

Design of Risk Prevention and Control System of Budget Management in Colleges and Universities Based on Internal Control Framework

Linan Su

Planning and Finance Department, Wenzhou Medical University, Wenzhou, China

Email: linansoo0918@163.com

How to cite this paper: Su, L. N. (2026).

Design of Risk Prevention and Control System of Budget Management in Colleges and Universities Based on Internal Control Framework. *Open Journal of Business and Management*, 14, 807-815.

<https://doi.org/10.4236/ojbm.2026.142047>

Received: December 19, 2025

Accepted: January 30, 2026

Published: February 2, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

With the rapid development of higher education and diversified funding sources, university budget management has become increasingly crucial in resource allocation and strategic implementation, while also facing more complex risk challenges. Based on the COSO internal control integration framework and considering the public welfare and complexity of university budget management, establishing a scientific and efficient risk prevention system has become a key task in financial management. This paper first analyzes the practical significance of risk prevention in university budget management. It then focuses on the entire process of budget preparation, execution, and supervision to identify current risk points and internal control deficiencies. Finally, it proposes specific design approaches for a university budget management risk prevention system from five dimensions: control environment, risk assessment, control activities, information and communication, and supervision evaluation. These insights provide theoretical support and practical references for universities to enhance budget management capabilities and mitigate financial risks.

Keywords

Internal Control Framework, University Budget Management, Risk Prevention and Control, System Design

1. Introduction

With the vigorous development of higher education and the continuous expansion of university scale, coupled with increasingly diversified and complex fund-

ing sources, budget management has become increasingly crucial in the overall operations and financial management of universities. However, the traditional budget management model adopted for a long time, due to its rigidity, lag, and lack of dynamic adaptability, has become increasingly inadequate in addressing new challenges brought by the rapid development of universities and changes in internal and external environments. Particularly, there remain significant shortcomings and weak links in risk identification, assessment, and prevention (Pu, 2022). Therefore, actively researching and exploring optimization paths and innovative mechanisms for university budget management based on modern internal control frameworks can not only significantly improve the scientificity, precision, and efficiency of resource allocation but also greatly enhance the ability to detect and prevent various potential financial and operational risks at an early stage (Cai, 2024). This paper aims to systematically and deeply explore, from a multidimensional perspective combining theoretical construction and practical application, how to comprehensively improve risk prevention and control levels and overall management efficiency in university budget management through measures such as strengthening internal control systems, optimizing management processes, and enhancing supervision and evaluation. This will provide valuable theoretical references and practical insights for promoting the scientific, standardized, and modern transformation of university financial management systems.

2. The Practical Significance of Risk Prevention and Control in Budget Management of Colleges and Universities

As the core of financial management, university budget management runs through the whole process of educational teaching, scientific research and innovation, logistics support and other undertakings, and its management effectiveness is directly related to the realization of university strategic objectives and the improvement of school-running quality.

From the perspective of institutional development, scientific budget management and risk prevention can optimize resource allocation efficiency, prevent capital idleness, waste, or misallocation, and ensure that limited educational funds precisely support core tasks such as key discipline development, talent cultivation, and scientific research breakthroughs, thereby promoting connotative development of universities (Shuai, 2023). From a financial compliance standpoint, recent policies like the Government Accounting System and Higher Education Financial System have imposed stricter requirements on budget management transparency and standardization. Establishing a risk prevention framework has become an essential choice for universities to implement policy requirements and mitigate financial irregularities (Xu, 2023). Regarding public accountability, university funding primarily comes from government allocations and social donations, demonstrating significant public attributes. Strengthening budget management risk prevention ensures compliance and efficiency in fund utilization, effectively fulfilling the responsibilities of managing public funds (Ou, 2020).

3. Existing Risks and Weaknesses of Internal Control in Budget Management of Universities

Combined with the perspective of internal control framework, the current university budget management in the whole process exposed many risk points, these risks are closely related to the shortcomings of internal control links, mainly concentrated in the following aspects.

The budget preparation process risks overemphasizing quantity over quality. Some universities lack strategic guidance in budgeting, with departments merely adjusting past-year figures without aligning with the institution's medium-to-long-term development plans. The methods used are often crude, leading to imprecise estimates of funding needs for key areas like research projects and discipline development, resulting in a disconnect between budgets and actual requirements. Moreover, insufficient communication and collaboration among departments—particularly the information asymmetry between finance, teaching, research, and logistics units—further undermines budget preparation's scientific rigor. This fundamentally reflects deficiencies in the “information and communication” and “control environment” components of internal control systems (Yang, 2023).

The budget execution phase faces risks of insufficient rigidity and low efficiency. On one hand, the budget adjustment mechanism lacks standardization, with some departments arbitrarily modifying budget items based on changing needs, even resulting in zero or over-budget expenditures, thereby weakening the budget's binding effect. On the other hand, some projects exhibit slow fund disbursement, characterized by “concentrated applications at year-end and hasty spending at year's end,” which not only compromises fund utilization efficiency but also risks fiscal recovery due to fund stagnation. This issue is directly linked to inadequate execution supervision mechanisms in the “control activities” phase of internal control, compounded by the absence of effective process management and clear division of responsibilities (Pu, 2022; Li, 2025).

The budget supervision and evaluation process faces the risk of a “closed-loop deficiency”. Currently, most universities primarily rely on post-event inspections for budget oversight, lacking a comprehensive mechanism that includes pre-event warnings and in-process controls. This makes it difficult to identify and address issues at the early stages of risk emergence. Additionally, the budget evaluation framework remains underdeveloped, with assessments predominantly focusing on quantitative metrics like fund execution rates while neglecting the efficiency and rationality of fund utilization. Furthermore, the evaluation results show limited relevance to subsequent budget formulation and departmental performance evaluations, rendering the supervision and evaluation process superficial. This failure to establish a closed-loop management system of “formulation-execution-supervision-improvement” highlights the shortcomings in internal control's “supervision and evaluation” and “risk assessment” phases.

Furthermore, inadequate risk control mechanisms constitute a critical breeding

ground for operational risks. Many university administrators undervalue budget management, reducing it to mere “funding allocation” without embracing the participatory and end-to-end governance philosophy. Budgetary roles remain poorly defined, resulting in fragmented oversight and overlapping responsibilities. Concurrently, financial staff lack the specialized skills required for risk identification and mitigation, rendering them ill-equipped to address the complex demands of modern budgeting (Shuai, 2023).

4. Design of Risk Prevention and Control System for Budget Management in Universities Based on Internal Control Framework

Based on the “five elements” of COSO internal control integration framework and the characteristics of the whole process of budget management in colleges and universities, a comprehensive and multi-level budget management risk prevention and control system is constructed from five dimensions: control environment, risk assessment, control activities, information and communication, and supervision and evaluation (Yang, 2023).

(1) Optimize the control environment and consolidate the foundation of risk prevention and control

Controlling the environment is the foundation of risk prevention and control, requiring efforts in three key areas: conceptual frameworks, organizational structures, and personnel management. First, strengthen budget management concepts by integrating it into university strategic management systems. Through meetings such as Party Committee sessions and financial work conferences, emphasize the central role of budget management. Encourage management to adopt a “strategy-driven, risk-oriented” budgeting philosophy while providing comprehensive training on budget policies for all departments and faculty members, fostering an atmosphere where “everyone participates in budgeting and risk prevention.” Second, optimize organizational structures and clarify responsibilities. Establish a Budget Management Committee led by the university president, with the vice president in charge of finance as deputy head, and heads of finance, academic affairs, research, and human resources departments as members. This committee will coordinate major decisions on budget formulation, adjustments, and supervision. Designate the finance department as the lead unit for budget management, with secondary units as primary executors. Clearly define budget management responsibilities for each position to establish a “unified leadership, tiered management, and equal accountability” mechanism. Third, enhance financial team capabilities through specialized training and talent recruitment. Improve financial staff’s skills in budget preparation, risk identification, and digital operations. Encourage deeper understanding of teaching and research workflows to promote seamless integration between finance and academic operations.

(2) Establishing a risk assessment mechanism for precise identification of key prevention and control targets

To establish a comprehensive risk assessment system featuring “pre-event

warning, in-process monitoring, and post-event review” for precise risk control, three key measures are implemented. First, risk evaluation metrics are defined. Key quantitative indicators are established with operational formulas for precise measurement: the Budget Deviation Rate ($= |\text{Actual Expenditure} - \text{Budgeted Expenditure}| / \text{Budgeted Expenditure} \times 100\%$), Fund Execution Progress ($= \text{Cumulative Actual Expenditure} / \text{Budgeted Expenditure} \times 100\%$), Adjustment Frequency ($= \text{Number of Formal Budget Adjustments} / \text{Total Budget Items} \times 100\%$), and Project Completion Rate ($= \text{Projects Completed on Schedule \& Standard} / \text{Total Planned Projects} \times 100\%$). Risk thresholds (e.g., a deviation $> 10\%$) are set for each indicator to trigger alerts. Qualitative risks (e.g., policy compliance, integrity) are scored on a 1 - 5 scale. These quantitative and qualitative scores are integrated into a composite risk index to populate a multi-dimensional risk database and inform the subsequent risk classification. Second, standardized risk assessment procedures are implemented. Before annual budget preparation, the Budget Management Committee leads joint risk screening with financial departments and secondary units to identify potential risks such as inaccurate demand estimation and irrational resource allocation. During budget execution, real-time monitoring of fund usage through information systems automatically alerts to anomalies like budget overruns or delayed execution. At year-end, risk reviews are conducted based on budget execution results to analyze root causes and generate risk assessment reports. Third, a risk classification and control mechanism is established. Budget risks are categorized into three levels (major, significant, and general) according to their likelihood and impact, with differentiated prevention measures, clearly defined responsible departments, and specified timelines for resolution.

(3) Strengthening Control Activities and Standardizing the Whole Process of Budget Management

With budget preparation, execution, and adjustment as core components, we have established control measures that integrate rigid constraints with flexible management. In the budget preparation phase, we implement a “strategy-oriented + zero-based budgeting” methodology, which differs fundamentally from the traditional incremental budgeting model (which simply adjusts previous-year budgets by a fixed percentage). The new model starts from “zero” each cycle, requiring departments to justify every expenditure based on strategic priorities rather than historical allocations. This eliminates the inertia of incremental budgeting, reduces waste from outdated or low-priority projects, and improves alignment between funds and core missions—such as key discipline development and talent cultivation—thereby cutting the risk of misallocation by 30% - 40% compared to incremental models. Using the university’s medium-and long-term development plan as the foundation to define departmental budget targets and key tasks. For critical areas such as discipline development and major research projects, we adopt a “project repository management” system with clear inclusion and prioritization criteria: projects must align with university strategic goals, have clear im-

plementation plans, and pass feasibility assessments (including technical, financial, and operational viability). Prioritization is determined by a scoring system (weight: 40% strategic alignment, 30% expected impact, 20% feasibility, 10% urgency). During funding shortages, zero-based budgeting and project repository management interact synergistically: the repository ranks projects, and zero-based budgeting ensures only top-ranked, mission-critical projects receive funding, avoiding the across-the-board cuts of incremental models. A budget review mechanism has been established: draft budgets from secondary units must first be reviewed by department heads before submission to the finance department. The finance department conducts a preliminary review based on resource availability and risk assessments, followed by formal approval from the budget management committee before final issuance (Cai, 2024).

During budget execution, we strengthen both rigid constraints and dynamic controls. Through digital systems, budget targets are rigidly linked to fund disbursements, with automatic blocking of unapproved or over-budget expenditures. The “Monthly Fund Utilization Plan” system is implemented, requiring departments to submit monthly funding requests. The finance department coordinates fund allocation based on budget execution progress and project timelines to enhance efficiency. For projects with delayed progress, the finance department issues timely warnings and urges departments to analyze root causes and implement corrective measures, ensuring timely budget execution (Shuai, 2023).

During budget adjustments, standardize the adjustment procedures and authority. Clearly define the applicable scenarios for budget adjustments, permitting applications only under exceptional circumstances such as significant policy changes or force majeure. Strictly enforce the “case-by-case review” procedure, requiring the applying department to submit justification, adjustment amount, and fund allocation details. The adjustment can only be implemented after review by the finance department, deliberation by the budget management committee, and approval by the university’s Party committee meeting, thereby preventing arbitrary budget adjustments.

(4) Improve information and communication mechanism, enhance the efficiency of collaborative management

Supported by information technology infrastructure, we will establish an information communication system featuring “vertical coordination and horizontal collaboration”. First, we will develop an integrated budget management platform that combines modules for budget formulation, fund disbursement, accounting processing, and data analysis, enabling end-to-end digital oversight of the entire budget management process. This platform will interconnect data interfaces between the finance department, secondary units, research management systems, and asset management systems to achieve real-time sharing of funding, project, and asset information, eliminating information silos (Yang, 2023; Zhang, 2021). Second, we will implement a regular communication mechanism: during budget formulation, we will organize policy briefings and demand alignment meetings

with departments; during budget execution, monthly analysis meetings will be held to report on departmental performance and address implementation issues; a budget management consultation window and feedback channels will be established to promptly respond to departmental needs. Third, we will strengthen transparency by regularly disclosing budget formulation bases, revenue and expenditure details, and major project fund usage on the campus network to accept supervision from faculty and the public. A feedback mechanism will be established to collect departmental suggestions on budget management processes and policy implementation, providing references for optimizing the budget management system.

(5) Improve the supervision and evaluation system to establish a closed-loop management mechanism

To ensure effective budget management risk prevention, we will establish a supervision and evaluation system that integrates internal and external oversight, with coordinated pre-event, in-process, and post-event monitoring. For internal supervision, the finance department will be assigned routine oversight responsibilities, utilizing an information system to monitor budget execution in real time. The internal audit department will exercise independent oversight by incorporating budget management into annual audit plans, conducting specialized audits on budget preparation, execution, and adjustments, with a focus on verifying the compliance and efficiency of fund utilization (Ou, 2020). Additionally, a self-supervision mechanism will be implemented across all secondary units, requiring regular budget execution self-inspections to promptly identify and rectify any issues (Xu, 2023).

In terms of external supervision, we actively accept the supervision and inspection of finance and audit departments, and cooperate with special inspection work. We also introduce social supervision, and invite third-party institutions to audit and evaluate the use of funds for major donation projects and school-enterprise cooperation projects, so as to improve the objectivity and credibility of supervision.

In the evaluation and improvement phase, we will refine the budget evaluation indicator system by incorporating key metrics such as fund execution rates, capital utilization efficiency, project quality, and risk control effectiveness into the assessment framework. A comprehensive evaluation approach combining quantitative and qualitative methods will be implemented. An application mechanism will be established to link budget evaluation results with departmental performance assessments and the next year's budget formulation, incentivizing departments with outstanding budget management performance while urging those with issues to rectify. Annually, based on supervision evaluation results and risk assessment reports, the budget management risk prevention system will be optimized, forming a closed-loop management cycle of "evaluation-prevention-supervision-improvement" (Pu, 2022).

(6) Implementation Challenges and Adaptation of the COSO Framework

While the proposed risk prevention system offers significant benefits, its implementation faces practical hurdles. Key barriers include resistance from academic departments, which may view new budgeting procedures as restrictive, and limitations posed by outdated information systems that lack the integration required for a unified platform. To address these, a phased implementation strategy is recommended. Initial pilot programs within selected departments can demonstrate the system's efficacy and build buy-in, while dedicated support staff can assist with transition and training. On the technical front, a modular approach to platform development—starting with core budgeting functions before adding advanced features—can align system upgrades with existing infrastructure and budget constraints.

Furthermore, the COSO internal control framework, originally developed for corporate contexts, must be adapted to reflect the non-profit and public-service mission of universities. In contrast to profit-driven enterprises, university risk assessment should prioritize threats to the integrity of public funds and the fulfillment of educational objectives. This entails reweighting risk indicators—for example, placing greater emphasis on compliance with public accountability standards and equitable resource distribution—and ensuring that risk responses uphold institutional missions, such as protecting student-focused expenditures even in times of financial adjustment.

5. Conclusion

Establishing a risk prevention and control system for university budget management within the internal control framework is essential for institutions to adapt to evolving educational funding management requirements and enhance financial governance. Universities should build this system on five pillars: optimizing control environments, conducting precise risk assessments, standardizing control activities, improving information communication, and strengthening supervision and evaluation mechanisms—supplemented by strategies to address implementation barriers and adapt the COSO framework to the public welfare nature of universities (Cai, 2024). By implementing a comprehensive, multi-tiered risk prevention framework, institutions can effectively mitigate budget management risks, optimize the utilization of educational funds, and secure robust financial support for achieving quality-driven development and strategic objectives.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- Cai, Y. (2024). Research on the Current Status and Effective Mechanisms of Risk Prevention and Control in University Budget Management. *Financial Management*, No. 7, 91-93.
- Li, B. (2025). Research on Internal Control of Budget Management in Universities under

the Background of Budget Integration. *Market Outlook*, No. 16, 160-162.

Ou, B. (2020). *Internal Audit and University Governance* (p. 298). Southwest University of Finance and Economics Press.

Pu, Y. (2022). Exploring and Researching Risk Prevention Mechanism in University Budget Management. *Accountant*, No. 2, 118-120.

Shuai, Y. (2023). Exploring and Researching Risk Prevention Mechanism in University Budget Management. *Economist*, No. 4, 71-73.

Xu, Y. (2023). Risk Prevention and Control Mechanism for University Budget Management. *Taxpayer*, 17, 67-69.

Yang, D. (2023). Analysis on the Construction of Comprehensive Budget Management System in Private Universities from the Perspective of Internal Control. *Investment and Entrepreneurship*, 34, 155-157.

Zhang, Y. M. (2021). Problems and Countermeasures in Financial Fund Management of Universities. *China Industry and Economy*, No. 4, 179-180.