and decreasing the number of idle assets. Public sector accounting theory closely links this effectiveness to mechanisms of accountability and transparency (Waoma *et al.*, 2023).

Information Systems

An information system is a combination of human structures, software, hardware, communication networks, data sources, and rules and procedures used to store, retrieve, transform, and organize data within an organization (Febriantoko, 2024). In asset management, information technology enables an integrated asset lifecycle and supports decision-making processes (Rizky Feliana Devi, 2024). This system allows for real-time asset recording, minimizes errors, and promotes transparency and accountability in line with the Government Accounting Standards (Standar Akuntansi Pemerintahan/SAP). Information systems such as the *Sistem Informasi Manajemen Aset Negara (SIMAN)*, or State Asset Management Information System, have become highly strategic tools in the digital era – not only for asset administration and utilization but also for needs planning and as a basis for informed decision-making.

Competence

Competence encompasses the knowledge, skills, and attitudes of employees in managing assets in accordance with public sector accounting principles. It is a combination of knowledge, skills, attitudes, and personal characteristics that determine job success (Suryana, Kurniawan and Paramarta, 2024). In the context of asset management, technical, cognitive, and analytical competencies are required to carry out functions effectively and accountably by Spencer and Spencer (1993). Internal control is a process designed to provide reasonable assurance regarding the achievement of organizational objectives in terms of operational efficiency and effectiveness, the reliability of financial reporting, and compliance with applicable regulations. According to Government Regulation No. 60 of 2008 concerning the Government Internal Control System (*Sistem Pengendalian Intern Pemerintah* or SPIP), internal control consists of five key components: control environment, risk assessment, control activities, information and communication, and monitoring. In the context of asset management, internal control helps prevent misuse, ensures that assets are used as intended, and detects idle or unproductive assets (Firmansyah and Kuntadi, 2023).

Optimization of Asset Utilization

Optimization of state asset utilization is a systematic effort to ensure that *Barang Milik Negara (BMN)*, or State-Owned Assets, are maximally used to support the achievement of public organizational goals, generate economic and social benefits, and contribute to state revenue. Within the framework of public sector accounting, this optimization aligns with the value for money principle, which encompasses economy, efficiency, and effectiveness (Mardiasmo, 2021). Optimization strategies include increasing utilization rates, monetizing idle assets, enhancing contributions to non-tax state revenue (*Penerimaan Negara Bukan Pajak* or PNBP), and improving cost-efficiency in asset management (Satmoko and Sari, 2024).

Hypothesis Development

In the context of public sector accounting, asset information systems function as tools for recording, control, reporting, and data-based decision-making (Hehanussa, 2024). Examples include the *Sistem Informasi Manajemen dan Akuntansi Barang Milik Negara (SIMAK-BMN)* and the *Sistem Aplikasi Keuangan Tingkat Instansi (SAKTI)*, developed by the Ministry of Finance. A well-developed information system enhances management effectiveness through data accuracy and speed while also enabling the optimization of asset utilization by identifying and leveraging idle or unproductive assets. Employee competence significantly influences asset management effectiveness, particularly in making strategic decisions aligned with efficiency and effectiveness principles (Manalu and Yudianto, 2024). In the context of BMN management, sufficient competence enables employees to understand regulations, operate information systems, and make sound decisions regarding asset utilization. Reliable competence is expected to reduce errors in asset-related policy and decision-making. A study by (Yudi, Wahyuni and Ramli, 2022) found that internal control systems and human resource competencies simultaneously improve asset management effectiveness in West Java's local governments, particularly in asset monitoring and administrative regulation. These findings highlight the importance of strong internal control policies to support the optimal utilization of assets (Masdayati, Syarifuddin and Darmawati, 2024). A robust internal control system prevents asset misuse and ensures the validity of asset data, thereby increasing management effectiveness and enabling safe optimization.

Unlike direct studies (Yudi et al., 2022), this research positions asset utilization optimization as a black box mediator. Several studies have shown that these three variables positively influence asset management quality. Nonetheless, most of these studies focus on direct relationships, without considering intermediary mechanisms (intervening variables) that bridge the process from input to outcome in a more comprehensive manner. In practice, the presence of an information system or internal control does not automatically result in effective asset management if not accompanied by proactive management of asset potential (Husni, 2022). This reveals a research gap: the lack of studies incorporating asset utilization optimization as a mediating variable. Based on the above discussion, the following hypotheses can be formulated:

- H₁ : Information systems have a significant effect on the effectiveness of asset management.
- H₂ : Competence has a significant effect on the effectiveness of asset management.
- H₃ : Internal control has a significant effect on the effectiveness of asset management.
- H₄ : Information systems have a significant effect on the effectiveness of asset management through the mediation of asset utilization optimization.
- H₅ : Competence has a significant effect on the effectiveness of asset management through the mediation of asset utilization optimization.
- H₆ : Internal control has a significant effect on the effectiveness of asset management through the mediation of asset utilization optimization.

These hypotheses were then empirically tested using the Partial Least Squares-Structural Equation Modeling (PLS-SEM) approach. The PLS-SEM method was chosen to confirm both the direct Influence of information systems, competence, and internal control on asset management effectiveness, as well as the indirect Influence through asset utilization optimization as a mediating variable. This approach allows for simultaneous testing of complex structural relationships and provides a more comprehensive picture of the interrelationship mechanisms between variables in public asset management.

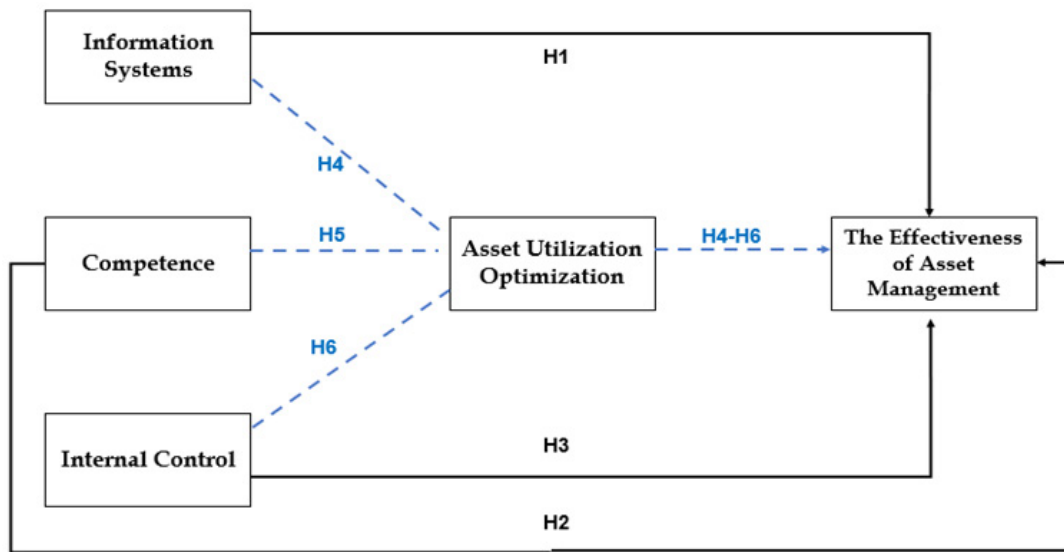


Figure 1. Framework of Thought
Source: Processed Data (2025)

METHOD, DATA, AND ANALYSIS

Population

This study employs three independent variables – Information Systems (X1), Competence (X2), and Internal Control (X3); one dependent variable – Asset Management Effectiveness (Y); and one mediating variable – Asset Utilization Optimization (Z). The population in this study consists of employees within the Directorate General of State Assets Management (*Direktorat Jenderal Kekayaan Negara*, DJKN) who perform duties and functions related to state asset management. The population used was 98 respondents from vertical units and head offices within the Directorate General of State Assets.

Dependent Variable

The effectiveness of the asset management variable is operationalized as the extent to which an organization successfully manages state assets in an accountable, orderly, and timely manner in alignment with its intended purpose. Asset management effectiveness reflects the organization's capability in achieving asset performance targets, such as increasing non-tax state revenue (PNBP), reducing maintenance costs, improving asset utilization, and minimizing idle assets. This effectiveness indicates how well asset management supports public sector organizational performance and complies with applicable regulations, as stipulated in Minister of Finance Decree No. 39/KM.6/2025.

Independent Variables

The information system variable in this study is operationalized as a user's perception of the quality and performance of the information system used for managing state assets. The measurement of this variable includes indicators such as availability, reliability, response time, adaptability, and usability, adapted from the Information Systems Success Model by DeLone and McLean (Nusandari *et al.*, 2022). The competence variable is operationalized as an individual's capability to carry out tasks and responsibilities related to asset management, reflecting a combination of knowledge, skills, and attitudes. The indicators for this variable include cognitive ability, technical skills, analytical thinking, professional attitude, and

training. Competence represents the capacity to act effectively within a public sector organizational context, as defined by Spencer and Spencer (Atbar, 2024). The internal control variable, in accordance with the COSO (Committee of Sponsoring Organizations of the Treadway Commission) framework, is operationalized as a process designed to provide reasonable assurance regarding the achievement of organizational objectives, particularly in asset management. It includes the reliability of financial reporting, compliance with regulations, and operational efficiency and effectiveness (Abdurrahman and Novita, 2021).

Mediating Variable

The Optimization of Asset Utilization variable is operationalized as a systematic effort to increase the utility and economic value of state assets, aiming to support efficient government operations and contribute to state revenue. The indicators for this variable include physical utilization improvement, revenue generated from asset management, cost efficiency in asset operations, and the benefit-to-asset value ratio. This optimization includes not only administrative aspects but also performance dimensions and the public value of assets (DJKN, 2021).

The operational variables in this study consist of variables, dimensions, indicators, sources, and number of items as shown in the table below.

Table 1. Operationalization Variable

Variable	Dimension	Indicator	Source	Items
Information System (X1)	A system focused on processing an organization's or company's accounting data is known as an accounting information system. This system is expected to produce relevant results for decision-making	Availability, Reliability, Response Time, Adaptability, Usability	DeLone and McLean (2003)	5
Competence (X2)	The construction of human resource competency components, namely Knowledge, Skills, and Attitude	Cognitive Ability, Technical, Analytical, Attitude, Training	Spencer, L. M., & Spencer, S. M. (1993)	5
Internal Control (X3)	An internal control system is a crucial procedure for management and activities carried out continuously by management and all staff to ensure the effective and efficient achievement of organizational goals, the reliability of financial reporting, the protection of state assets, and compliance with laws and regulations	Control Environment, Risk Assessment, Control Activities, Information and Communication, Monitoring	Government Regulation Number 60 of 2008	5
Optimizing Asset Utilization (Z)	The utilization and monetization levels of State Property (BMN) refer to the extent to which BMN is optimally utilized and managed to generate revenue for the state. Utilization relates to the use of BMN according to its intended purpose, while monetization is the effort to obtain economic value from BMN, for example through leasing, utilization cooperation, or sales.	Utilization Level, Non-Tax State Revenue (PNBP) from asset management, Schemes in accordance with regulations, Maintenance costs, Asset benefit ratio	DJKN, Ministry of Finance (2021)	5

Variable	Dimension	Indicator	Source	Items
Asset Management Effectiveness (Y)	The BMN management performance indicator is one indicator of the achievement of the implementation of bureaucratic reform policies in the field of BMN management to support the creation of agile, nimble, and collaborative digital governance	Accountable and productive, Timely administration, Compliance with regulations, Effective supervision and control, Reliable administration	Decision of the Minister of Finance (KMK) Number 39/KM.6/2025	5

RESULTS AND DISCUSSION

Results

Convergent Validity Test

The external loadings and Average Variance Extracted (AVE) values of each indicator are used in the convergent validity test to determine the validity of each relationship between the indicator and the latent variable. Convergent validity can be determined by observing the correlation of indicator scores >0.7 (Hair *et al.*, 2022).

Table 2. Outer Loading Test Results

Indikator	X1	X2	X3	Z	Y
SI.1	0.827				
SI.2	0.853				
SI.3	0.881				
SI.4	0.873				
SI.5	0.717				
COM.1		0.810			
COM.2		0.851			
COM.3		0.884			
COM.4		0.732			
COM.5		0.762			
PI.1			0.831		
PI.2			0.872		
PI.3			0.871		
PI.4			0.777		
PI.5			0.881		
OPA.1				0.750	
OPA.2				0.779	
OPA.3				0.756	
OPA.4				0.892	
OPA.5				0.925	
EPA.1					0.882
EPA.2					0.906
EPA.3					0.901
EPA.4					0.859
EPA.5					0.836

Source: SmartPLS, Processed 2025

Based on the outer loading test results in the table above, all variable indicators have a loading factor >0.7 , indicating that all indicators are valid for measuring their constructs (Hair *et al.*, 2022). The next step is to determine the AVE value, which measures the amount of variance captured or known from the construct, and then compare it with the variance resulting from measurement error.

Table 3. Composite Reliability and Average Variance Extracted

Variabel	CR (rho_a)	Average Variance Extracted
Information Systems (X1)	0.887	0.693
Competence (X2)	0.867	0.656
Internal Control (X3)	0.901	0.718
Optimizing Asset Utilization (Z)	0.879	0.678
Asset Management Effectiveness (Y)	0.925	0.769

Source: SmartPLS, Processed 2025

Based on the results of the convergent validity test, it can be concluded that the validity value has met the AVE value of >0.5 , indicating that convergent validity is met.

Discriminant Validity Test

The next test is the discriminant validity test, using the cross-loading test. The cross-loading test is a test conducted on the outer loading value of a variable construct, which must have a greater value for the variable itself compared to the other variables. The method for testing discriminant validity using the reflex indicator is to observe the cross-loading value for each resulting variable, which must be greater than 0.7 (Hair *et al.*, 2022). The results of the discriminant validity cross-loading test indicate that each item in the measurement has a greater correlation with the measured variable. This result indicates that the cross-loading is acceptable.

Reliability Test

Reliability is a measure of the extent to which an instrument can be expected to produce the same measurement results if repeated measurements are taken (Evi and Rachbini, 2023). In this study, reliability testing was conducted by examining Cronbach's alpha and composite reliability values. Cronbach's alpha and composite reliability values considered to have high reliability are >0.70 (Nasution, 2024). The result shows that the Cronbach's alpha and composite reliability values for all variables are >0.70 , indicating a high level of reliability in this study.

R-Square Test

The coefficient of determination (R-square) measures the extent to which one or more independent variables can explain variation in the dependent variable. A high R^2 indicates adequate predictive power for the model. $R^2 = 0.75$ (substantial), $R^2 = 0.50$ (moderate), and $R^2 = 0.25$ (weak). (Hair *et al.*, 2022)

Table 4. R-Square Test Results

Variabel	R-square	R-square adjusted	Keterangan
Asset Management Effectiveness (Y)	0.681	0.667	strengthen
Asset Utilization Optimization (Z)	0.679	0.668	strengthen

Source: SmartPLS, Processed 2025

The R-squared value for the dependent variable in this study is 0.681. This means that the information systems (X_1), competency (X_2), and internal control (X_3) variables influence the Asset Management Effectiveness (Y) variable by 68.1%. The remaining 31.9% is influenced by other variables (in addition to the variables in this study).

Q-Square Test

The model fit test uses several statistical indicators, including the Standardized Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI).

Table 5. Model Fit Test Results

	Saturated model	Estimated model
SRMR	0.078	0.078
d_ ULS	1.995	1.995
d_ G	1.411	1.411
Chi-square	703.577	703.577

Source: SmartPLS, Processed 2025

Based on the test results, the SRMR value of 0.078 meets the requirement of being below 0.10, while the NFI value of 0.710 meets the requirement of being above 0.662. Therefore, it can be concluded that the model in this study has a high goodness of fit and is suitable for testing the research hypothesis (Sofyani, 2025)

F-Square Test

The F-square test is used to calculate the magnitude of the influence between variables with an effect size. Based on data processing using SmartPLS 4.0, the F-square value obtained is

Table 6. F-Square Test Results (F^2)

Variabel	Y	Z
Information Systems (X_1)	0.017	0.177
Competence (X_2)	0.049	0.103
Internal Control (X_3)	0.022	0.118
Optimizing Asset Utilization (Z)	0.214	-
Asset Management Effectiveness (Y)	-	-

Source: SmartPLS, Processed 2025

The F-test was conducted to determine the goodness-of-fit of the research model. Values of 0.02, 0.15, and 0.35 were defined as low, moderate, and high, respectively (Evi and Rachbini, 2023). The table above shows that the f-square value for the dependent variable in this study, the effect of X_1 on Y, is low at 0.017, while the effect of Z on Y is moderate to high at 0.214.

Bootstrapping Test

Bootstrapping is a non-parametric resampling technique used to test the significance of indirect effects without assuming normality. Hypothesis testing was conducted through the bootstrapping

process using SmartPLS 4.0, with the requirements for acceptance of the hypothesis being a p-value <0.05 and a t-statistic >1.96, indicating significance in this study (Inan *et al.*, 2022).

Table 7. Bootstrapping Test Results

	Original sample (O)	Sample Mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	p values
$X_1 \rightarrow Y$	0.274	0.278	0.078	3.494	0.000
$X_2 \rightarrow Y$	0.324	0.320	0.116	2.801	0.005
$X_3 \rightarrow Y$	0.283	0.286	0.121	2.330	0.020
$X_1 \rightarrow Z$	0.343	0.346	0.093	3.711	0.000
$X_2 \rightarrow Z$	0.275	0.272	0.094	2.927	0.003
$X_3 \rightarrow Z$	0.309	0.311	0.093	3.309	0.001
$Z \rightarrow Y$	0.461	0.455	0.130	3.538	0.000

Source: SmartPLS, Processed 2025

Based on the table above, the independent and mediating variables in this study have p-values <0.05 and t-statistics >1.96, thus meeting the significance level.

Indirect Effect Test

The indirect effect is the result of the influence of X on M (path a) multiplied by the influence of M on Y (path b). The formula is Indirect Effect = a x b.

Table 8. Results of the Indirect Effect Test

	Original sample (O)	Sample Mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	p values
$X_1 \rightarrow Z \rightarrow Y$	0.158	0.157	0.062	2.543	0.011
$X_2 \rightarrow Z \rightarrow Y$	0.127	0.124	0.059	2.145	0.032
$X_3 \rightarrow Z \rightarrow Y$	0.142	0.140	0.058	2.471	0.014

Source: SmartPLS, Processed 2025

This effect was analyzed using bootstrapping results. The report includes coefficient values, t-statistics, and p-values. A Confidence Interval (CI) is also reported to indicate significance. If the indirect effect is significant and the direct effect is insignificant, it indicates complete mediation. If both are significant, it indicates partial mediation. Based on the table above, the independent variable and mediating variable in this study have p-values <0.05 and t-statistics >1.96, thus meeting significance.

Variance Accounted for Test

Variance Accounted For (VAF) indicates the proportion of the total effect mediated by the mediating variable (Hair *et al.*, 2022). Generally, a VAF < 20% indicates no mediation, a VAF d" 20% indicates partial

mediation, and a VAF > 80% indicates complete mediation (Hair *et al.*, 2022). The formula is calculated as VAF = Indirect Effect multiplied by Total Effect multiplied by 100%.

Table 9. Results of the Variance Accounted for Test

Jalur Mediasi	Indirect Effect	Direct Effect	Total Effect	VAF (%)	Interpretation
X1 → Z → Y	0.158	0.274	0.432	36.57	Partial Mediation (Weak)
X2 → Z → Y	0.127	0.324	0.451	28.16	Partial Mediation (Weak)
X3 → Z → Y	0.142	0.283	0.425	33.41	Partial Mediation (Weak)

Source: SmartPLS, Processed 2025

Based on the table above, it can be seen that the independent variables and mediating variables in this study have Variance Accounted For values in the range of 28%–37%, indicating weak partial mediation.

Discussion

This table summarizes the results of structural model estimation using Partial Least Squares–Structural Equation Modeling (PLS-SEM) based on a bootstrapping procedure. The table presents standardized path coefficients, t-statistics, and p-values for the direct effect, specific indirect effect through the asset utilization optimization variable, and the total effect. The classification of mediation types is determined based on the simultaneous significance of the direct and indirect effects, with the criterion that the indirect effect is significant if the 95% confidence interval does not cross zero.

Table 10. Results Summary Table

The Influence of Information Systems on Asset Management Effectiveness

The results of hypothesis testing for H₁ indicate that the information system has a positive and significant effect on asset management effectiveness, with a path coefficient value of 0.274, a t-statistic of 3.494, and a p-value of 0.000. These findings suggest that the use of a high-quality information system directly enhances accountability, accuracy, and efficiency in the management of state-owned assets (BMN).

These results align with DeLone & McLean’s Information System Success Model (Sabeh *et al.*, 2021), which states that the success of an information system is influenced by three main dimensions: system quality, information quality, and service quality. All three dimensions are essential in the context of SIMAN (State Asset Management Information System). System quality includes the reliability and user-friendliness of SIMAN (uptime, access speed), and information quality refers to the accuracy and completeness of asset data. In contrast, service quality includes technical support and responsiveness from the system provider.

These three aspects contribute to user satisfaction and ultimately increase the net benefit in the form of asset management effectiveness. An optimally functioning SIMAN supports real-time inventory and reporting processes, facilitates data-driven decision-making, prevents asset loss, and encourages more strategic asset utilization.

These findings are consistent with the study by (Syarifudin, Ritchi and Avianti, 2020), which found that information systems significantly influence the effectiveness of asset management in local

governments. Similarly, (Kusnawati, Sari and Supriyanto, 2019) emphasized the importance of system integration and data reliability in strengthening public asset accountability. The success of information systems in improving asset management effectiveness largely depends on the technical quality, content quality, and accompanying support services. Emphasizing these dimensions supports the conclusion that a successful information system delivers tangible benefits for effective public asset management.

The Influence of Competence on Asset Management Effectiveness

The testing of hypothesis H_2 shows that human resource (HR) competence has a positive and significant effect on asset management effectiveness, with a path coefficient of 0.324, a t-statistic of 2.801, and a p-value of 0.005. These results confirm that the higher the competency level of employees, the better the effectiveness in managing state-owned assets (BMN), including in aspects such as administration, monitoring, and optimal asset utilization.

These findings are consistent with the competency framework developed by Spencer & Spencer (Suryana, Kurniawan and Paramarta, 2024), which states that individual job success is determined by three main dimensions: knowledge, skill, and attitude. In the context of state asset management, competence encompasses understanding regulations related to BMN (knowledge), possessing the technical ability to use applications such as SIMAN and analyse asset utilisation options (skill), as well as demonstrating accountable attitudes and participating in training or capacity development programs (attitude).

This study is supported by findings from (Satmoko and Sari, 2024), which indicate that government asset management becomes more effective when handled by employees with strong knowledge and analytical capabilities. Furthermore, (Harfianah and Faisal, 2023) add that professionalism and compliance with regulations are key differentiators in the performance effectiveness of asset managers in the public sector.

Human resource competence encompasses not only technical knowledge but also the overall capacity for analytical thinking, accountable action, and continuous development through ongoing training. Therefore, improving asset management effectiveness requires strategic interventions to strengthen employee competence—both structurally through training and culturally through the cultivation of strong work ethics and attitudes.

The Influence of Internal Control on Asset Management Effectiveness

The results of testing hypothesis H_3 indicate that internal control has a positive and significant effect on asset management effectiveness, with a path coefficient of 0.283, a t-statistic of 2.330, and a p-value of 0.020. This finding suggests that the stronger the internal control system implemented by an organization, the higher the effectiveness in asset management, including accountability, regulatory compliance, and ongoing oversight.

These results are consistent with the COSO internal control framework (Abdurrahman and Novita, 2021) and the provisions in Government Regulation No. 60 of 2008 concerning the Government Internal Control System (SPIP), which emphasizes five main components of internal control: (1) control environment, (2) risk assessment, (3) control activities, (4) information and communication, and (5) monitoring activities. In the context of BMN management, these five components are interconnected to ensure that the processes of administration, utilization, and supervision of assets are carried out according to excellent governance principles.

Empirically, this study is supported by findings from (Masdayati, Syarifuddin and Darmawati, 2024), which show that consistent and comprehensive implementation of an internal control system has a positive impact on the effectiveness of regional asset management. (Kusnawati, Sari and Supriyanto, 2019) also demonstrated that strict authorization procedures, excellent internal communication, and timely follow-up of audit findings are key factors in effective government asset control.

These findings affirm that the effectiveness of public asset management strongly depends on the presence and implementation of a comprehensive and functioning internal control system. Public organizations, especially those managing state wealth, must ensure that all components of internal control are systematically implemented to reduce the risk of irregularities, strengthen oversight, and support data-driven decision-making.

Asset Utilization Optimization as a Mediator of the Effect of Information Systems on Asset Management Effectiveness

The results of testing hypothesis H_4 show that asset utilization optimization acts as a partial mediating variable in the relationship between information systems and asset management effectiveness, with an indirect effect value of 0.158, a direct effect of 0.274, and a total effect of 0.432. That information systems influence effectiveness not only directly, but also indirectly through optimizing asset utilization.

This finding strengthens the Information System Success Model (Sabeh *et al.*, 2021), which emphasizes that system quality, information quality, and service quality enhance user satisfaction and generate net benefits. In this context, information systems such as SIMAN function not only as recording tools but also as decision-support systems to identify and process assets that can be optimized. When assets are successfully utilized through lease schemes or joint utilization agreements (KSP), this aspect directly contributes to the overall improvement of asset management effectiveness.

Previous studies by (Wibowo, 2023) and (Fitriana and Nugroho, 2021) also show that the presence of integrated and accurate information systems accelerates the optimization process of previously non-productive assets. However, the system's effectiveness largely depends on user follow-up, data quality, and policy support for utilization.

While information systems directly influence the effectiveness of asset management, the mediating role of asset utilization optimization is still significant, although it is categorized as weak and partial. This highlights the importance of strengthening information systems that are not only technically reliable but also responsive to strategic asset utilization needs.

Asset Utilization Optimization as a Mediator of the Effect of Competence on Asset Management Effectiveness

The results of testing hypothesis H_5 indicate that asset utilization optimization significantly mediates the relationship between human resource (HR) competence and asset management effectiveness. However, the mediation is categorized as weakly partial. With an indirect effect value of 0.127, a direct effect of 0.324, and a total effect of 0.451, that only about a quarter of the total influence of HR competency on the effectiveness of asset management is explained through mediation channels, while the remainder is a direct influence.

This result aligns with the Knowledge-Skill-Attitude (KSA) competency theory by Spencer & Spencer (Suryana, Kurniawan and Paramarta, 2024), which asserts that knowledge, technical and analytical skills,

and attitude play key roles in determining individual performance. In the context of asset management, highly competent personnel are capable of identifying idle assets, preparing utilization agreements, and managing state assets accountably, ultimately encouraging optimized asset utilization.

Empirical support is found in the study by (Rahayu and Yuditiya, 2023), which shows that employee competence influences increased asset utilization, particularly in decision-making based on regulations and the use of digital asset applications. However, (Kurniawati, 2023) highlights that structural and policy barriers also impede optimization, suggesting that competence alone cannot yield optimal impact without systemic support.

Thus, although HR competence has a proven significant effect on asset management effectiveness, the mediation path through asset optimization remains limited. Therefore, HR development must be accompanied by more progressive utilization policies, technological support, and robust monitoring systems to maximize its contribution to asset management.

Asset Utilization Optimization as a Mediator of the Effect of Internal Control on Asset Management Effectiveness

The results of testing hypothesis H_6 indicate that asset utilization optimization serves as a partial mediator in the relationship between internal control and asset management effectiveness. The indirect effect value is 0.142, the direct effect is 0.283, and the total effect is 0.425. That mediation is weakly partial, namely that part of the influence of internal control on the effectiveness of asset management is explained through asset optimization.

This finding is consistent with the framework of the Committee of Sponsoring Organizations of the Treadway Commission (Sabeh *et al.*, 2021) and the provisions of Government Regulation No. 60 of 2008 concerning the Government Internal Control System (SPIP). Both emphasize five key components of internal control: control environment, risk assessment, control activities, information and communication, and monitoring. All of these components contribute to governance practices that support optimal and measurable asset utilization.

Empirical evidence is also found in the study by (Anasta *et al.*, 2024), which concluded that work units that regularly conduct monitoring and follow-up audits tend to be more successful in utilizing assets productively. (Yuliani, Silitonga and Widjayanti, 2023) also confirm that clear authorization procedures, segregation of duties, and internal communication directly affect an institution's ability to reduce idle assets.

Although internal control directly influences asset management effectiveness, the indirect pathway through asset optimization remains relevant. This result implies that improving asset management effectiveness will be more optimal if internal control focuses not only on administrative compliance but also on encouraging active and sustainable asset utilization.

CONCLUSIONS AND SUGGESTIONS

The results of the study confirm that information systems, human resource competencies, and internal controls significantly influence the effectiveness of asset management within the DJKN environment, both directly and through optimizing asset utilization as a mediating variable. Structurally, the effect size (f^2) indicates that each variable's contribution falls in the small-to-medium range, confirming the substantive role of each construct in explaining variations in asset management effectiveness. In

addition, a positive predictive relevance (Q^2) value indicates that the model has adequate predictive ability. The model's suitability is also supported, as indicated by the SRMR value within the acceptance limit and the fulfillment of the discriminant validity criteria based on HTMT, so that the mediation model is deemed feasible and empirically valid in the context of BMN management by DJKN.

In practical terms, these findings confirm that improving the effectiveness of state-owned asset management requires integrated policy interventions. Strengthening employee competencies should focus on enhancing analytical skills and mastery of the asset management information system, particularly through advanced SIMAN training and by strengthening its integration with SAKTI. Furthermore, enhancing SPIP (Asset Management Information System) should focus on controlling asset utilization, monitoring idle assets, and accelerating follow-up on audit findings, so that the contribution of each factor to asset management effectiveness – as reflected in the f^2 value – can be maximized sustainably.

The limitations of this study are reflected in the coefficient of determination, which is in the moderate category, even though the model has demonstrated good predictive relevance ($Q^2 > 0$). Furthermore, the unit of analysis, which is limited to DJKN employees, limits the generalizability of the findings. Therefore, further research is recommended to expand the scope of research objects and subjects and explore other variables that have the potential to increase the model's predictive power, such as compliance with BMN regulations, the effectiveness of follow-up on BPK findings, and BMN transfer and disposal policies, while still considering the evaluation of model suitability and construct validity.

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