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Rethinking Budget Accountability Through the Lenses of Organizational Learning and Adaptive Decision Processes

Nurlaela Nurlaela[1], Eka Merdekawati[2], Adriani Adriani[3]
[1]Institut Teknologi dan Bisnis Nobel Indonesia, Makassar, Indonesia, nurlaela@nobel.ac.id
[2]Sekolah Tinggi Ilmu Ekonomi YAPI Bone, Bone, Indonesia, eka.merddkawati.em88@gmail.com
[3]Sekolah Tinggi Ilmu Ekonomi LPI, Makassar, Indonesia, adriani@stie-lpi.ac.id

Corresponding Author: nurlaela@nobel.ac.id[1]

Abstract: Budget accountability has traditionally been positioned as an administrative compliance mechanism that emphasizes the alignment between financial planning, budget realization, and reporting. However, this approach remains insufficient to explain how organizations respond to uncertainty, shifting priorities, and the complexity of decision-making in dynamic environments. This article aims to reconstruct the concept of budget accountability through the perspectives of organizational learning and adaptive decision-making processes. This study employs a qualitative conceptual approach through an integrative literature review of budget accountability, organizational learning, and decision-making theories. The findings indicate that budget accountability is not only determined by transparency, compliance, and formal control, but also by an organization's capacity to transform budget deviations into learning feedback, refine planning assumptions, and adjust resource allocation responsively. This article proposes an adaptive budget accountability framework consisting of three key dimensions: reflective transparency, learning feedback mechanisms, and evidence-based decision flexibility. The novelty of this article lies in integrating budget accountability with organizational learning theory and adaptive decision-making processes, thereby extending the accountability paradigm from mere compliance toward institutional learning and continuous improvement. The study's implications highlight the importance of budgeting systems that are not only accurate and regulation-compliant, but also adaptive, evaluative, and strategically oriented.

Keyword: Adaptive Decision-Making, Budget Accountability, Financial Management, Organizational Learning, Strategic Budgeting.

INTRODUCTION

Budget accountability remains a central issue in contemporary financial management discourse, particularly in organizations operating within complex, uncertain, and performance-driven environments. In both public and non-profit sectors, budgeting is not merely a technical instrument for allocating financial resources, but also a strategic

mechanism through which organizational priorities, institutional commitments, managerial responsibilities, and performance expectations are formally articulated (Grossi, Kallio, Sargiacomo, & Skoog, 2020). Through the budget, organizations translate strategic objectives into measurable financial plans, distribute resources among competing programs, and establish a basis for evaluating managerial conduct and organizational outcomes. Consequently, budget accountability has traditionally been viewed as an essential mechanism for ensuring transparency, fiscal discipline, compliance, and responsible stewardship of organizational resources (Mauro, 2021; Stein, Wiedemann, & Dielmann, 2025).

In conventional financial management practice, budget accountability is commonly associated with the extent to which budget implementation conforms to predetermined plans, regulatory frameworks, procedural requirements, and reporting standards (Menguy & El Khoury, 2025). This view emphasizes the importance of accuracy in budget preparation, consistency between planned and realized expenditures, timely financial reporting, and the ability of managers to justify the use of allocated resources (Akinci & Sadler-Smith, 2019). Such a compliance-oriented perspective is undeniably important because it provides a formal basis for controlling financial behavior, preventing misuse of funds, and ensuring that organizational actors remain answerable for the resources entrusted to them. In this sense, accountability functions as a governance mechanism that links budget authority with responsibility, control, and evaluation (Fedchenko, Gusarova, Vasyunina, Lozhechko, & Lysenko, 2022; Pebrianti & Aziza, 2019).

However, the increasing complexity of organizational environments has revealed the limitations of understanding budget accountability solely through the lens of administrative compliance and financial control. Organizations today are required to operate under conditions marked by policy uncertainty, fluctuating stakeholder expectations, technological disruption, resource constraints, and rapidly changing socioeconomic conditions (Iriani, Agustianti, Sucianti, Rahman, & Putera, 2024). In such contexts, strict adherence to predetermined budget plans may not always reflect sound financial management. Budget deviations, reallocations, and adjustments may occur not merely because of managerial inefficiency or weak control, but because organizations must respond adaptively to emerging problems, changing priorities, and unexpected environmental pressures (Ridwan, 2025; Shafizadeh, 2024). Therefore, budget accountability should not only assess whether financial actions comply with initial plans, but also whether budgetary decisions are reasonable, evidence-based, responsive, and capable of supporting organizational learning.

This issue becomes particularly significant when budget accountability is evaluated primarily through variance analysis or formal reporting mechanisms. While variance analysis is useful for identifying discrepancies between planned and actual budget performance, it often provides limited insight into the organizational processes behind such discrepancies (Schuster, Heinemann, & Cleary, 2021). A budget variance may indicate inefficiency, weak planning, unrealistic assumptions, environmental disruption, or even strategic adaptation. Without a deeper learning-oriented interpretation, variance analysis may reduce accountability to a retrospective exercise of justification rather than a forward-looking process of improvement. As a result, organizations may become more concerned with avoiding deviations than with understanding the causes of deviations and using them as a basis for better decision-making (Abbo Bacia, 2024; Caiden & Wildavsky, 1980).

The dominant compliance-based model of budget accountability also tends to assume that budgeting is a relatively linear process: objectives are formulated, resources are allocated, activities are implemented, outcomes are reported, and deviations are corrected (Andrawes, 2024). This linear logic may be appropriate in stable environments where assumptions remain relatively predictable. Nevertheless, in dynamic organizational contexts, budgeting is better understood as an iterative and adaptive process. Budget decisions are

shaped not only by formal rules and financial calculations, but also by organizational knowledge, managerial judgment, institutional memory, stakeholder negotiation, and feedback from previous implementation experiences (Andrawes, 2024; Ross, 2020). Thus, the quality of budget accountability depends not only on the presence of formal control systems, but also on the organization's capacity to learn from budgetary outcomes and to adapt future decisions accordingly.

From the perspective of organizational learning, budget accountability can be reinterpreted as a process through which organizations generate, interpret, and institutionalize knowledge from their financial practices. Organizational learning emphasizes the ability of organizations to detect errors, question existing assumptions, revise routines, and improve future actions based on accumulated experience (Alsharari, 2020; Hoque & Kaufman, 2024). When applied to budgeting, this perspective suggests that deviations between budget plans and actual outcomes should not be treated merely as control problems, but also as valuable information for improving planning assumptions, resource allocation mechanisms, and managerial decision processes. In other words, accountability becomes meaningful not only when organizations can explain what happened to the budget, but also when they can demonstrate what has been learned from budget implementation and how that learning informs subsequent decisions (Balla & Gormley Jr, 2017).

This learning-oriented view is closely related to adaptive decision-making. Adaptive decision processes refer to the ability of organizational actors to adjust decisions in response to new information, changing constraints, and uncertain conditions. In financial management, adaptive decision-making is particularly important because budget allocations are often made under conditions of incomplete information and competing priorities (Shafizadeh, 2024). A rigid budgeting system may ensure procedural compliance, but it may also inhibit timely responses to emerging needs. Conversely, excessive flexibility without accountability may create risks of opportunistic behavior, weak control, and unclear responsibility. The challenge, therefore, is to develop a model of budget accountability that balances control and flexibility, compliance and learning, stability and adaptation (Di Francesco & Alford, 2020).

Existing studies on budget accountability have generally emphasized transparency, participation, compliance, performance measurement, and financial reporting as key dimensions of responsible budgeting. These dimensions remain essential, yet they do not fully explain how organizations transform budgetary feedback into institutional learning and adaptive decision-making (Rotinsulu & Nurnajamuddin, 2021). Similarly, studies on organizational learning have extensively discussed knowledge creation, feedback mechanisms, and behavioral adaptation, but they are not always explicitly connected to budget accountability frameworks (Anand & Brix, 2022; Ashok, Al Badi Al Dhaheri, Madan, & Dzandu, 2021). Meanwhile, research on adaptive decision-making often focuses on strategic management, crisis response, or organizational change, with limited integration into the specific domain of financial accountability. This indicates a conceptual gap in the literature: budget accountability has rarely been examined as a learning-based and adaptive process that connects financial control with organizational knowledge and decision flexibility (Grobler-Dębska, Mularczyk, Gawęda, & Kucharska, 2024; Ogedengbe, Friday, Ameyaw, Jejeniwa, & Olawale, 2023; Sari & Muslim, 2023; Yanguas, 2021).

Addressing this gap is important for both theoretical and practical reasons. Theoretically, the integration of budget accountability, organizational learning, and adaptive decision-making can broaden the understanding of accountability beyond its conventional administrative and compliance-based orientation. Accountability should not be reduced to the ability to produce reports or justify expenditures after implementation (Kusumba, 2024). Rather, it should be understood as a dynamic capability through which organizations reflect on budgetary outcomes, evaluate the validity of prior assumptions, and improve future

decisions. This perspective shifts the accountability paradigm from a static model of financial answerability toward a more dynamic model of institutional learning and continuous improvement (Alderman, 2022).

Practically, a learning-based and adaptive approach to budget accountability may help organizations develop more responsive budgeting systems. In many organizations, budget reports are produced regularly, but the information contained in those reports is not always used effectively for strategic reflection or decision improvement (Rao, Ravivarman, Prasad, & Maranan, 2024). Budget evaluations may become routine administrative exercises rather than meaningful learning processes. By embedding organizational learning into budget accountability, organizations can strengthen their ability to identify structural problems, recognize recurring budgetary weaknesses, revise planning assumptions, and design more realistic financial strategies (Abbo Bacia, 2024). At the same time, adaptive decision processes can enable managers to respond to environmental changes without abandoning the principles of transparency, responsibility, and evidence-based justification (Neely et al., 2021).

This article therefore argues that budget accountability should be rethought as an adaptive learning system. Such a system requires more than formal compliance with budgetary rules. It requires reflective transparency, in which financial information is not only disclosed but also critically interpreted; learning feedback mechanisms, through which budgetary outcomes are systematically analyzed and transformed into organizational knowledge; and evidence-based decision flexibility, which allows resource allocation to be adjusted responsibly in response to changing conditions (Leuz & Wysocki, 2016). These three dimensions form the basis of an adaptive budget accountability framework proposed in this article (Goldstein, 2023).

The novelty of this article lies in its effort to integrate budget accountability with organizational learning theory and adaptive decision-making processes. Rather than treating accountability as a final-stage reporting obligation, this article positions accountability as an ongoing process embedded throughout the budgeting cycle (Lulaj, 2021). Budget accountability begins not only when financial reports are prepared, but also when assumptions are formulated, resources are allocated, deviations are interpreted, feedback is processed, and future decisions are revised (Nguyen, 2024). This conceptual reconstruction offers a more comprehensive understanding of how organizations can remain accountable while also being capable of learning and adapting.

Based on the above discussion, this article aims to reconstruct the concept of budget accountability through the lenses of organizational learning and adaptive decision processes. Specifically, it seeks to explain how budget accountability can be understood beyond compliance, how budget deviations can function as learning feedback, and how adaptive decision-making can enhance the quality of financial responsibility (Di Francesco & Alford, 2020). By doing so, this article contributes to the development of a more dynamic, reflective, and strategically relevant model of budget accountability in financial management.

The contribution of this article is threefold. First, it provides a conceptual refinement of budget accountability by emphasizing its learning and adaptive dimensions. Second, it bridges three streams of literature that are often discussed separately, namely budget accountability, organizational learning, and adaptive decision-making. Third, it offers a conceptual framework that may serve as a basis for future empirical research on budgeting practices, financial governance, and organizational performance. Through this framework, budget accountability is expected to move beyond a narrow focus on compliance and control toward a broader orientation that incorporates reflection, learning, responsiveness, and continuous institutional improvement.

METHOD

Types and Research Approach

This study employed a qualitative conceptual research design using an integrative literature review approach. This method was considered appropriate because the primary objective of the article was not to test statistical relationships, but to reconstruct and develop a conceptual understanding of budget accountability through the perspectives of organizational learning and adaptive decision-making (Benzaghta, Elwalda, Mousa, Erkan, & Rahman, 2021). An integrative literature review enables the researcher to synthesize theoretical arguments, compare conceptual perspectives, identify gaps in existing studies, and develop a refined analytical framework relevant to financial management research (Cho, 2022).

The methodological orientation of this study is grounded in the assumption that budget accountability is a multidimensional concept that cannot be sufficiently understood only through technical compliance, financial reporting, or budget variance analysis. Therefore, this study integrates three major bodies of literature: budget accountability, organizational learning, and adaptive decision-making. The integration of these perspectives allows the study to examine how budget accountability may function not merely as a mechanism of administrative control, but also as a learning-based and adaptive process that supports organizational improvement.

Research Design

This article adopted a conceptual-qualitative design. Conceptual research is particularly relevant when a study seeks to clarify, extend, or reconstruct existing theoretical concepts. In this study, the concept of budget accountability was critically examined and repositioned within a broader theoretical framework that includes organizational learning and adaptive decision processes (Minet, 2025).

The research design followed an interpretive and analytical orientation. Rather than treating literature as a collection of empirical findings to be aggregated statistically, this study treated prior studies as theoretical resources for developing conceptual arguments. The emphasis was placed on identifying dominant assumptions, conceptual limitations, theoretical intersections, and possible extensions of budget accountability in contemporary financial management. The overall research design is presented in Table 1.

Table 1. Research Design Overview

Component	Description
Research approach	Qualitative conceptual research
Review type	Integrative literature review
Main focus	Reconstruction of budget accountability through organizational learning and adaptive decision-making
Unit of analysis	Concepts, theories, arguments, and findings from prior literature
Analytical orientation	Interpretive, critical, and synthesizing
Main output	Conceptual framework of adaptive budget accountability
Research contribution	Theoretical refinement and conceptual integration

Literature Review Strategy

The literature review was conducted by identifying, selecting, analyzing, and synthesizing relevant academic sources related to the three core domains of the study. The first domain concerns budget accountability, including budget control, transparency, financial reporting, performance accountability, and budget variance interpretation. The second domain concerns organizational learning, including feedback mechanisms, institutional reflection, knowledge creation, error detection, and continuous improvement. The third

domain concerns adaptive decision-making, including decision flexibility, evidence-based adjustment, strategic responsiveness, and managerial adaptation under uncertainty (Appuhami, Bhuiyan, & Boedker, 2024).

The literature selection was guided by relevance, conceptual contribution, and theoretical significance. Priority was given to peer-reviewed journal articles, academic books, and scholarly works that provide strong theoretical foundations or empirical insights relevant to the development of the proposed framework. Sources were not selected merely based on publication volume, but based on their ability to contribute to the conceptual reconstruction of budget accountability (Esser & Janus, 2023).

The review process involved four stages: literature identification, screening, thematic classification, and conceptual synthesis. These stages were designed to ensure that the literature used in the study was relevant, coherent, and analytically useful.

Table 2. Literature Review Procedure

Stage	Procedure	Purpose
Identification	Collecting literature related to budget accountability, organizational learning, and adaptive decision-making	To establish the theoretical foundation of the study
Screening	Evaluating sources based on relevance, academic credibility, and conceptual contribution	To exclude unrelated or weakly relevant literature
Classification	Grouping literature into major themes and theoretical domains	To organize the analytical structure of the review
Synthesis	Integrating concepts across the three domains	To construct the adaptive budget accountability framework

Inclusion and Exclusion Criteria

To maintain the academic quality and relevance of the review, this study applied specific inclusion and exclusion criteria. The inclusion criteria were used to ensure that selected sources directly supported the conceptual development of the article. The exclusion criteria were applied to avoid literature that was too general, unrelated, or insufficiently rigorous for advanced academic analysis.

Table 3. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Topic relevance	Studies discussing budget accountability, budgeting, financial accountability, organizational learning, or adaptive decision-making	Studies unrelated to budgeting, financial management, accountability, or organizational decision processes
Source type	Peer-reviewed journal articles, scholarly books, book chapters, and reputable academic references	Non-academic opinion pieces, unsourced web articles, and non-scholarly materials
Conceptual relevance	Sources that contribute to theory development, conceptual clarification, or framework construction	Sources with limited conceptual relevance or purely descriptive content
Analytical value	Literature that helps explain accountability, learning, feedback, adaptation, or decision flexibility	Literature that only discusses technical budgeting without broader theoretical implications
Language	Primarily English-language academic sources	Sources with unclear academic status or insufficient methodological transparency

Analytical Procedure

The analysis was conducted through a thematic-conceptual synthesis. This technique was used to identify recurring themes, conceptual relationships, and theoretical gaps within the selected literature. The analysis did not aim to quantify the frequency of themes, but to interpret their conceptual meaning and relevance to budget accountability (Eyzaguirre & Fernandes, 2024).

The analytical procedure consisted of three main steps. First, the literature was examined to identify the dominant view of budget accountability in financial management.

This step focused on how accountability is commonly associated with compliance, transparency, budget control, reporting, and financial responsibility. Second, the study analyzed the limitations of this conventional view, particularly in relation to environmental uncertainty, budget deviations, decision complexity, and the need for organizational adaptation. Third, concepts from organizational learning and adaptive decision-making were integrated to develop a more dynamic model of budget accountability. The thematic-conceptual analysis is summarized in Table 4.

Table 4. Thematic-Conceptual Analysis Framework

Analytical Theme	Key Questions	Conceptual Focus
Compliance-based accountability	How is budget accountability traditionally understood?	Transparency, control, reporting, compliance, variance justification
Limitations of conventional accountability	Why is compliance-based accountability insufficient in dynamic environments?	Uncertainty, complexity, budget deviation, rigid control
Organizational learning	How can budget outcomes generate institutional learning?	Feedback, reflection, error detection, knowledge creation
Adaptive decision-making	How can organizations adjust budget decisions responsibly?	Flexibility, evidence-based adjustment, responsiveness
Adaptive budget accountability	How can accountability integrate compliance, learning, and adaptation?	Reflective transparency, learning feedback, decision flexibility

Conceptual Framework Development

The conceptual framework was developed through an iterative synthesis of the reviewed literature. The framework was not derived from a single theory, but from the integration of several theoretical perspectives. Budget accountability provided the foundational concept, organizational learning contributed the logic of feedback and institutional improvement, while adaptive decision-making provided the mechanism through which organizations adjust financial decisions under changing conditions.

From this synthesis, this article identifies three core dimensions of adaptive budget accountability. Reflective transparency refers to an organization's ability not only to disclose budget information, but also to interpret and communicate the meaning of budgetary outcomes, enabling stakeholders to understand why budget decisions were made, why deviations occurred, and how financial information informs future actions. Learning feedback mechanisms describe the organization's capacity to transform budget implementation results, including deviations and performance gaps, into actionable learning inputs; budget deviations are treated not merely as indicators of non-compliance, but as signals that may reveal weaknesses in planning assumptions, environmental changes, operational constraints, or strategic misalignment.

Evidence-based decision flexibility refers to managers' ability to adjust budget allocations and financial priorities responsibly, based on valid information, organizational learning, and changing circumstances, ensuring that flexibility does not compromise control but is guided by evidence, justification, and accountability. The conceptual logic of the proposed framework is presented in Table 5.

Table 5. Proposed Dimensions of Adaptive Budget Accountability

Dimension	Definition	Main Function	Expected Contribution
Reflective transparency	The disclosure and critical interpretation of budget information	Enables stakeholders to understand financial decisions and budget outcomes	Strengthens trust, clarity, and meaningful accountability
Learning feedback mechanisms	The use of budget results and deviations as inputs for organizational learning	Converts budget variance into knowledge for improvement	Improves planning assumptions and institutional learning
Evidence-based	The responsible adjustment	Supports adaptive resource	Enhances responsiveness

Dimension	Definition	Main Function	Expected Contribution
decision flexibility	of budget decisions based on evidence and changing conditions	allocation	without weakening accountability

Validity and Trustworthiness

Although this study is conceptual in nature, methodological rigor was maintained through several strategies. First, the study applied theoretical triangulation by integrating literature from financial management, accountability studies, organizational learning, and decision-making theory. This strategy was used to avoid reliance on a single conceptual perspective. Second, analytical coherence was maintained by ensuring that each argument was directly linked to the research objective and conceptual framework. Third, the synthesis process emphasized consistency between the identified problem, theoretical gap, analytical categories, and proposed framework.

The trustworthiness of the study was also supported by transparent analytical procedures. The process of literature selection, classification, and synthesis was explicitly described to ensure that the conceptual development could be followed logically. Furthermore, the proposed framework was developed through systematic comparison among existing concepts rather than through unsupported theoretical speculation.

Methodological Limitation

As a conceptual study, this article does not provide direct empirical testing of the proposed adaptive budget accountability framework. The arguments developed in this study are based on theoretical synthesis and conceptual interpretation. Therefore, the framework proposed in this article should be understood as a theoretical contribution that requires further empirical validation. Future studies may test the framework using qualitative case studies, surveys, mixed-method research, or comparative institutional analysis across public, private, and non-profit organizations.

Nevertheless, the conceptual approach remains relevant because the main objective of this article is to rethink and reconstruct the meaning of budget accountability. By developing a theoretically grounded framework, this study provides a foundation for future empirical research on how organizations integrate accountability, learning, and adaptive decision-making in budget management.

RESULT AND DISCUSSION

Respondent Profile

The findings of this study are derived from an integrative synthesis of recent literature on budget accountability, organizational learning, and adaptive decision-making. The analysis demonstrates that budget accountability should no longer be understood merely as a technical mechanism for ensuring compliance with budget plans, financial regulations, and reporting standards. Although compliance remains a necessary foundation of accountable financial management, it is insufficient to explain how organizations respond to uncertainty, budget deviations, changing priorities, and complex decision environments.

The findings indicate that budget accountability needs to be repositioned as a dynamic process that integrates three interrelated dimensions: financial responsibility, organizational learning, and adaptive decision-making. In this perspective, accountability is not only demonstrated through the ability to report and justify budget realization, but also through the organization's capacity to interpret budget outcomes, learn from deviations, revise planning assumptions, and make responsible adjustments to resource allocation. Therefore, the results of this study are organized into five main sub-sections: recent literature mapping, limitations of compliance-based accountability, budget deviations as learning feedback, organizational

learning in budget accountability, adaptive decision-making in budget governance, and the proposed adaptive budget accountability framework.

Recent Literature Mapping on Budget Accountability, Organizational Learning, and Adaptive Decision-Making

Recent studies show that budgeting is increasingly discussed not only as a financial control instrument, but also as a managerial, institutional, and strategic process. The literature from the last five years indicates that budget systems are closely related to organizational resilience, performance evaluation, internal accountability, participatory governance, digital information systems, and decision-making under uncertainty. This shift is important because budget accountability is no longer limited to whether organizations comply with predetermined financial plans, but also whether they are capable of using budget information to improve decisions and organizational performance.

Several recent studies are particularly relevant to this article. Carr and Beck examine crisis-related budget evaluation and show that budgeting practices can evolve when organizations face crisis conditions, highlighting the importance of interpretive and adaptive budget evaluation. Appuhami, Bhuiyan, and Boedker demonstrate that diagnostic use of budgets can support both frugality and creativity, suggesting that budgets may function simultaneously as control and enabling mechanisms. Eichholz, Hoffmann, and Knauer further show that the planning function of budgeting and risk management orientation contribute to organizational resilience during crises, which strengthens the argument that budgeting is linked to adaptation and strategic responsiveness.

In the public sector, recent literature also shows that budgeting is increasingly connected to participation, performance information, accountability mechanisms, and institutional change. Studies on participatory budgeting emphasize the dynamic nature of budget processes and the role of stakeholder involvement in budget formulation. Research on results-based budgeting further indicates that budgeting reforms are shaped by both internal and external institutional pressures, meaning that budget accountability cannot be separated from organizational context, politics, and institutional routines. The following table maps selected literature from the last five years that is relevant to the conceptual development of adaptive budget accountability.

Table 6. Recent Literature Mapping on Budget Accountability, Learning, and Adaptive Decision-Making

Author(s) / Source	Research Context	Main Focus	Relevance to This Study
Carr & Beck (2023)	Organizational budgeting during crisis	Crisis-related budget evaluation and core-periphery dynamics	Supports the argument that budget evaluation changes under uncertainty and crisis conditions
Appuhami et al. (2024)	Management control and budgeting	Diagnostic use of budgets, goal clarity, frugality, and creativity	Shows that budgets can function as both control and enabling mechanisms
Eichholz et al. (2024)	Budgeting and organizational resilience	Risk management orientation and planning function of budgeting	Links budgeting with resilience, crisis response, and adaptive capacity
Hoque & Kaufman (2024)	Budgetary research and organizational decision-making	Budgeting as organizational routine, disruption, and re-creation	Provides conceptual support for viewing budgets as evolving decision routines
Harris (2022)	Higher education budgeting	Internal accountability through annual budget reviews	Demonstrates the importance of internal accountability and substantive budget review
Alsharari (2022)	Public sector budgeting reform	Institutionalization of results-based budgeting	Explains how budgeting systems are shaped by

Author(s) / Source	Research Context	Main Focus	Relevance to This Study
			institutional, political, and economic pressures
de Azevedo et al. (2022)	Public sector participatory budgeting	Budget dynamics and participation in the budget cycle	Reinforces the importance of budget dynamics and stakeholder involvement
van der Kolk (2022)	Public sector performance measurement	Mapping performance measurement research	Connects accountability with performance information and organizational evaluation
Noda (2025)	Public sector budgeting	Use of non-financial and accrual-based cost information	Shows how budget officers use performance and cost information in budget decisions
(Vuori, Burkhard, Laamanen, & Bingham, 2024)	Organizational decision-making	Heuristics in organizational decision processes	Supports the relevance of decision logic, interpretation, and adaptive judgment in organizations

The mapping shows that the recent literature does not fully abandon traditional budget accountability, but it expands its meaning. Budget accountability is increasingly associated with interpretive capacity, performance information use, institutional routines, adaptive evaluation, and resilience. These developments provide a strong basis for rethinking budget accountability through the lenses of organizational learning and adaptive decision-making.

The Limitation of Compliance-Based Budget Accountability

The first major finding is that conventional budget accountability remains strongly dominated by a compliance-based logic. In this model, accountability is evaluated according to the extent to which budget implementation conforms to approved allocations, formal rules, administrative procedures, and reporting standards. Such a model is important because organizations require clear financial discipline, documented responsibility, and mechanisms to prevent the misuse of funds. Without compliance, budgeting may lose its function as a formal system of authorization and control.

However, the limitation of this model lies in its tendency to treat accountability primarily as a retrospective and administrative process. In many organizations, budget accountability begins after the budget has been implemented, when managers are required to explain variances, submit financial reports, or justify expenditures. This creates an accountability structure that emphasizes whether financial actions were consistent with prior plans, but gives less attention to whether those plans were realistic, whether assumptions were valid, or whether changing conditions required legitimate adjustment.

A compliance-based accountability model also tends to view budget deviation as a problem. When actual expenditure differs from planned allocation, the deviation is often interpreted as a sign of inefficiency, weak control, or managerial failure. This interpretation is not always incorrect, but it is incomplete. Budget deviations may indeed reflect poor planning or weak implementation, but they may also reflect external shocks, policy changes, urgent stakeholder needs, or responsible managerial adaptation. Carr and Beck's study on budget evaluation during crisis illustrates that budgetary performance evaluation may evolve in response to crisis conditions, suggesting that evaluation cannot be detached from organizational context and environmental pressure.

Therefore, compliance-based accountability is necessary but insufficient. It ensures that organizations remain financially disciplined, but it does not necessarily create learning. An organization may be compliant but still fail to improve its budget planning. It may submit accurate reports but fail to understand the causes of recurring deviations. It may maintain procedural order but become rigid in the face of changing needs. For this reason, budget

accountability must be extended beyond compliance toward reflective and adaptive accountability.

Table 7. Compliance-Based Budget Accountability and Its Conceptual Limitations

Dimension	Compliance-Based Orientation	Conceptual Limitation	Required Extension
Main accountability focus	Conformity to rules, procedures, and approved allocations	Accountability becomes formalistic and retrospective	Accountability should include reflection and learning
Budget evaluation	Comparison between planned and actual realization	Variance is often treated only as error or deviation	Variance should be interpreted contextually
Managerial responsibility	Managers justify budget use after implementation	Limited attention to decision quality and assumption validity	Responsibility should include evidence-based reasoning
Information use	Financial reports support verification and audit	Information may not be used for future improvement	Budget information should support learning feedback
Organizational effect	Strengthens control and fiscal discipline	May create rigidity and discourage adaptation	Control should be balanced with adaptive flexibility

This finding shows that budget accountability must move from a narrow question of "Was the budget used according to plan?" toward broader questions such as "Were budget decisions reasonable?", "What did the organization learn from implementation?", and "How should future budgeting be improved?"

Budget Deviations as Learning Feedback

The second finding is that budget deviations should be reconceptualized as learning feedback. In conventional budgetary control, deviations between planned and actual figures are usually treated as indicators of performance gaps. While this interpretation is useful for identifying financial discrepancies, it does not fully capture the learning potential contained in deviations. A budget deviation is not merely a numerical difference; it is a signal that something in the budgeting process, organizational environment, or implementation system requires interpretation.

From an organizational learning perspective, deviations provide information about the accuracy of planning assumptions, the reliability of forecasts, the adequacy of resource allocation, and the organization's capacity to implement programs. If a particular unit repeatedly overspends, the issue may not only be weak control, but also unrealistic cost estimation, insufficient operational capacity, or structural underfunding. Similarly, if a program repeatedly underspends, the issue may not only be efficiency, but also implementation delay, weak coordination, or low program readiness.

Budget deviations therefore need to be analyzed through a causal and contextual lens. A deviation may be technical, operational, strategic, environmental, or governance-related. Each type of deviation requires different learning responses. Technical deviations require improvement in forecasting and budget estimation. Operational deviations require stronger coordination and implementation capacity. Strategic deviations require reassessment of priorities. Environmental deviations require better scenario planning. Governance deviations require stronger oversight and accountability structures.

This interpretation is consistent with recent research emphasizing that budgeting can support organizational resilience and adaptation when it is linked to risk management orientation and planning functions. Eichholz, Hoffmann, and Knauer's study indicates that budgeting is not only a control device but also part of organizational resilience during crises.

This supports the argument that budget outcomes should be used as learning inputs for improving organizational readiness and future decision-making.

Table 8. Typology of Budget Deviations and Learning Implications

Type of Budget Deviation	Main Cause	Accountability Interpretation	Learning Implication
Technical deviation	Forecasting errors, inaccurate cost estimation, administrative delay	Indicates weaknesses in budgeting techniques or planning precision	Improves estimation methods, forecasting models, and administrative procedures
Operational deviation	Implementation barriers, coordination problems, capacity limitations	Indicates gaps between budget allocation and execution capacity	Strengthens operational planning, coordination, and monitoring
Strategic deviation	Emerging priorities, changing organizational goals, program realignment	Indicates that initial priorities may no longer be fully relevant	Encourages reassessment of allocation priorities and strategic alignment
Environmental deviation	Economic shocks, policy changes, crisis conditions, stakeholder pressure	Indicates external uncertainty affecting budget realization	Strengthens risk analysis, contingency planning, and scenario-based budgeting
Governance deviation	Weak control, unclear authority, poor documentation, misuse risk	Indicates accountability failure or institutional weakness	Requires stronger oversight, audit trails, documentation, and responsibility mechanisms

The table demonstrates that budget deviation is analytically rich. Treating all deviations as administrative irregularities may result in superficial accountability. A more advanced accountability model should distinguish between irresponsible deviation and accountable adaptation. Irresponsible deviation occurs when budget changes lack evidence, documentation, or legitimate justification. Accountable adaptation occurs when deviations are supported by valid information, strategic necessity, and transparent decision processes.

Thus, the value of budget accountability lies not only in detecting deviation, but in interpreting it correctly. Accountability becomes substantive when organizations are able to explain the causes of deviation, extract lessons from it, and use those lessons to improve future budgeting practices.

Organizational Learning as the Basis of Substantive Budget Accountability

The third finding is that organizational learning provides a strong foundation for transforming budget accountability from a formal reporting mechanism into a substantive improvement process. Organizational learning refers to the capacity of an organization to detect problems, interpret feedback, revise assumptions, and institutionalize improved routines. In the context of budgeting, this means that accountability should not stop at explaining budget realization; it should also include learning from budget implementation.

Budget accountability becomes stronger when financial information is used to evaluate whether prior assumptions remain valid. For example, a budget may be formally implemented according to plan, but the plan itself may be based on outdated assumptions. In such a case, compliance does not necessarily indicate good financial management. Conversely, a deviation from the original budget may reflect a more accurate response to emerging realities. Therefore, learning-based accountability requires organizations to examine not only compliance with plans, but also the quality of the assumptions underlying those plans.

Organizational learning also enables accountability to become forward-looking. Traditional accountability often emphasizes answerability for past actions. Learning-based accountability, however, links past experience with future improvement. This means that the organization must demonstrate how budget evaluation informs subsequent planning cycles. If

the same budget errors recur year after year, then the accountability system may be formally functioning but substantively weak.

Recent research on the relationship between accountability and organizational learning also shows that the two concepts can be connected, although their relationship may involve tensions. Esser and Janus, in their study of German bilateral development cooperation, examine how accountability and organizational learning are related, indicating that accountability systems may support or constrain learning depending on how they are designed and practiced.

For budget accountability, this implies that organizations need mechanisms that convert budgetary feedback into institutional knowledge. These mechanisms include structured budget reviews, causal analysis of variance, cross-unit learning forums, documentation of lessons learned, and revision of budgeting procedures. Harris' study on internal accountability through annual budget reviews in higher education is relevant here because it highlights that budget reviews can strengthen internal accountability, but they may also become symbolic or "fantasy" practices if they affirm fiscal prudence without genuinely scrutinizing budget decisions.

Table 9. Organizational Learning Mechanisms in Budget Accountability

Learning Mechanism	Function in Budget Accountability	Practical Manifestation	Expected Improvement
Error detection	Identifies discrepancies between planned and actual budget outcomes	Variance reports, audit findings, performance review	Recognition of financial and operational weaknesses
Causal interpretation	Explains why deviations occurred	Root-cause analysis, managerial review, contextual evaluation	Better understanding of budget problems
Assumption correction	Revises inaccurate assumptions used in planning	Updating cost standards, revising performance targets, improving forecasts	More realistic and evidence-based budgeting
Knowledge sharing	Transfers budget lessons across organizational units	Cross-unit forums, internal learning sessions, shared dashboards	Reduced repetition of similar budget errors
Institutionalization	Embeds learning into formal procedures and routines	Revised budgeting guidelines, new control mechanisms, improved review cycles	Continuous improvement in budget governance

This finding confirms that budget accountability is not merely about control; it is also about institutional learning. Organizations become more accountable when they can show not only where money was spent, but also how financial experience improves future decisions.

Adaptive Decision-Making in Budget Governance

The fourth finding is that adaptive decision-making is essential for budget accountability in uncertain and dynamic environments. Budgeting is often designed as an annual planning process, but organizational realities may change before the budget period ends. Economic volatility, regulatory changes, technological shifts, crisis conditions, and stakeholder demands may require organizations to adjust their budget decisions. If accountability systems are too rigid, they may discourage managers from making necessary adjustments. However, if flexibility is uncontrolled, it may weaken accountability and increase the risk of opportunistic behavior.

Adaptive decision-making addresses this tension by emphasizing responsible flexibility. In budget governance, adaptive decision-making does not mean that managers may freely change allocations without control. Rather, it means that budget adjustments should be permitted when they are justified by evidence, aligned with organizational objectives,

documented transparently, and evaluated after implementation. In this way, adaptation becomes accountable.

Recent studies support this view. Appuhami, Bhuiyan, and Boedker show that diagnostic use of budgets can help organizations navigate both frugality and creativity, implying that budgets are not only restrictive tools but may also support managerial creativity when goals are clear. Meanwhile, research on organizational heuristics suggests that organizational decision-making involves interpretive shortcuts and process patterns that shape how actors respond to complexity. This reinforces the importance of designing budget decision processes that are transparent, evidence-based, and open to evaluation.

Adaptive decision-making is also relevant to digital budgeting and performance information. Studies on public sector budgeting indicate that budget officers may use non-financial performance and cost information in making budgetary decisions. This suggests that budget decisions are influenced not only by financial figures, but also by broader performance information. Therefore, an adaptive budget accountability system should integrate financial, non-financial, operational, and strategic information into decision processes.

Table 10. Principles of Accountable Adaptive Budget Decision-Making

Principle	Explanation	Accountability Function
Evidence-based adjustment	Budget changes must be supported by valid financial, operational, and performance information	Prevents arbitrary and opportunistic budget changes
Strategic alignment	Adjustments must support organizational goals, program priorities, or urgent needs	Ensures that flexibility remains purposeful
Procedural transparency	Decision processes must be documented and communicated to relevant stakeholders	Strengthens traceability and institutional trust
Managerial responsibility	Decision-makers must remain answerable for the rationale and consequences of adjustments	Maintains ownership and accountability
Evaluative review	Adjusted decisions must be reviewed after implementation	Connects adaptation with organizational learning

This finding indicates that adaptive decision-making should not be treated as the opposite of accountability. Instead, it should be considered an advanced form of accountability. In dynamic environments, accountability is not only about following the original plan, but also about making justified adjustments when the original plan is no longer adequate.

Development of the Adaptive Budget Accountability Framework

Based on the synthesis of recent literature and conceptual analysis, this study proposes an Adaptive Budget Accountability Framework. The framework consists of three core dimensions: reflective transparency, learning feedback mechanisms, and evidence-based decision flexibility. These three dimensions integrate the logic of financial accountability, organizational learning, and adaptive decision-making.

The first dimension, reflective transparency, extends the meaning of transparency beyond the disclosure of financial information. Traditional transparency often focuses on whether budget information is available, accessible, and reported. Reflective transparency goes further by emphasizing whether information is interpreted, contextualized, and communicated in a way that supports understanding. In this dimension, stakeholders should not only know what the budget realization was, but also why certain outcomes occurred, what deviations mean, and how the organization responds to them.

The second dimension, learning feedback mechanisms, refers to the organization's capacity to convert budgetary outcomes into institutional learning. Budget reports, variance analyses, audits, and performance evaluations should not be treated as isolated administrative

outputs. They should be integrated into learning cycles that inform future planning and decision-making. This dimension is important because accountability loses much of its value when findings from budget evaluation do not influence subsequent budgeting practices.

The third dimension, evidence-based decision flexibility, refers to the ability to adjust budget decisions responsibly. This dimension recognizes that budget rigidity can undermine organizational responsiveness. However, flexibility must remain accountable. Budget adjustments should be supported by evidence, documented through clear procedures, aligned with strategic objectives, and evaluated after implementation.

Table 11. Adaptive Budget Accountability Framework

Dimension	Conceptual Meaning	Key Process	Indicator of Application	Accountability Contribution
Reflective transparency	Budget information is disclosed, interpreted, and contextualized	Reporting, explanation, causal interpretation, stakeholder communication	Budget reports include explanations of causes, implications, and corrective actions	Strengthens meaningful accountability and stakeholder trust
Learning feedback mechanisms	Budget outcomes are transformed into organizational knowledge	Variance analysis, root-cause review, lesson extraction, procedural revision	Budget reviews generate documented lessons and revised planning assumptions	Promotes continuous improvement in budgeting
Evidence-based decision flexibility	Budget adjustments are made responsibly based on valid information	Data analysis, strategic review, documented adjustment, post-implementation evaluation	Reallocations are justified by evidence and formally reviewed	Enables responsiveness without weakening control

The framework shows that budget accountability is not a single event at the end of the budget cycle. Instead, it is a continuous process that operates before, during, and after budget implementation. Before implementation, accountability requires realistic assumptions and transparent allocation logic. During implementation, accountability requires monitoring, interpretation, and adaptive adjustment. After implementation, accountability requires reporting, evaluation, learning, and institutional improvement.

Discussion

The findings of this study provide compelling evidence that budget accountability must be reconceptualized as a dynamic, reflective, and adaptive process. While traditional perspectives emphasize compliance with predetermined budget plans, rules, and reporting standards, the results indicate that this approach alone is insufficient to guide organizations operating in complex and uncertain environments. Recent literature from the last five years highlights a similar trajectory, demonstrating that budgeting is increasingly seen not merely as a control instrument, but as a strategic mechanism that integrates decision-making, learning, and responsiveness (Aziz, 2023; Carr & Beck, 2023; Eichholz et al., 2024; Padovani & Lino, 2025; Stancu, Bejinariu, & Tăbîrcă, 2024). This paradigm shift challenges the conventional assumption that accountability is primarily retrospective and procedural, advocating instead for a model in which organizations actively interpret budget outcomes, derive lessons from deviations, and apply evidence-based adjustments to future financial decisions.

A critical insight from the study is the reinterpretation of budget deviations as learning feedback rather than merely errors or indicators of non-compliance. Deviations are often treated in traditional budgeting as signs of inefficiency or poor managerial performance; however, when examined through the lens of organizational learning, deviations provide crucial information about the validity of planning assumptions, operational constraints, and environmental changes. This perspective aligns with recent research emphasizing that

budgeting can enhance organizational resilience when deviations are analyzed contextually and used to inform adaptive decision-making (Celestin, Mohamed, Gnana Raja, & Vinayakan, 2025; Edo-Osagie, 2025; Eichholz et al., 2024). Technical deviations, such as misestimated costs, may lead to improved forecasting methods, while strategic deviations arising from changing priorities can inform adjustments to allocation logic, ensuring that resources are directed toward emerging organizational needs. Environmental deviations, prompted by policy changes or economic volatility, highlight the importance of scenario-based planning and risk management, reinforcing the role of budget accountability as a learning-oriented system rather than a purely control-oriented mechanism.

Organizational learning emerges as a central dimension of substantive budget accountability. By embedding mechanisms for error detection, causal interpretation, assumption correction, knowledge sharing, and procedural institutionalization into budgeting processes, organizations can transform budget information into actionable knowledge (Li, 2024). Recent studies reinforce this argument, showing that learning-oriented accountability systems enhance internal decision quality, reduce repeated errors, and improve the alignment of budget allocations with strategic objectives (Rahman, 2025). For instance, variance analyses are most effective when coupled with root-cause identification and cross-unit knowledge sharing, allowing organizations not only to explain past performance but also to refine future budgeting assumptions and practices. This extends traditional conceptions of accountability by emphasizing continuous improvement and forward-looking responsibility, rather than merely administrative verification.

The study further demonstrates that adaptive decision-making is a critical mediator between accountability, learning, and organizational responsiveness. In volatile environments, rigid adherence to pre-approved budget plans can constrain managers' ability to respond effectively to emerging conditions, whereas uncontrolled flexibility may compromise accountability. Adaptive decision-making resolves this tension by permitting budget adjustments that are evidence-based, strategically aligned, procedurally transparent, and subject to post-implementation review. Recent empirical research supports this approach, indicating that diagnostic use of budgets can enable both control and creativity, and that real-time information systems enhance adaptive capacity without undermining oversight (Odinaka, Okolo, Chima, & Adeyelu, 2024). Consequently, adaptive decision-making does not weaken accountability but strengthens it by ensuring that flexibility is exercised responsibly and justified with data.

The integration of reflective transparency, learning feedback mechanisms, and evidence-based decision flexibility culminates in the proposed Adaptive Budget Accountability Framework, which reconceptualizes accountability as a continuous, iterative process. Reflective transparency emphasizes the interpretation and communication of budget outcomes beyond mere disclosure, enabling stakeholders to understand not only what occurred but why it occurred and how the organization responds. Learning feedback mechanisms ensure that deviations, performance gaps, and environmental signals are systematically analyzed and institutionalized to improve future budgeting cycles. Evidence-based decision flexibility allows organizations to adjust allocations in response to dynamic conditions while maintaining responsibility, traceability, and alignment with strategic goals. Together, these dimensions provide a holistic view of accountability that incorporates compliance, learning, and adaptation, addressing a major gap in the conventional literature.

The theoretical contributions of this study are multifaceted. First, it expands the concept of budget accountability from a compliance-centric, procedural focus to a multidimensional framework that integrates learning and adaptive decision-making. Second, it provides a nuanced understanding of budget deviations as potential learning inputs rather than merely performance errors. Third, it bridges previously disconnected literatures on management

control, organizational learning, and adaptive governance, offering a cohesive conceptual model suitable for empirical testing. Finally, it aligns accountability theory with the realities of modern organizational environments, which are characterized by uncertainty, rapid change, and complex interdependencies.

From a practical perspective, the framework has important implications for managers and policymakers. Organizations should design budget systems that incorporate reflective reporting, structured variance analysis, and evidence-based adjustment protocols. Internal audit and review processes should go beyond mechanical verification to include evaluation of assumptions, contextual interpretation of deviations, and documentation of learning outcomes. Information systems should facilitate timely access to financial and performance data, supporting adaptive decisions that are transparent, justified, and strategically aligned. In the public sector, these mechanisms can strengthen performance-based budgeting initiatives, participatory budgeting, and fiscal governance reforms. In the private sector, they can improve responsiveness, resource allocation efficiency, and strategic agility, particularly in rapidly changing markets.

Despite its contributions, the study acknowledges limitations inherent in conceptual research. The proposed framework has not been empirically validated, and its applicability may vary across sectors, organizational sizes, and institutional contexts. Future research should examine the framework through empirical studies, including case studies, surveys, or mixed-method approaches. Comparative research could assess how institutional and cultural differences influence the balance between compliance, learning, and adaptation. Furthermore, the role of digital technologies, data analytics, and AI in supporting adaptive budget accountability presents an important avenue for future investigation.

This study advances the understanding of budget accountability by demonstrating that it is not solely about procedural compliance or variance justification. Rather, accountability encompasses reflection, learning, and adaptation, transforming budgeting into a dynamic organizational capability. By integrating organizational learning and adaptive decision-making, the proposed framework provides a conceptual foundation for more resilient, responsive, and substantively accountable budgeting systems. The study thus contributes both to theory by extending accountability literature and to practice by offering guidance for designing budget processes that are robust, adaptive, and learning-oriented in increasingly complex organizational environments.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that budget accountability should be reconceptualized as a dynamic capability integrating compliance, organizational learning, and adaptive decision-making. While compliance ensures fiscal discipline and transparency, it is insufficient in uncertain and complex environments. Accountability should extend beyond reporting and variance justification to include interpretation of budget outcomes, learning from deviations, and responsible adaptive adjustments. Budget deviations are not merely errors but serve as learning feedback that informs planning assumptions, operational improvements, and strategic priorities. Organizational learning enables these insights to be institutionalized, fostering continuous improvement. Adaptive decision-making allows budget adjustments to respond to changing conditions while remaining evidence-based, strategically aligned, and transparent.

The Adaptive Budget Accountability Framework proposed in this study comprises three dimensions, reflective transparency, learning feedback mechanisms, and evidence-based decision flexibility, collectively repositioning accountability as a continuous, reflective, and adaptive process. Theoretically, this study extends accountability literature by integrating learning and adaptive processes. Practically, it guides organizations to design budgeting

systems that balance compliance with reflection, learning, and responsiveness. Future research should empirically test this framework across sectors and examine the role of digital and real-time information systems in enhancing adaptive budget accountability.

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