

## DEVELOPING A FRAUD-RESISTANT PERFORMANCE-BASED BUDGETING MODEL FOR THE INDONESIAN NAVY: AN APPLICATION OF ACFE AND COSO FRAMEWORKS

### DESENVOLVENDO UM MODELO DE ORÇAMENTO BASEADO EM DESEMPENHO RESISTENTE A FRAUDES PARA A MARINHA INDONÉSIA: UMA APLICAÇÃO DOS FRAMEWORKS ACFE E COSO

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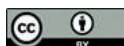
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#### Abstract

This study develops a fraud-resistant performance-based budgeting (PBK) model for the Indonesian Navy (TNI AL) by integrating the Association of Certified Fraud Examiners (ACFE) standards and the COSO internal control framework. Recent regulatory reforms in Indonesia (Minister of Finance Regulation No. 62/2023 and PMK 107/2024) emphasize performance alignment and accountability in public budgeting, yet implementation in defense institutions remains uneven and vulnerable to irregularities. Using a qualitative case study design, the research draws on semi-structured interviews with planning, finance, and internal audit personnel at TNI AL Headquarters (Srena, Diskual, and Itjenal), document review, and NVivo-assisted thematic analysis. Findings indicate that while the TNI AL has adopted performance-based planning mechanisms, gaps remain in risk assessment, monitoring, and detailed activity costing—factors associated with repeated budget revisions and reported overpayments. The study identifies multiple

#### Resumo

*Este estudo desenvolve um modelo de orçamento baseado em desempenho (PBK) resistente a fraudes para a Marinha da Indonésia (TNI AL), integrando os padrões da Associação de Examinadores de Fraudes Certificados (ACFE) e a estrutura de controle interno COSO. As recentes reformas regulatórias na Indonésia (Decreto do Ministério das Finanças nº 62/2023 e PMK 107/2024) enfatizam o alinhamento de desempenho e a responsabilização no orçamento público, mas a implementação nas instituições de defesa permanece desigual e vulnerável a irregularidades. Utilizando uma abordagem qualitativa de estudo de caso, a pesquisa se baseia em entrevistas semiestruturadas com pessoal de planejamento, finanças e auditoria interna do Quartel-General da TNI AL (Srena, Diskual e Itjenal), revisão de documentos e análise temática com auxílio do NVivo. Os resultados indicam que, embora a TNI AL tenha adotado mecanismos de planejamento baseado em desempenho, ainda existem lacunas na avaliação de riscos, no*



fraud drivers consistent with the ACFE Fraud Hexagon (pressure, opportunity, rationalization, capability, ego, collusion), compounded by organizational factors (limited accounting capacity, cultural constraints on whistleblowing, and budget shortfalls). Based on these findings, we propose a revised PBK model that (1) applies SMART criteria to planning; (2) strengthens separation of duties and monitoring through COSO components; (3) enhances transparency and expenditure analysis via detailed RKA-K/L and e-reporting integration; and (4) embeds ACFE-aligned anti-fraud controls (whistleblowing, continuous audit, and anti-bribery measures). The proposed model is intended to improve the integrity and efficiency of defense budgeting and to inform policymakers and auditors designing controls in high-risk public sectors. The paper concludes with policy recommendations and directions for empirical validation across other defense branches.

**Keywords:** Fraud Prevention. Performance-Based Budgeting. Indonesian Navy. ACFE. COSO. Public Financial Management.

*monitoramento e no detalhamento dos custos das atividades — fatores associados a revisões orçamentárias repetidas e a relatos de pagamentos indevidos. O estudo identifica múltiplos fatores que impulsionam a fraude, consistentes com o Hexágono da Fraude da ACFE (pressão, oportunidade, racionalização, capacidade, ego e conluio), agravados por fatores organizacionais (capacidade contábil limitada, restrições culturais à denúncia de irregularidades e déficits orçamentários). Com base nessas descobertas, propomos um modelo de Orçamento Baseado em Desempenho (OBD) revisado que (1) aplica os critérios SMART ao planejamento; (2) fortalece a segregação de funções e o monitoramento por meio dos componentes do COSO; (3) aprimora a transparência e a análise de despesas por meio da integração detalhada de RKA-K/L e relatórios eletrônicos; e (4) incorpora controles antifraude alinhados à ACFE (denúncia de irregularidades, auditoria contínua e medidas anticorrupção). O modelo proposto visa aprimorar a integridade e a eficiência do orçamento de defesa e orientar formuladores de políticas e auditores na elaboração de controles em setores públicos de alto risco. O artigo conclui com recomendações de políticas e diretrizes para validação empírica em outros ramos das Forças Armadas.*

**Palavras-chave:** Prevenção de Fraude. Orçamento Baseado em Desempenho. Marinha da Indonésia. ACFE. COSO. Gestão Financeira Pública.

## 1 INTRODUCTION

Public financial governance within the defense sector presents unique challenges due to the complexity of military operations, the magnitude of procurement spending, and the need for confidentiality in strategic activities. These characteristics often limit transparency and make defense institutions vulnerable to irregularities in budgeting and financial reporting. In Indonesia, recent fiscal reforms—particularly the issuance of the Minister of Finance Regulation No. 62 of 2023 and its amendment PMK No. 107 of 2024—have emphasized the importance of performance-based budgeting (PBK) as a means of promoting efficiency, accountability, and measurable outcomes in public sector

expenditure. These reforms are intended to strengthen fiscal discipline and ensure that every rupiah spent by government institutions contributes directly to performance targets and strategic goals.

As part of the Indonesian National Armed Forces, the Indonesian Navy (Tentara Nasional Indonesia Angkatan Laut, or TNI AL) plays a critical role in safeguarding the nation's maritime sovereignty and supporting national development. The institution manages a significant portion of defense expenditures, including the procurement of defense systems, operational maintenance, and infrastructure development. However, the complexity of these activities and the decentralized nature of budget execution expose the Navy to potential risks of fraud and inefficiency. Findings from the Audit Board of Indonesia (BPK) in recent years have revealed recurring budget revisions, overpayments, and inconsistencies between planning and realization, suggesting that internal control mechanisms remain suboptimal. Such conditions highlight the necessity of developing a more robust budgeting system that not only aligns with performance-based principles but also embeds effective fraud prevention measures.

While performance-based budgeting has been widely adopted in Indonesia's civil institutions, its application in defense organizations remains underexplored. Previous research has tended to address budget performance or fraud prevention as separate issues, with limited attention to their integration. In particular, the link between the Association of Certified Fraud Examiners (ACFE) framework—widely recognized for identifying behavioral and structural causes of fraud—and the Committee of Sponsoring Organizations (COSO) internal control framework has not been systematically examined within the context of defense budgeting. This gap creates both theoretical and practical challenges: theoretically, it limits understanding of how fraud risk can be mitigated through internal control integration; practically, it constrains policymakers from designing budgeting models that are both performance-oriented and fraud-resistant.

To address these gaps, this study examines how performance-based budgeting is currently implemented within the Indonesian Navy and identifies the internal and external factors that contribute to potential fraud in budget management. The research further investigates how the principles of the ACFE Fraud Hexagon—comprising pressure, opportunity, rationalization, capability, ego, and collusion—manifest within the budgeting process, and how weaknesses in internal control exacerbate these risks.

Building upon these findings, the study seeks to develop an integrative performance-based budgeting model that combines the ACFE fraud risk framework with the COSO internal control components, thereby reinforcing accountability and transparency in defense financial management.

Ultimately, this research aims to provide both conceptual and practical contributions. Conceptually, it expands the theoretical understanding of fraud prevention by integrating behavioral and control-based frameworks within the domain of performance-based budgeting. Practically, it offers a model that can guide policymakers, auditors, and defense administrators in improving the integrity of budgeting systems within high-risk institutions. Through this approach, the study contributes to the realization of good and clean governance within Indonesia's defense sector and supports the government's broader agenda of financial reform and institutional accountability.

## **2 LITERATURE REVIEW**

### **2.1 Performance-based budgeting in the public sector**

Performance-based budgeting (PBK) is an approach that links financial allocations with measurable performance outputs and outcomes. It is designed to enhance efficiency and accountability by ensuring that government resources are directed toward activities that generate demonstrable public value (Manta, 2020). In the Indonesian context, PBK has been institutionalized through various regulations, most recently Minister of Finance Regulation No. 62 of 2023 and its amendment PMK 107 of 2024. These policies require that budget planning be based on three approaches: a medium-term expenditure framework, integrated budgeting, and performance-based evaluation.

PBK emphasizes measurable indicators, standardized cost structures, and performance evaluation as the foundation for budget planning and implementation. Empirical studies have shown that PBK enhances financial discipline, improves public accountability, and reduces inefficiency when implemented consistently (Petlenko *et al.*, 2023; Mangwanya, 2022). However, in many developing countries, including Indonesia, implementation challenges persist due to administrative complexity, capacity constraints,

and limited understanding of performance metrics among budget officers (Biswan & Grafitanti, 2021; Mirzamani *et al.*, 2022).

## 2.2 Fraud risk and the ACFE framework

Fraud in public budgeting is a deliberate act intended to obtain unlawful financial or personal gain, typically arising from weaknesses in governance and internal control systems (Friyani & Hernando, 2019). The Association of Certified Fraud Examiners (ACFE) provides one of the most widely used analytical frameworks for understanding the causes of fraud through its Fraud Triangle—comprising pressure, opportunity, and rationalization—and its later expansion into the Fraud Pentagon and Fraud Hexagon models. The Fraud Hexagon introduces three additional dimensions: capability, ego, and collusion, recognizing that organizational culture and individual power dynamics also contribute to fraudulent behavior (Tarjo & Sakti, 2022).

Research shows that pressure often originates from unrealistic performance targets or personal financial stress, while opportunity stems from weak supervision or lack of transparency in procedures (Thomann *et al.*, 2025). Rationalization involves moral justification for unethical acts, whereas capability reflects the perpetrator's knowledge and authority to exploit control weaknesses (Sukmadilaga *et al.*, 2022). Ego represents arrogance or entitlement, and collusion denotes cooperation among individuals to conceal fraud (Çollaku *et al.*, 2024; De Klerk, 2017).

In the context of government budgeting, these elements often interact with systemic issues such as inadequate segregation of duties, insufficient training, and limited accountability mechanisms (Ahmar *et al.*, 2024). Applying the ACFE framework in public organizations, therefore, allows a more nuanced understanding of how individual behavior and institutional design contribute to financial misconduct. Integrating this framework into budgeting systems is crucial for identifying early warning indicators and developing targeted preventive controls (Kagias *et al.*, 2022).

### 2.3 Internal control and the COSO framework

An effective internal control system serves as the backbone of any effort to prevent and detect fraud. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed an integrated framework that defines internal control as a process designed to provide reasonable assurance regarding the achievement of organizational objectives related to operations, reporting, and compliance (Chan *et al.*, 2021). COSO identifies five interrelated components—control environment, risk assessment, control activities, information and communication, and monitoring—which together provide a comprehensive approach to managing risks and ensuring accountability.

Empirical studies have demonstrated that organizations with strong COSO-based control systems experience lower instances of budget manipulation, procurement fraud, and misreporting (Hamza *et al.*, 2025; Maulidi & Ansell, 2021). In public institutions, applying COSO principles supports not only compliance with financial regulations but also the creation of a culture of integrity and performance accountability (Vallabhaneni, 2024). Within the defense sector, COSO is particularly relevant given the high complexity of operations and the need for systematic risk management. However, research by Ferreira *et al.* (2024) notes that the military's hierarchical structure often limits horizontal communication and feedback, weakening the monitoring component of COSO and increasing the potential for internal control lapses.

### 2.4 Integrating ACFE and COSO in performance-based budgeting

The intersection of ACFE and COSO frameworks offers a comprehensive approach to fraud-resistant budgeting. While ACFE explains the behavioral and situational causes of fraud, COSO provides a structural and procedural mechanism to prevent it. Combining both allows public institutions to address fraud at multiple levels: behavioral, organizational, and systemic (Sapovadia, 2025; Anggraini *et al.*, 2023).

Recent research has emphasized the importance of integrating fraud risk management into budgeting and performance management systems. For example, Gotelaere and Paoli (2025) argue that embedding risk assessment and control activities

within PBK cycles enhances both efficiency and integrity. Similarly, Bracci *et al.* (2024) highlights that integrating behavioral fraud models into internal control systems allows for more proactive detection and prevention. Within Indonesia's public sector, however, such integration remains limited, particularly in defense institutions where the culture of hierarchy and confidentiality often constrains open reporting and transparency.

Therefore, developing a PBK model that systematically integrates ACFE's behavioral risk indicators with COSO's control components represents a significant innovation in public financial management. It allows for dynamic fraud prevention embedded within each phase of the budget cycle—planning, implementation, reporting, and evaluation—thus supporting both regulatory compliance and organizational integrity. Based on the reviewed literature, this study constructs a conceptual framework that integrates three key elements: (1) performance-based budgeting principles emphasizing measurable performance and accountability; (2) ACFE's Fraud Hexagon explaining the behavioral and motivational drivers of fraud; and (3) COSO's internal control system providing structural safeguards against misconduct.

In this integrated model, ACFE factors (pressure, opportunity, rationalization, capability, ego, and collusion) represent the internal and external risks inherent in budgeting activities. The COSO components act as mitigating mechanisms—where the control environment and risk assessment help identify vulnerabilities, control activities and monitoring reduce opportunities for fraud, and information and communication promote transparency. Together, these systems reinforce the design of a fraud-resistant PBK model that enhances accountability, minimizes irregularities, and aligns with Indonesia's ongoing public financial management reforms.

### 3 METHODS

This study adopts a qualitative case study design to explore how performance-based budgeting (PBK) is implemented and how fraud risk factors emerge within the Indonesian Navy (TNI AL). The case study approach was chosen because it allows for in-depth exploration of organizational processes and behaviors within their real-life context (Yin, 2018). The method is suitable for examining complex governance systems—such as budgeting and internal control—where multiple administrative,

behavioral, and contextual factors interact. The focus of this research is not only to describe existing budgeting mechanisms but also to interpret the interplay between institutional rules, human behavior, and control structures as framed by the ACFE and COSO models.

The research was conducted within the organizational structure of the Indonesian Navy Headquarters (Mabesal), focusing on three key directorates involved in budgeting and financial governance:

1. The Budget and Financial Planning Staff (Srena), responsible for strategic and operational budget planning;
2. The Inspectorate General of the Navy (Itjenal), which functions as the internal supervisory body; and
3. The Navy Finance Office (Diskual), responsible for accounting, financial reporting, and budget realization.

In addition to these internal units, data were collected from relevant external stakeholders such as the Ministry of Finance—specifically the Directorate General of Budget—and the Audit Board of Indonesia (BPK) to obtain perspectives on compliance and audit findings. The Indonesian Navy was selected as a single case because it represents a large, hierarchical organization that operates under strict confidentiality but manages significant state financial resources—conditions that create both a need and a challenge for implementing fraud-resistant budgeting systems.

Participants were selected using purposive sampling, aimed at identifying individuals with direct involvement or expertise in budgeting, financial control, and auditing processes. The study engaged 12 informants across the identified institutions, including planning officers, financial managers, internal auditors, and oversight personnel. Selection was guided by the principles of data relevance and positional diversity to ensure representation from both operational and supervisory levels.

All interviews were conducted between March and August 2024 through a combination of in-person and virtual meetings. Prior to data collection, participants were informed of the study's purpose, and informed consent was obtained in accordance with research ethics protocols. Confidentiality was maintained by anonymizing participant identities and designating them with coded references.

Three primary data collection techniques were employed:

1. Semi-structured interviews were conducted using an interview guide derived from the ACFE and COSO frameworks. Questions explored participants' experiences with PBK implementation, internal control mechanisms, risk assessment practices, and perceptions of fraud vulnerability. Each interview lasted between 45–90 minutes and was audio-recorded with permission.
2. Document analysis included official regulations (PMK No. 62/2023, PMK No. 107/2024), internal budgeting guidelines, audit findings from the Audit Board (BPK), and relevant policy memoranda from the Navy's internal finance and planning divisions.
3. Observation and correspondence were conducted with planning and audit units to understand workflow, data flow, and coordination processes during budget preparation and implementation.

Triangulating these data sources allowed the researcher to validate interpretations and ensure that the analysis reflected both formal policy structures and lived organizational experiences.

Data analysis followed a qualitative descriptive and thematic approach, supported by the use of NVivo 12 Plus software for systematic coding and pattern identification. The analysis proceeded through four stages:

1. Data familiarization, where interview transcripts and documents were read repeatedly to identify preliminary themes;
2. Initial coding, using deductive codes derived from ACFE's six fraud dimensions (pressure, opportunity, rationalization, capability, ego, and collusion) and COSO's five control components;
3. Theme development, where emerging patterns—such as weaknesses in control environment, monitoring gaps, and budget revision frequency—were grouped into higher-order categories; and
4. Interpretation and model formulation, which integrated empirical insights into the conceptual framework combining PBK, ACFE, and COSO elements.

Data visualization tools in NVivo, including word clouds, coding matrices, and project maps, were employed to capture relationships among fraud factors, control weaknesses, and budgeting outcomes. This process enabled the identification of causal

links between organizational culture, regulatory compliance, and fraud vulnerability within the Indonesian Navy's budgeting system.

To ensure research validity and reliability, the study applied several strategies consistent with Lincoln and Guba's (1985) criteria of trustworthiness (Enworo, 2023).

1. Credibility was enhanced through triangulation of data sources (interviews, documents, and observations) and member checking, whereby participants reviewed and verified key interpretations.
2. Transferability was addressed by providing detailed contextual descriptions of the Navy's budgeting environment, enabling other researchers to assess applicability to similar institutions.
3. Dependability was achieved through maintaining a comprehensive audit trail documenting data collection and analysis decisions.
4. Confirmability was ensured by systematically recording analytical memos in NVivo to minimize researcher bias and preserve transparency of interpretation.

The study received ethical clearance from the institutional review board of Hangtuh University, and all participants provided informed consent prior to data collection.

The chosen qualitative case study design provides a comprehensive understanding of how performance-based budgeting interacts with organizational structures and fraud risks in a real-world defense context. The triangulated data approach, systematic NVivo analysis, and integration of behavioral (ACFE) and control-based (COSO) theoretical perspectives collectively strengthen the methodological rigor of this research. This approach enables the study not only to identify the root causes of budgeting irregularities but also to propose an empirically grounded, fraud-resistant PBK model applicable to defense institutions.

## **4 RESULTS**

This section presents the findings of the study in three major parts:

1. The existing implementation of performance-based budgeting (PBK) in the Indonesian Navy;

2. The factors contributing to fraud risk and irregularities in budget management; and
3. The development of an integrated PBK model based on ACFE and COSO frameworks to strengthen fraud prevention mechanisms.

Findings were derived from thematic analysis of 12 semi-structured interviews, document reviews, and NVivo-assisted coding. To enhance transparency, themes are supported by illustrative excerpts and validated by cross-checking with secondary documentation such as audit reports and budget regulations.

#### **4.1 Implementation of performance-based budgeting in the Indonesian Navy**

The findings indicate that the Indonesian Navy has formally adopted the principles of performance-based budgeting as mandated by the Minister of Finance Regulations No. 62/2023 and 107/2024. Budget planning and execution are guided by performance indicators, standard cost structures, and evaluation mechanisms. However, implementation across Navy units remains uneven and largely compliance-oriented rather than outcome-focused.

Analysis of interview data revealed three major characteristics of current PBK practice:

##### **1. Administrative Conformity over Performance Integration**

Many informants emphasized that PBK implementation has been understood primarily as an administrative requirement rather than a management tool. As one planning officer noted,

“Our focus is on completing the documents according to the template from the Ministry of Finance, not necessarily on how these budgets translate into measurable operational results.” (P3, Srena)

This finding aligns with document analysis showing that the majority of budget revisions in 2023–2024 were related to reclassification of expenditures rather than to adjustments based on performance evaluations.

##### **2. Limited Use of Performance Indicators**

Although the Navy employs key performance indicators (KPIs) for each program, their integration into the budgeting process is minimal. The indicators are often general—

such as “readiness level” or “fleet deployment capacity”—without measurable cost-to-output correlations. NVivo coding of interview data showed frequent co-occurrence between “indicator ambiguity” and “budget inefficiency,” suggesting that unclear performance metrics contribute to ineffective resource allocation.

### 3. Weak Integration between Planning, Execution, and Evaluation

The analysis revealed fragmented coordination among the planning (Srena), implementation (Diskual), and supervisory (Itjenal) units. The absence of an integrated digital system results in manual data reconciliation and delays in reporting. The Navy’s reliance on bottom-up budget proposals from regional commands creates inconsistencies between planned and realized expenditures, leading to repeated budget revisions.

In summary, while the PBK framework has been formally implemented, its operationalization within the Navy remains procedural, lacking the analytical link between budget inputs and performance outcomes envisioned by the regulatory framework.

## 4.2 Fraud risk factors in the current budgeting model

NVivo-based thematic mapping of interviews and document data identified eight interrelated factors contributing to fraud risk in the Indonesian Navy’s budgeting system. These factors were analyzed within the ACFE Fraud Hexagon framework and supplemented by contextual organizational issues.

### 1. Pressure and Target-Driven Stress

Respondents indicated that pressure to meet administrative deadlines and budget absorption targets often led to rushed planning and data manipulation. Performance pressure was not only institutional but also personal, as delays in fund realization could affect officers’ evaluations and career prospects.

### 2. Opportunity through Weak Supervision

The study found that internal monitoring remains inconsistent. The Inspectorate General (Itjenal) has limited personnel relative to the number of budgetary units it oversees. One auditor commented:

“Monitoring focuses more on compliance checks than real-time supervision, so deviations are often found after disbursement rather than during planning.” (P7, Itjenal)

This reactive audit pattern increases the window for misuse of funds.

### 3. Rationalization and Cultural Justification

Several informants described how hierarchical culture encourages loyalty and silence over disclosure. Minor deviations are often rationalized as “operational flexibility.” This cultural element reflects a systemic tolerance that may gradually normalize unethical behavior.

### 4. Capability and Technical Expertise Gaps

Limited financial management skills among non-finance officers were a recurring theme. The absence of continuous training in government accounting standards (SAP) and digital budgeting tools constrains accurate documentation and facilitates manipulation.

### 5. Ego and Power Asymmetry

Senior officers’ authority over budget decisions occasionally overrides established procedures. This asymmetry of power reduces internal control effectiveness, consistent with ACFE’s dimension of arrogance or ego.

### 6. Collusion and Informal Networks

Evidence of informal coordination among budget handlers and contractors emerged from coded references under “favor exchange” and “mutual benefit.” Although not necessarily illegal in all cases, such practices weaken transparency and reinforce collusive habits.

### 7. External and Policy-Induced Factors

Changes in ministerial regulations, delayed budget ceilings, and inconsistent technical guidelines were cited as external pressures that create procedural ambiguity, indirectly increasing fraud risk.

### 8. Budget Shortfall and Misallocation

Periodic shortfalls between proposed and approved budgets encourage internal fund shifting and unrecorded reallocation. Analysis of BPK reports confirmed repeated cases of overpayment and fines due to late fund realization.

### 4.3 Development of a fraud-resistant PBK model

Drawing upon the combined insights from ACFE and COSO analysis, the study proposes a revised performance-based budgeting model for the Indonesian Navy that strengthens fraud prevention mechanisms at every stage of the budget cycle.

The model development process followed a synthesis of empirical findings and theoretical alignment, resulting in four interlinked stages:

#### 1. SMART-Based Budget Planning

Planning should adopt the SMART principles—specific, measurable, achievable, relevant, and time-bound—supported by evidence-based performance indicators and cost standards. Clear alignment between performance targets and funding allocations can minimize ambiguity and manipulation in planning.

#### 2. Transparent Budget Implementation and Documentation

Implementation should be conducted strictly according to approved DIPA documents. Integrating e-budgeting and e-reporting platforms will enable real-time verification of transactions and facilitate cross-checking among Srena, Diskual, and Itjenal units.

#### 3. Comprehensive Accounting and Financial Reporting

The Navy should strengthen its reporting mechanisms by synchronizing financial data with national systems such as SPAN and adopting standardized reporting templates to reduce discrepancies and late submissions.

#### 4. Integrated Internal Control and Supervision

Embedding the five COSO components within each phase of the PBK cycle—supported by ACFE’s behavioral insights—will create continuous preventive monitoring. This includes introducing whistleblowing channels, rotational assignments to minimize collusion, and capacity-building programs for budget officers.

The proposed model emphasizes an iterative feedback loop where audit findings and performance evaluations inform subsequent planning cycles. This transformation from a compliance-oriented to a performance-driven budgeting culture aligns with the government’s broader objective of realizing Good and Clean Governance in defense institutions.

## 5 DISCUSSION

The findings of this study provide a nuanced understanding of how performance-based budgeting (PBK) operates within the Indonesian Navy and why inconsistencies persist between regulatory intent and implementation outcomes. Although the Navy formally adheres to the principles outlined in the Minister of Finance Regulations No. 62/2023 and 107/2024, its budgeting practices remain largely compliance-oriented, emphasizing administrative completion rather than the realization of measurable performance outcomes. This result reflects the argument of Abbasov (2025) that performance-based budgeting in developing administrative systems often struggles to move beyond procedural compliance due to institutional inertia and capacity limitations. Within the Indonesian Navy, this phenomenon is amplified by its hierarchical structure, where authority concentration and strict command protocols hinder participatory budget formulation and dynamic performance evaluation.

The study's first major insight concerns the weak translation of performance indicators into operational budgeting. While PBK frameworks theoretically link resource allocation to measurable outputs, the Navy's indicators are often broad and unquantifiable, such as "readiness level" or "operational capability." This finding supports Islam (2025), who note that in developing countries, performance indicators tend to be symbolic rather than strategic, serving to legitimize budget submissions rather than to guide managerial decision-making. Consequently, resource allocation in the Navy remains input-driven, with little empirical linkage to outcomes. This limits the institution's ability to assess efficiency and identify deviations that could indicate fraud or inefficiency.

The second key finding relates to the systemic vulnerabilities that create opportunities for fraud, as interpreted through the lens of the ACFE Fraud Hexagon. Behavioral factors such as pressure, rationalization, and capability were particularly pronounced among middle-level officers responsible for budget preparation and execution. Pressure was largely institutional—manifested in the expectation to meet absorption targets within fiscal deadlines—yet it was compounded by personal motivations linked to performance evaluations and promotion criteria. This observation echoes Onyango (2021) and Tetteh *et al.* (2021), who found that bureaucratic pressure is

a dominant antecedent of financial misconduct in public institutions. Moreover, rationalization was facilitated by a culture of loyalty and obedience to authority, where deviations from procedure were often justified as operational necessity. Such cultural rationalization is consistent with Ellestad & Winton (2024) theoretical premise that ethical compromise is frequently rationalized when organizational culture prioritizes results over integrity.

The opportunity for fraud within the Navy's budgeting system arises primarily from weaknesses in internal control mechanisms, notably in the areas of monitoring and risk assessment. Although the control environment—anchored by strict military discipline—appears strong, its rigidity paradoxically discourages open reporting of irregularities. Similar to findings by Ladwig III & Mukherjee (2024), this study reveals that hierarchical structures often undermine feedback loops essential for preventive oversight. The reliance on post-facto audits rather than continuous supervision further aligns with Yanti & Wijaya (2020), who emphasizes that reactive audit cultures fail to deter fraud because they identify irregularities only after financial damage occurs. Thus, while the Navy's internal control framework is formally aligned with the COSO model, its practical effectiveness remains constrained by cultural and procedural barriers.

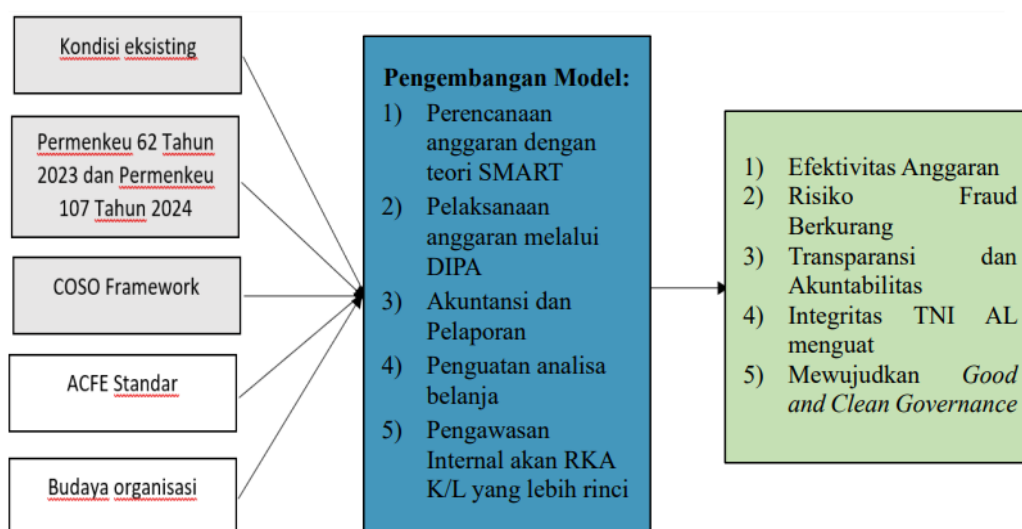
The integration of the ACFE and COSO frameworks within the empirical context of the Navy reveals that behavioral and structural determinants of fraud are deeply intertwined. For instance, collusion—one of the most pervasive risk factors identified—was not merely a behavioral issue but also a by-product of weak segregation of duties and the absence of rotational assignments. This reinforces Taherdoost (2021) proposition that fraud prevention requires the simultaneous management of human incentives and organizational design. The Navy's strong vertical command reduces autonomy at lower levels, but it also limits the diffusion of accountability, allowing informal networks to operate beneath formal oversight structures. Hence, fraud prevention in defense budgeting cannot rely solely on ethical training or procedural tightening; it must address systemic incentives and control mechanisms together.

The findings further demonstrate that risk assessment and monitoring are the least effective components of the COSO framework within the Navy, mirroring results reported by Udeh (2019) and Dangi *et al.* (2020) in public sector settings. These weaknesses create structural blind spots that increase exposure to opportunity-based

fraud. For example, risk assessments are often conducted only at the beginning of the fiscal year and rarely updated to reflect operational changes. This static approach to risk management contrasts with COSO's principle of dynamic and continuous evaluation, thereby undermining the system's preventive function. Strengthening these components would require real-time digital monitoring systems and cross-unit information sharing, both of which are currently limited in the Navy's budgeting process.

**Figure 1**

*Performance-Based Budgeting Development Model*



From a theoretical standpoint, the study extends existing literature by proposing an integrated fraud-resistant PBK framework that combines behavioral and structural approaches. While prior research has treated fraud risk management and performance budgeting as distinct domains, this study demonstrates that their integration yields a more holistic understanding of financial governance in high-risk organizations. The model proposed here illustrates that the behavioral triggers identified by ACFE (e.g., pressure, opportunity, rationalization) can be effectively mitigated when aligned with COSO's structural safeguards (e.g., risk assessment, monitoring, control environment). This theoretical contribution supports Achumie *et al.* (2024) and Zhou *et al.* (2025), who advocate for embedding fraud risk assessment directly into budget planning and execution processes rather than addressing it as a post-audit issue.

In practical terms, the proposed model provides a pathway for organizational transformation within the defense sector. By embedding SMART-based planning, digital reporting, and continuous internal supervision, the Indonesian Navy can shift from a compliance-driven to a performance-driven budgeting culture. This change is consistent with the principles of Good and Clean Governance, where transparency and accountability are institutionalized through system design rather than individual discretion. The model also underscores the need for capacity building among budget officers, emphasizing continuous education in government accounting standards, digital literacy, and ethical awareness—elements that are crucial for sustaining long-term integrity in financial management.

Furthermore, the research underscores that reforming budgeting systems in military institutions requires addressing not only technical procedures but also organizational culture and leadership. Ethical tone from the top, open communication, and protection for whistleblowers are necessary preconditions for effective fraud prevention. Without these, even the most sophisticated control systems will be undermined by informal practices and cultural resistance. In this regard, the study contributes to ongoing policy debates on the modernization of defense finance systems in Indonesia and other developing countries where governance reforms must navigate between transparency imperatives and operational confidentiality.

In summary, the discussion highlights that preventing fraud in performance-based budgeting demands an integrated approach combining structural control, behavioral management, and cultural reform. The Indonesian Navy's experience exemplifies how regulatory compliance alone cannot guarantee accountability unless accompanied by adaptive control mechanisms and an integrity-based culture. By aligning ACFE's behavioral insights with COSO's control architecture, this study offers both theoretical enrichment and practical guidance for strengthening public financial management in complex, high-stakes environments such as national defense.

## 6 CONCLUSION

This study explored how performance-based budgeting (PBK) is implemented within the Indonesian Navy and proposed an integrative model to strengthen fraud

prevention using the ACFE Fraud Hexagon and the COSO internal control framework. Findings show that PBK in the Navy remains largely procedural and compliance-oriented, with weak links between performance indicators and resource allocation. Behavioral factors—such as pressure, opportunity, and rationalization—combined with structural gaps in monitoring and risk assessment, create conditions that increase the risk of fraud.

To address these challenges, the research proposes a fraud-resistant PBK model built on four pillars: SMART-based planning, transparent budget execution through digital reporting, integrated financial accountability, and continuous internal supervision aligned with COSO principles. The model embeds ACFE's behavioral insights into each stage of the budget cycle, ensuring that ethical conduct and control systems reinforce one another.

Theoretically, this study contributes by linking behavioral fraud theory with internal control and performance-based budgeting, offering a multidimensional understanding of financial integrity in defense organizations. Practically, it provides guidance for policymakers and financial managers seeking to improve accountability, efficiency, and ethical compliance in public budgeting. While limited to a single case and qualitative scope, future research could extend the model across other defense or public institutions to test its broader applicability. Overall, achieving good and clean governance in the defense sector requires integrating ethical culture with strong internal control—an approach exemplified by the proposed ACFE–COSO-based PBK framework.

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### Authors' Contribution

All authors contributed equally to the development of this article.

### Data availability

All datasets relevant to this study's findings are fully available within the article.

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