DESIGNING A REAL-TIME TKDN MONITORING DASHBOARD CONCEPT AS A DECISION SUPPORT SYSTEM ALIGNED WITH AKHLAK VALUES AT PT BUKIT ASAM

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Abstract

The Domestic Component Level (Tingkat Komponen Dalam Negeri/TKDN) policy is a key instrument of the Indonesian government to strengthen national industries through procurement activities. For state-owned enterprises (SOEs) such as PT Bukit Asam Tbk (PTBA), TKDN implementation must also reflect AKHLAK values as ethical guidelines for governance. Although PTBA has consistently met TKDN targets, reporting remains manual, relying on Excel and a single person-in-charge. This condition creates inefficiencies, risks of data inconsistency, and limited responsiveness to urgent requests from regulators. This study addresses the problem of the absence of an integrated mechanism to monitor TKDN realization in real time within PTBA's electronic procurement system (SPEND). The research objective is to design a TKDN monitoring dashboard conceptualized as a Decision Support System (DSS) that incorporates automation, user-centered design (UCD), and AKHLAK values. An exploratory qualitative method was employed, combining semi-structured interviews, participant observation, and document review. Data were analyzed using thematic coding, supported by SWOT analysis, to identify system gaps, user requirements, and ethical value integration. UCD principles were applied to ensure that dashboard features were aligned with stakeholder needs and validated through feedback from key informants. The findings confirm three main themes: limitations of the current reporting system, the need for an interactive dashboard, and the importance of embedding AKHLAK values in system design. A static mock-up was developed, featuring real-time visualization, dynamic filters, role-based access, and modules for certificate management and reporting. This study contributes theoretically by integrating DSS, UCD, knowledge management, and organizational values into dashboard design, and practically by providing PTBA with a blueprint for optimizing SPEND to support more efficient, transparent, and accountable procurement governance.

Keywords: TKDN, Dashboard, Decision Support System, User-Centered Design, AKHLAK, PTBA, Procurement

INTRODUCTION

The Indonesian government has emphasized the use of domestic products through the Domestic Component Level (Tingkat Komponen Dalam Negeri/TKDN) policy as a strategic instrument to strengthen national industries and reduce reliance on imports. For state-owned enterprises (SOEs), including PT Bukit Asam Tbk (PTBA), this policy is closely tied to corporate governance transformation that requires the integration of ethical values, specifically the AKHLAK values (Amanah, Kompeten, Harmonis, Loyal, Adaptif, Kolaboratif). Within PTBA, procurement activities are managed through the electronic system SPEND, which has increased efficiency and transparency. However, the system has not yet provided real-time monitoring and visualization of TKDN achievement, making reporting still highly dependent on manual processes using Excel and on a single person-in-charge. This condition hampers responsiveness to urgent requests from regulators and risks data inconsistency.

From a theoretical standpoint, prior studies on e-procurement and decision support systems (DSS) highlight the importance of automation, data visualization, and user-centered design (UCD) to improve reporting accuracy and managerial decision-making. Knowledge management (KM) literature further emphasizes that dependence on specific personnel without systematic documentation undermines organizational learning and continuity. In addition, embedding ethical values such as AKHLAK into DSS development is essential to ensure that efficiency improvements do not compromise accountability and integrity.

In this context, the key problem addressed in this study is the absence of an integrated and automated mechanism to monitor and report TKDN realization within PTBA's procurement system. The objective of this research is to design a real-time TKDN monitoring dashboard integrated with SPEND, conceptualized as part of a DSS, and aligned with AKHLAK values. This design is expected to improve efficiency, enhance data transparency, and support accountable and collaborative decision-making in procurement governance.

REVIEW OF LITERATURE

The Domestic Component Level (TKDN) is a strategic policy to strengthen national industries by promoting the use of domestic goods and services in procurement. It is regulated under Minister of Industry Regulation No. 16/2011 and reinforced through Presidential Instruction No. 2/2022 on the Acceleration of Domestic Product Utilization (Republik Indonesia, 2011; Republik Indonesia, 2022). Although PTBA has consistently met TKDN targets, reporting remains manual and dependent on individuals, creating risks of delay and inconsistency (PT Bukit Asam, 2024). Scholars highlight that weak monitoring and poor understanding of procurement practices are common barriers in implementing local content policies (Tordo et al., 2013; Nickerson & Geipel, 2019).

E-procurement systems serve as essential instruments for transparency and accountability. Lemar (2018) notes that e-procurement simplifies processes and strengthens oversight, while Gunasegaran et al. (2023) warn that non-automated systems risk errors and manipulation. In Indonesia, system integration with regulatory and sustainability policies remains a challenge (Utami et al., 2024). User experience is also critical, as systems must be intuitive and provide advanced reporting features to ensure adoption (Hashim et al., 2022).

Decision Support Systems (DSS) support managers by delivering structured and timely information. Adam et al. (2012) emphasize that ethics must be embedded into DSS

design to ensure decisions align with social norms, while Sharmin and Chowdhury (2025) and Lamothe et al. (2025) show that ethical DSS enhances accountability and trust in the public sector. For SOEs such as PTBA, embedding AKHLAK values into DSS is therefore essential.

Knowledge Management (KM) prevents overreliance on individuals and secures organizational continuity. Without systematic documentation, knowledge loss is likely when key personnel are unavailable (Davenport & Prusak, 2010). KM-based dashboards help integrate procurement data in real time, enabling responsive decisions and functioning as organizational "memory banks" (Pakkala et al., 2024; Micolta Diaz, 2025; Sulistyawati, 2024).

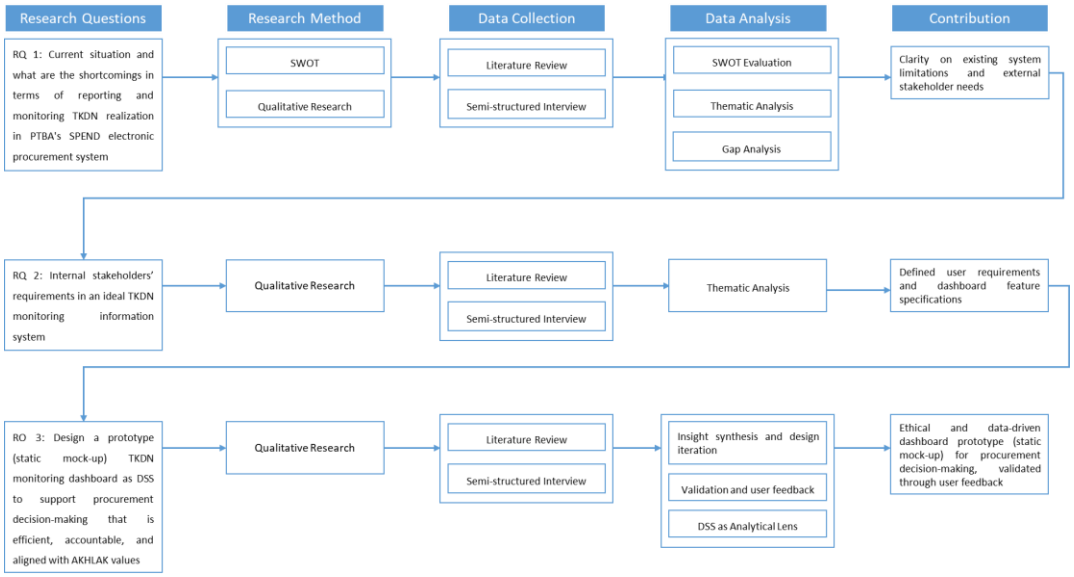
User-Centered Design (UCD) ensures dashboards reflect actual user needs. Cepero et al. (2025) and Rahman et al. (2025) confirm that UCD-based dashboards deliver more intuitive and relevant insights, while Kevin et al. (2024) and Myakala et al. (2024) highlight visualization features such as filters, interactive charts, and trend graphs that simplify analysis. In crisis contexts, UCD ensures both speed and accuracy in interpreting data (Yue et al., 2024).

Finally, SWOT analysis is a strategic tool for aligning organizational strengths and weaknesses with external opportunities and threats (Gürel & Tat, 2017). Panagiotou (2003) shows that integrating SWOT with information systems enhances situational awareness and supports strategy formulation. In this research, SWOT provides the rationale for mapping internal limitations in TKDN reporting and connecting them with opportunities such as digital dashboard development, thereby justifying the design of a DSS that is both technically robust and ethically grounded.

RESEARCH METHOD

This study employed an exploratory qualitative research design combined with a user-centered system design approach. The research aimed to develop a prototype of a real-time TKDN monitoring dashboard integrated with the SPEND system, aligned with AKHLAK values as ethical guidelines for procurement governance. The research process consisted of problem identification, user requirement exploration, conceptual design, and prototype validation visualize in Figure 1.

Figure 1.
Research Design Diagram



The data were obtained from both primary and secondary sources. Primary data were collected through semi-structured interviews with internal stakeholders, including the Head of Procurement Division, department heads, system administrators, procurement specialists, and the designated TKDN data officer. Participant observation was also conducted, as the researcher was directly involved in the TKDN reporting process, allowing for contextual understanding of workflows and challenges. Secondary data were drawn from internal company documents such as procurement guidelines, reporting templates, and management decrees, as well as relevant government regulations and academic literature on decision support systems, knowledge management, user-centered design, and procurement governance. A summary of the interview framework and respondents is presented in Table 1. Interview Questions and Respondents List.

Table 1
Interview Questions and Respondents List

Research Questions	Data Needed	Interview Questions	Source/ Reference	Respondents
RQ1: What is the current condition, and what are the shortcomings in the recording, reporting, and monitoring of TKDN	Current Reporting and Monitoring Process, User Roles, Challenges, Data Accuracy, and	1. How is the current reporting and/or monitoring process of TKDN realization conducted in your unit?	"Business process monitoring refers to the collection and analysis of process execution data to understand what is happening within an organization's workflows and to ensure they align with expected	• Procurement Division Head • Procurement Planning Dept. Head • PIC TKDN Data • PIC SPEND System

Research Questions	Data Needed	Interview Questions	Source/ Reference	Respondents
realization in PTBA's SPEND electronic procurement system?	Responsiveness.		performance." (Dumas et al., 2018)	• PIC TKDN Policy
		2. What challenges or limitations do you encounter during the reporting or monitoring of TKDN?	"Barriers to PHCIS adoption included limited infrastructure, lack of trained personnel, resistance to change, and insufficient financial resources, all of which hindered effective system implementation." (Afrizal et al., 2019)	
RQ2: What aspects are required by internal stakeholders in an ideal TKDN monitoring information system?	Key Information Needs, Data Presentation Preferences, and Required Dashboard Features to Support Efficiency and Decision-Making.	1. What types of information are most essential for you when preparing or reviewing TKDN realization reports?	"For managerial decision-making, information should be accurate, relevant, and timely to be effective in guiding strategic and operational actions." (Gunarathne & Lee, 2019)	• Procurement Division Head • Procurement Planning Dept. Head • PIC TKDN Data • PIC SPEND System • PIC TKDN Policy • Procurement Specialist • Purchasing Specialist • Contract Specialist
		2. What kind of dashboard design and features would be most helpful for you in carrying out your work?	"Dashboards should display the most important information needed to achieve one or more objectives, consolidated and arranged on a single screen so the information can be monitored at a glance." (Few, 2012)	

Research Questions	Data Needed	Interview Questions	Source/ Reference	Respondents
RQ3: How should a TKDN monitoring dashboard, as part of a Decision Support System (DSS), be designed to support procurement decision-making that is efficient, accountable, and aligned with AKHLAK values?	Decision-Making Support, Integration of AKHLAK Principles, and Expectations for Data Integration.	1. In what ways can a TKDN monitoring dashboard support you in achieving more efficient and accountable procurement decision-making?	"A decision support system (DSS) provides managers with tools and access to databases, enabling them to analyze information and make informed decisions efficiently and effectively." (Sharda, 2006)	• Procurement Division Head • Procurement Planning Dept. Head • PIC TKDN Data • PIC SPEND System • PIC TKDN Policy • Procurement Specialist • Purchasing Specialist • Contract Specialist
		2. In your daily work, are there specific situations where you feel the need to refer to TKDN data to support decision-making or team coordination ?	"Collaboration enables teams to coordinate their efforts and make decisions more efficiently. This capability enhances information sharing and ensures that all team members have access to accurate and timely data." (Qudrat-Ullah, 2025)	
		3. In your opinion, how can the principles of AKHLAK be reflected within the dashboard design?	"When organizational values are embedded into systems and processes, they reinforce the desired culture and guide behavior throughout the organization." (Schein, 2010)	

The types of data collected included qualitative narratives on current reporting practices, user expectations for dashboard features, and perceptions of AKHLAK integration, complemented by documentary evidence of procurement processes and regulatory requirements. Data analysis was conducted using a descriptive interpretative approach through thematic coding. Interview transcripts and observation notes were categorized into

themes such as reporting limitations, user requirements, and ethical values. These themes were then synthesized to formulate system requirements and dashboard features. Validation was carried out conceptually by reconfirming the findings with key informants to ensure alignment between the proposed design and user needs. The final output was a static mock up of the TKDN monitoring dashboard, serving as a conceptual prototype for further technical development.

RESULTS AND DISCUSSION

The empirical findings reveal that the current TKDN reporting process at PTBA remains highly manual, relying on Excel-based compilation by a single person-in-charge (PIC). This creates bottlenecks, risks of delays, and limited transparency. Thematic analysis of interviews confirmed three main themes: (1) limitations of the existing reporting system, (2) the need for an interactive real-time dashboard, and (3) expectations for embedding AKHLAK values such as Amanah, Kompeten, and Kolaboratif into system design. These findings are summarized in Table 2 below.

Table 2.
Summary of Thematic Analysis Interview Results

Respondent	Question	Answer	Initial Code	Theme
Procurement Division Head	How is the current reporting and/or monitoring process of TKDN realization conducted in your unit?	The reporting and monitoring process of TKDN begins with the estimation stage, in which TKDN values are determined when the Purchase Requisition (PR) is submitted by the user and subsequently verified by the procurement analyst alongside the verification of the Owner's Estimate (HPS) and the Terms of Reference (KAK). This TKDN value then serves as a reference during the tender process, after which the final committed TKDN value of the winning bidder or contractor is recorded in the SPEND system. Reporting and monitoring are often requested by external parties and are managed by the designated PIC, with the submitted reports typically prepared in Excel format	Limited Data Accessibility	Limitations of the Reporting System
	What challenges or limitations do	The main challenge lies in the limited visualization capabilities of the SPEND system regarding	Manual Processes	Limitations of the

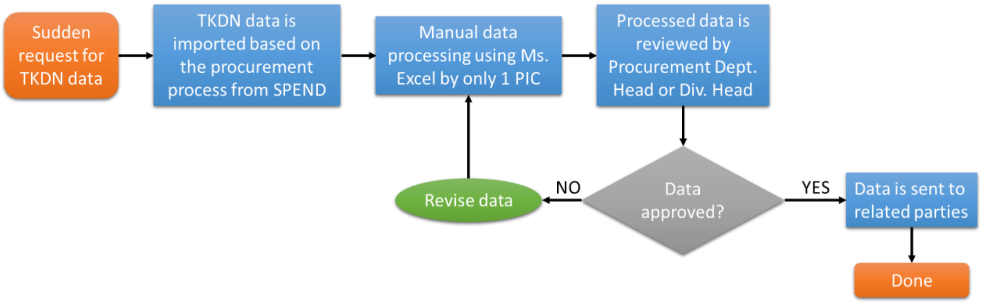
Respondent	Question	Answer	Initial Code	Theme
	you encounter during the reporting or monitoring of TKDN?	TKDN data, which creates a dependency on the TKDN Data PIC as the sole custodian of the most updated information. Furthermore, reporting and monitoring are still verified manually using Excel files processed by the PIC, which occasionally introduces human error due to the large volume of data involved. Currently, only one PIC is responsible for managing TKDN data. Nevertheless, the SPEND system itself provides a strong foundation, as it already documents all procurement contracts and their corresponding TKDN values		Reporting System
Procurement Planning Dept. Head	In what ways can a TKDN monitoring dashboard support you in achieving more efficient and accountable procurement decision-making?	The introduction of a real-time dashboard would significantly accelerate decision-making processes, as users would no longer need to wait for manual compilation by the PIC. This is especially crucial when sudden requests arise from management or external institutions. Moreover, presenting information in a transparent and structured manner would help reinforce accountability and openness in procurement decisions. From the perspective of the planning function, such a dashboard could serve as a strategic tool to ensure that procurement activities remain aligned with the principle of Amanah and contribute to achieving the company's TKDN targets. An integrated dashboard directly connected to SPEND, without requiring manual data	The Role of the Dashboard as a Decision Support System (DSS)	Need for an Interactive Dashboard

Respondent	Question	Answer	Initial Code	Theme
		processing, would provide faster and more accurate insights		
PIC TKDN Data	What types of information are most essential for you when preparing or reviewing TKDN realization reports?	Given that the most frequent data requests come from the Ministry of Energy and Mineral Resources (ESDM) regarding RKAB (Work Plan and Budget) categories, the first priority is access to TKDN realization data per RKAB category. In addition, realization data at the item level for goods and services, vendor-level TKDN realization, as well as historical realization data to support TKDN projections are also essential. Realization data categorized by division, procurement type, or goods/services category would likewise be valuable to expedite searches for sudden requests from external institutions.	Need for Realization Data	Need for an Interactive Dashboard
	What kind of dashboard design and features would be most helpful for you in carrying out your work?	From the perspective of the PIC responsible for processing and presenting TKDN data, an ideal dashboard should provide up-to-date realization data that can be accessed at any time. Filtering features are also critical, for instance by year, procurement category, division, or even down to vendor level, to facilitate data retrieval according to specific needs. Visual elements such as trend graphs, comparisons between realization and targets, and the largest contributors by category or vendor would be highly useful for rapid analysis. If the dashboard could also display historical data dynamically, users could	Visualization and Filtering Features	Need for an Interactive Dashboard

Respondent	Question	Answer	Initial Code	Theme
		immediately observe annual performance patterns without having to manually open multiple Excel files. This would greatly simplify the preparation of periodic reports for institutions such as the Ministry of Energy and Mineral Resources (ESDM) or MIND ID, as well as enhance responsiveness in addressing audit queries from bodies such as the Audit Board of Indonesia (BPK).		
Purchasing Specialist	In your opinion, how can the principles of AKHLAK be reflected within the dashboard design?	From the perspective of a Purchasing Specialist, a TKDN dashboard could strengthen the application of AKHLAK values. Amanah is reflected in the transparent and traceable presentation of vendors' TKDN commitments. Kompeten is demonstrated in the use of data-driven, objective evaluations of suppliers. Adaptif is represented through the adoption of digital systems that enable more accurate and efficient tender processes. Kolaboratif and Harmonis are evident in the way the dashboard facilitates cross-functional coordination between purchasing, planning, legal, and TKDN teams. Finally, Loyal is embodied in the company's commitment to consistently implementing TKDN regulations with transparency across all procurement processes.	Organizational Values	Integration of AKHLAK Values into the System

Participant observation further illustrated that urgent data requests from regulators require multi-step manual processing, with verification bottlenecks that delay reporting. This process flow is depicted in Figure 2. The analysis indicates that the absence of automated visualization and reliance on manual verification not only reduces efficiency but also contradicts knowledge management principles, which emphasize systematic documentation and accessibility across units (Davenport & Prusak, 2010; Pakkala et al., 2024).

Figure 2.
Participant Observation Result Flowchart



A SWOT analysis was conducted to systematically map the strengths, weaknesses, opportunities, and threats of the current reporting system. While SPEND provides a solid digital foundation, its lack of visualization features represents a key weakness, creating dependency on a single PIC. Opportunities lie in developing a real-time dashboard to enhance responsiveness and transparency, while threats include risks of audit delays due to sudden data requests (Table 3). These findings align with Gürel & Tat (2017), who stress the role of SWOT in identifying organizational gaps that inform system development.

Table 3.
SWOT Analysis of the Current TKDN Reporting System

Strengths			Weaknesses		
Points	**Keywords**	**Respondent Quote**	**Points**	**Keywords**	**Respondent Quote**
Procurement data and TKDN estimates have been documented in the SPEND system since the beginning of the process.	Documented	"...The SPEND system has served as a strong foundation, as it documents all contract data and TKDN values throughout the procurement process." (Procurement Div. Head)	Reporting processes are still conducted manually using Microsoft Excel, which increases the risk of input errors.	Manual, Ms. Excel	"...there is no dedicated feature or menu for TKDN, requiring the SPEND system PIC to first export the data before it can be further processed manually using Microsoft Excel for reporting and monitoring purposes." (PIC TKDN Data)

Information on TKDN estimates, vendors, and goods/services items is recorded from the initial procurement stage, making it easily retrievable from SPEND.	Recorded	"Currently, SPEND records essential information such as TKDN estimates, vendors, and goods/services items from the early stages of procurement." (Procurement Planning Dept. Head)	The SPEND system does not provide dedicated visualization or specific menus for TKDN data.	Unavailable TKDN Visualization	"The main challenge lies in the absence of a dedicated visualization function for TKDN data within SPEND. Consequently, monitoring and reporting processes remain non-automated, as the system does not yet provide a specific TKDN module." (Procurement Planning Dept. Head
Opportunities			**Threats**		
Points	**Keywords**	**Respondent Quote**	**Points**	**Keywords**	**Respondent Quote**
Developing a real-time monitoring dashboard could significantly improve the speed of TKDN information access.	Real-time Dashboard	"A real-time dashboard would significantly enhance decision-making by enabling more responsive and transparent access to information. It would also simplify data analysis while reducing dependence on the TKDN Data PIC."	Dependence on a single PIC creates a process risk if the PIC is unavailable.	Dependence	"...TKDN data must be manually processed in Excel by only 1 TKDN Data PIC, who verifies the data line by line. Given the large volume of data, the risk of human error remains considerable." (Procurement Planning Dept. Head)

		(Procurement Div. Head)			
The dashboard has the potential to enhance reporting transparency and reflect the company's AKHLAK values.	Reflect AKHLAK values	"Through a real-time TKDN dashboard, AKHLAK values can be embedded into practice—for example, Amanah (trustworthiness) through transparent data visualization, Adaptif (adaptability) through the Procurement Division's innovation in improving SPEND, and Kolaboratif (collaboration) through cross-unit cooperation, particularly with the IT Division in system development." (Procurement Planning Dept. Head	Sudden data requests from regulators can create pressure and risks of delays, as the system is not yet fully digitalized.	Sudden data request	"From a policy perspective, the primary challenge is the absence of a fully integrated system that links TKDN calculation, verification, and reporting. This gap complicates the process of demonstrating compliance with regulations, particularly in the event of sudden audit requests." (PIC TKDN Policy)

User needs analysis revealed clear requirements for dashboard functionality: granular visualization by category and vendor, dynamic filters, achievement trend monitoring, and full integration with SPEND. These expectations are presented in Table 4. Such features reflect user-centered design principles (Cepero et al., 2025; Rahman et al., 2025) and are

consistent with the view that intuitive dashboards accelerate decision-making (Myakala et al., 2024; Yue et al., 2024).

Table 4.
Dashboard Functional Needs and Respondent Quotes

Feature Category	User Expectations	Goals	Respondent Quote
Granular visualization	Display of data by procurement category, type of goods/services, and vendor through interactive charts.	Evaluation of TKDN achievement and identification of areas for improvement.	"Visual displays such as trend charts, comparisons between realization and targets, and the largest TKDN contributions by category or vendor would be highly beneficial for rapid analysis. If the dashboard could also present historical data dynamically, I would be able to directly observe achievement patterns across years without the need to open individual Excel files..." (PIC TKDN Data)
Dynamic filter	Filtering of data by year, type of procurement, category, and contract value.	Flexible and thematic reporting.	"In my view, it would be very useful if the dashboard could present TKDN realization data periodically, for example on a monthly basis, with the option to filter by year…" (Procurement Planning Dept. Head)
Achievement trend	Visualization of monthly and annual TKDN achievement trends, both in aggregate and at the unit level.	Strategic procurement planning and monitoring of achievement.	"From my perspective, the dashboard should display TKDN realization compared with total spending, highlight the largest TKDN contributions in terms of monetary value by division and by goods/services category, and provide TKDN data classified by RKAB category, as this is regularly requested by the Ministry of Energy and Mineral Resources every

Feature Category	User Expectations	Goals	Respondent Quote
			quarter." (Procurement Div. Head)
Integration with SPEND/CISEA	Direct connection to the system, eliminating the need for duplicate inputs or manual exports.	Efficiency and real-time data accessibility.	"As a system administrator, I believe it would be highly beneficial if there were a backend module to facilitate data export in standard reporting formats required by the Ministry or auditors. A real-time dashboard that retrieves data directly from SPEND would represent a significant leap forward in monitoring efficiency, both for audit purposes and for internal strategic use..." (PIC SPEND System)

The integration of AKHLAK values into dashboard design was also emphasized by users. For example, Amanah is reflected in transparent visualization, Kompeten in accurate and up-to-date indicators, Adaptif in responsive filtering functions, and Kolaboratif in multi-user system access. The mapping of these values to dashboard features is detailed in Table 5. This confirms Sharmin & Chowdhury (2025) that ethical DSS strengthens public trust by embedding values into system operations.

Table 5.
Mapping AKHLAK Values in Dashboard Design

AKHLAK Values	Implementation on the Dashboard
Amanah (Transparency & Integrity)	Provision of real-time and visualized TKDN realization data, complemented by verified data sources from the SPEND system
Kompeten (Data-Driven Decision-Making)	Presentation of key indicators such as TKDN achievement percentage, monthly and annual trends, and cross-category comparisons to facilitate rapid and accurate analysis
Harmonis (Inter-Functional Synergy)	Dashboard access is available across relevant units, ensuring that all stakeholders share a common data reference for effective coordination
Loyal (Commitment to Shared Goals)	Visualization of TKDN achievements by unit/division, highlighting each unit's contribution to the company's overall targets

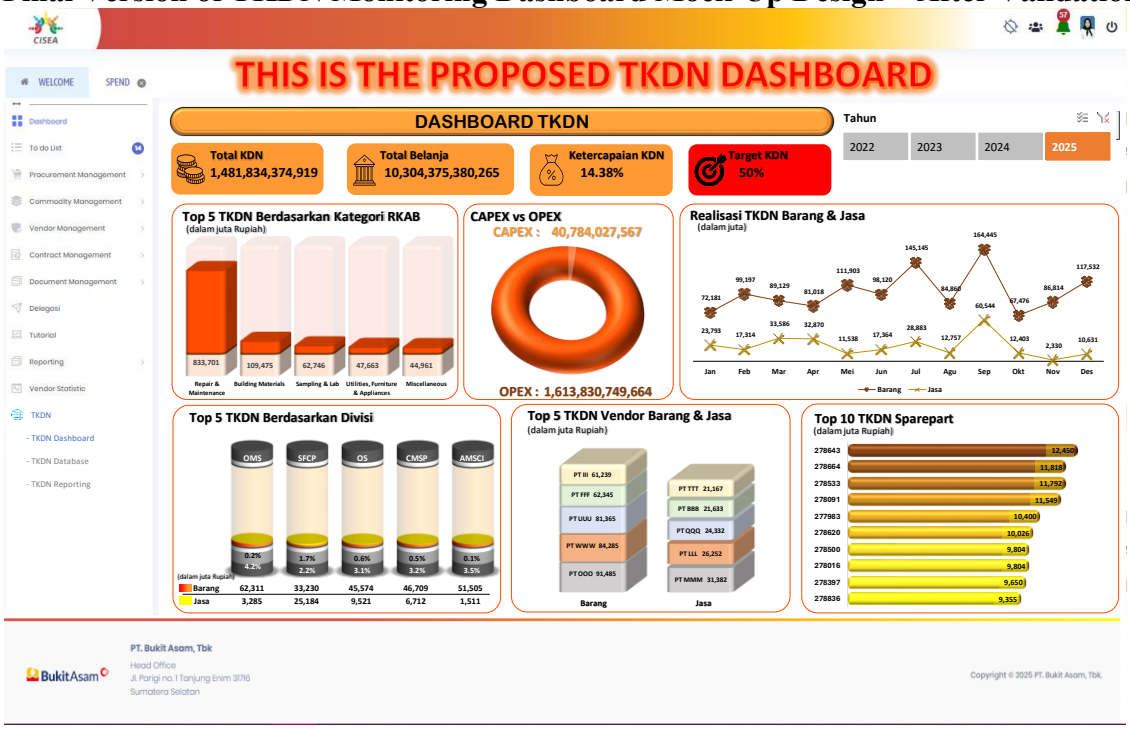
Vol. 8. No. 3 (2025)
Page: 15117-15136

AKHLAK Values	Implementation on the Dashboard
Adaptif (Responsiveness to Change)	Dynamic filtering features (e.g., year-based filters) that allow users to adjust data displays according to situational needs or urgent data requests
Kolaboratif (Cross-Functional Access)	Integration with SPEND to enable automatic data updates without manual processing, thereby supporting real-time collaboration across teams

Based on these findings, a static mock-up of the real-time TKDN dashboard was developed. The final version, after user validation, includes summary indicators, category/vendor charts, monthly performance trends, and supporting modules such as a TKDN database and reporting menu (Figure 3. Final Version of TKDN Monitoring Dashboard Mock-Up Design – After Validation). This design demonstrates how DSS theory and user-centered design can be operationalized in SOE procurement, contributing not only to efficiency but also to value-based governance.

Overall, these results highlight that while PTBA's SPEND system provides a strong digital foundation, its current limitations hinder effective decision-making. The proposed dashboard design represents a novel contribution by integrating DSS, UCD, and AKHLAK values into a unified procurement governance tool. This aligns with previous studies on ethical DSS (Adam et al., 2012; Lamothe et al., 2025) while offering empirical evidence from Indonesia's mining sector.

Figure 3.
Final Version of TKDN Monitoring Dashboard Mock-Up Design – After Validation



CONCLUSION

This study examined the limitations of TKDN reporting at PT Bukit Asam (PTBA) and proposed the design of a real time monitoring dashboard as part of a Decision Support System (DSS). The findings show that the current system remains dependent on manual Excel based processing and a single person-in-charge, leading to inefficiency, lack of responsiveness, and risks of data inconsistency. Through interviews, observation, and document review, three main themes emerged: the limitations of the current reporting system, user requirements for an interactive dashboard, and the importance of embedding AKHLAK values in system design. A validated static mock-up was produced, demonstrating features such as real-time visualization, dynamic filters, and role-based access.

Theoretically, this study contributes to DSS literature by integrating user-centered design, knowledge management, and ethical values into a unified dashboard model. It highlights how embedding organizational values—in this case, AKHLAK—into system design strengthens accountability and trust, extending previous research on ethical DSS in public procurement. The use of SWOT analysis to guide dashboard development also illustrates a strategic approach to aligning internal weaknesses with opportunities for digital transformation.

Practically, the proposed dashboard addresses pressing operational needs by improving reporting efficiency, enhancing data transparency, and reducing dependence on individuals. For PTBA, it offers a blueprint for optimizing the SPEND system and strengthening procurement governance in line with regulatory compliance and national industrial policy.

Theoretical Implications:

- Enriches DSS literature by embedding ethical values (AKHLAK) into system design.
- Demonstrates the integration of user-centered design and knowledge management in developing value-based dashboards.
- Provides a methodological example of using SWOT analysis to align empirical findings with system design.

Practical Implications:

- Offers PTBA a ready-to-use blueprint for real-time TKDN monitoring.
- Enhances procurement governance by improving accuracy, efficiency, and transparency.
- Supports regulatory compliance and strengthens accountability in line with SOE governance principles.

Future research could extend this work by implementing and testing the dashboard in practice, evaluating its impact on decision-making speed, accuracy, and organizational performance. Comparative studies across different SOEs or sectors would also enrich the understanding of how value-based DSS can be applied in broader contexts.

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