

Research on Optimization of Internal Control in Colleges and Universities under the Background of Integration of Fiscal Budget Management

Lan Qin*, Bingjie Xia, Jing Qiu, Xue Bai

Zhejiang Pharmaceutical University, Ningbo, Zhejiang 315000, China

*Corresponding author: qinlan1987@163.com

Abstract: New mandatory technical rules and reforms in the process of fiscal budget management have changed the governance ecology of colleges and universities, so the old internal control system needs to be adjusted accordingly. With the introduction of integrated operations and financial processes in senior secondary schools, this paper will systematically examine the effect of integration on internal control and find actual problems in the three areas of business process integration, risk management and information interaction. Based on the above analysis, the general framework of internal control has been set up. It will be based on the "main thread" of "budget" and "process embedding", and "data-driven assistance". We will increase the number of supervisors at all links in the chain, build an all-weather risk-monitoring system, and set up joint-resource allocation. Based on the first results of the pilot application at universities, some theoretical support and practical suggestions have been obtained to help other institutions strengthen the integration of budget and internal control, improve the efficiency of resource allocation, and enhance governance resilience.

Keywords: Integration of Fiscal Budget Management, Internal Control in Colleges and Universities, Budget as the Main Thread, Process Control, Dynamic Risk Assessment, Coordinated Resource Allocation

Introduction

Fiscal management has entered a new period of standardisation, integration and digitalisation—collectively known as the integration stage—and thus the demands on the internal control system of colleges and universities are continuously rising. Integration is a technological advance, and at the same time, it is a reform of the basic logic and system of government. The old model of internal control is not well-known by the staff of the company, and it is also difficult to find problems in time. Given the new circumstances mentioned above, there are now two reasons to study the improvement of internal control. First, with the rise in demands from all sides, the purpose of internal control has moved from meeting only the basic requirements to providing actual benefits for the company. Second, with the development of technology-driven empowerment, many new cases for the application of internal control have begun to emerge in all parts of the business. Most studies have only examined one part and have not investigated the connections among all the parts, revealed the reasons for these effects, or built a general framework. Therefore, the purpose of this paper is to offer some theoretical support and practical suggestions for improving the strategic efficiency and operational reliability of resource allocation in higher education institutions by exploring the basic link between integration and internal control, identifying operational bottlenecks, and putting forward a future development plan^[1].

1. Theoretical Correlation Analysis of Integrated Fiscal Budget Management and Internal Control in Colleges and Universities

1.1 Institutional Connotation and Core Features of Integrated Fiscal Budget Management

1.1.1 Process Reengineering Based on a Standardised Rule System

It is not only the application of informatisation but also an endeavour to create a single set of business rules and data standards that all parties must adhere to. The normal system includes the entire process of project repository construction, budget preparation, quota division, fund release and

accounting. It has gathered the original decentralized budget activities of all departments in one place and can be traced. Digital reengineering of processes can reduce the occurrence of human error and information lag, so compliance requirements for budget execution should be built into the logic of all specific business operations via systems.

1.1.2 Technical Governance Features of Data Centralisation and Penetration Monitoring

A single-window system will be set up to collect all the budgets and promptly release standardised data on fund releases from the government. The above data structure will help managers know the whole situation of the progress, structure and compliance of budget execution at any time. Another attribute of technical governance is that the subject of regulation has moved from individuals to technology; thus, the focus of risk prevention is now on the development cycle of technology, and preventive control needs to be implemented well in advance of the occurrence of risks. Therefore, the General Office will be more open and accountable.

1.2 Theoretical Basis and Constituent Elements of the Internal Control System in Colleges and Universities

1.2.1 A Joint Theoretical Foundation for Risk Management and Corporate Governance

The foundation of this system is not just one, but also includes the content of the principal-agent problem, the problem of stakeholders and all-round risk management. Principal-agent theory believes that there should be checks on power and supervision. The goals of regulation have been expanded, and now many groups with different interests need to be considered. At the same time, a full-process risk management system can be established to make the internal control more organised and comprehensive in all areas of the company. All of the above theories propose that the goal of establishing an institutional order is to reduce uncertainty and make full use of organisational resources for the organised achievement of goals^[2].

1.2.2 Coupling of Static and Dynamic Elements: Environment, Process and Monitoring

The components of the internal control system in colleges and universities can be divided into fixed parts and variable parts. The five basic parts of internal control are the control environment, risk assessment, control activities, information and communication, and monitoring. Among them, the control environment is the "foundation" for the system's operation and sets the general tone and style of control. The aim of risk assessment is to help people better manage risks and provide a reference for doing so. Operating tools are the control activities, the nerve system is the form of information and communication, monitoring acts as the "immune system", and all these parts work together in various areas of business operations, such as budget control, procurement and payment, asset utilisation, etc., to create an uninterrupted cycle and a self-optimising closed-loop management system.

1.3 The Mechanism of Operation of Integrated Budget Management on Internal Control in Colleges and Universities

1.3.1 Reshaping the Control Environment for Rigidification and Improvement of Transparency

As an external necessary condition for technology and institutions, the whole system should be included in the basic structure of colleges and universities. It will make the outer fiscal discipline and compliance requirements the operating rules of the information system. It will increase the sense of formality and rigidity in the control system and reduce the influence of informal practices or personal authority on the effectiveness of control. At the same time, the all-encompassing digitalisation of business processes and financial data has increased the openness of the company's economic activities and created a good environment for the development of an internal control culture based on rules and data.

1.3.2 Close Coupling of Operating and Financial Processes and Real-time Risk Control Mechanism

The main idea of integration is to break down process barriers and data silos in business operations and finance to achieve the "integration of operational and financial processes". The start, approval, payment and recording of all economic transactions are in the same logical chain and occur in real time. Therefore, internal control activities will no longer be an isolated check at the end; instead, they will be continuous controls built into the business process. Based on the budget index, the contract terms and expenditure standards are known in advance; thus, any risks that may occur during the process, such as budget overrun, off-contractual payment or non-compliant payment, can be identified and avoided

before the payment is made. It will be more timely and precise in the operation of the control. Therefore, the goal of internal control is no longer to prevent risks but to support the normal operations of the company.

2. Practical Examination of Internal Control in Colleges and Universities During the Process of Integrated Budget Management

2.1 Analysis of the Current Situation of Business Process Integration and Its Interface with Internal Control

2.1.1 Inconsistency of Standardised Processes and the Complexity of Business Reality

There is a conflict of structure in the linear and standardised process logic of the integrated system and the inherently non-standardised and flexible nature of some economic activities at universities. Generally speaking, this can be seen in the control of indirect costs for research projects, the construction of multi-year rolling budgets, and the approval path for some kinds of special procurement. The fixed rules of the system may not cover all the differences in actual business operations. Therefore, the scale of economic activity will be reduced or divided according to the demands of the system, or the system will not be suitable for such activities. There is a contradiction; thus, the object of internal control activities, that is to say, the digitised business process, may have representational deviations from the original, real-world economic activities it models. Therefore, there are problems with the foundation of information for control activities at the source, and thus the accuracy of risk identification and assessment is reduced.

2.1.2 Insufficient Depth of Integration of Control Activities and Business Processes

At present, the integration of internal control activities and integrated processes is still in the "electronic embedding" stage at some important links, such as the automatic verification of budget indicators in the payment stage. However, the degree of control over some more upstream risk factors in the business process is still weak; for instance, contract terms have not been linked to budget indicators, and the rationality of procurement needs has not been substantiated. At some later time, the link between the results of a particular stage in a project and fund utilisation will no longer be properly recorded. The control logic has not been fully converted into a continuous monitoring and dynamic adjustment mechanism for all links in the business process, and it is not closely linked with the business logic; it is still a separate verification point. Due to the lack of close integration, the internal control function is still in a "judgment after the fact" or "gatekeeping" mode for business processes and has not achieved "prompt guidance"; thus, it cannot control risks in a timely manner and improve overall operating efficiency^[3].

2.2 Assessment of Internal Risk Management Capabilities Under Rigid Budgetary Constraints

2.2.1 Structural Trend of Strengthened Compliance Risk Control and Lack of Attention to Performance Risk

Due to the limitations of the system, some control over compliance risk has been achieved through technology; for example, it can be guaranteed that the reimbursement invoices meet the requirements of the regulations and are in line with the budget line items. However, it is possible that too many resources and attention have been given to managing the risks of operations and compliance at the implementation stage, and thus the performance risks and allocation risks have not been identified and assessed in time, leading to a more serious impact on the company's strategy. For example, there is often no organised and regular system for evaluating and analysing the risk of scientific rigour and appropriateness in budget project approval justifications; it is unknown whether the allocation of resources is in line with the overall plan and whether the funds will be used economically, efficiently and effectively to achieve the desired results. Therefore, the structure of risk management will be more focused on compliance than on performance, and thus it will fail to meet the original purpose of supporting the achievement of organizational goals.

2.2.2 Coverage Gaps in Risk Management Activities During the Budget Period

All links in the risk management of the budget need to be addressed. Most of the risk management work at present is concentrated in the budget execution and payment stages. There is little or no participation in setting goals, project reservations and performance indicators at the front end before the

formulation of the budget, and at the back end, there is no performance evaluation, feedback on results or establishment of accountability mechanisms after budget execution. There will be a defect in the allocation of resources from the start because there is no front-end risk management. Conversely, without risk management in the back-end, it will be impossible to discover problems in time and correct them to improve the quality of decisions. There are many deficiencies in the coverage; thus, risk management cannot form a complete closed-loop process of setting goals, achieving results and implementing them, nor can it improve overall efficiency in the use of resources through continuous improvement.

2.3 Constraints of Information Interaction Barriers on the Effectiveness of Internal Control

2.3.1 The Coexistence of Technical Data Centralisation and Business Semantic Barriers

Although there has been centralisation of data on financial payment information and budget indicator figures, there are still no standard mappings and association rules for this data with "semantic information" that describes the actual nature of business activities, such as the progress stage of a research project, specific content of teaching activities, or actual usage status of assets. There are problems of centralised data and scattered information. If the internal control activities, especially monitoring and risk assessment, are based only on the surface data of fund flow and not linked to the detailed information in the business process, then their analysis and judgment will be limited and slow. The reasons above do not cover the whole situation of the risk-control system for all kinds of risks (operating and financial), so no all-encompassing analysis and foresight can be achieved.

2.3.2 The Constraining Effect of Information Fragmentation on the Formation of a Control Closed Loop

All the links in a good internal control system are connected, and they will work together in a continuous cycle. At present, there is still a bottleneck in the flow of information among all departments in different parts of the system. The feedback mechanism for the return of information on audit findings, performance evaluation results, risk warning signals, etc., to the front-end business process and decision-making stage is not working properly. Due to the division of information, it is not possible to trace the problems in the monitoring process back to their origin systematically for correction. The results of the risk assessment will not be used to strengthen controls or increase the budget. If the flow of information cannot be closed on time, there will be some deficiencies in both the timeliness and completeness of the internal control system. Therefore, the way it learns independently and changes constantly will be limited.

3. Optimization Pathways for Internal Control in Colleges and Universities under Integrated Budget Management

3.1 Build the whole set of internal controls according to the budget at the top level

3.1.1 Conceptual Transformation: From Discrete Control to Process Embedding

First, there is a need to change the basic idea; internal control is no longer regarded as a series of checks and approvals outside the business process. It should be regarded as an essential part of the business logic that will work closely with the main process of budget management. Therefore, the starting point for the design of internal control is the value chain of budget projects, and the control objectives will directly correspond to the performance objectives of these projects. Then, control activities will be established and carried out at different times in the life cycle of the project, in line with the main decision points and risk factors, such as justification and approval, execution, monitoring and evaluation, and completion. The first is an 'internal stabilizer' that helps to achieve the goal of the process, and it is not an 'external corrector' for errors that have already occurred. Therefore, it will be in line with the goals of the value-creation process.

3.1.2 Restructuring of Internal Control Elements Around the Main Axis of the Budget

Based on the above, the five components of internal control need to be revised and focused on the main direction of budget management. The construction of the Control Environment should promote a culture of "budget as law" and be data-driven. In advance of starting any budget project, we will conduct a full-scope risk assessment to find out about possible problems such as deviations from the plan, lack of funds, schedule delays, poor performance, etc. Control activities should be organised in

line with the main links of the budget process systematically, such as reservation in the project pool, indicator allocation, contract association, payment triggering and performance reporting, to form an interconnected chain of control. The information and communication system should be able to collect, transmit and spread the actual budget execution data of a project in a timely manner. The scope of the monitoring work should cover the entire closed-loop process, from the rationality of budget planning to the actual results of performance; the whole system needs to be in good working order and continuously improved.

3.2 Improve Process Control and Supervision at the Linkage Points of Budget Implementation

3.2.1 Deployment of In-Depth Control Nodes Based on Operational Substance

Expand the range of control to cover all links in the business process and elaborate on the strong front-end and back-end control mechanisms. The front-end control should ensure that the distribution of budget indicators is in line with the actual business situation and reasonable given the activities in that period, such as procurement demand and research project proposals. Therefore, the basis of the expenditure justification will be the budget and reasonable from the start. At the time of starting the payment, the control rules in the system should consider budget indicators, contract terms, asset information, acceptance certificates and stage-by-stage performance data. Integration will carry out all kinds of automatic compliance and reasonableness checks in light of the actual nature of the business. Add a Dynamic Comparison Mechanism to track the actual expenditure of the budget against the original plan. Set up management alerts for cases of execution delay or performance deviation and change the focus of control from basic compliance with early warning of performance problems.

3.2.2 Continuous Supervision and Improvement Guidance Based on Data

The Goal of Optimising the Monitoring Mechanism is to change from periodic checks of the collected data to continuous observation of the data at a particular time. Build an all-encompassing Data Model for the entire process of budget execution, and then, in real time, track and connect the payment trail with the progress of contract implementation and the status of asset registration. Therefore, any irregularities will be dealt with in a timely manner, such as payments without corresponding contracts, too many small-value split-procurement projects, or irregular progress in project expenditure. Analysis of the above data can help us find any problems in a timely manner, determine the effectiveness of the current control activities based on a large amount of execution data, and identify any redundant or weak links in the process. Organize the results of the monitoring into specific feedback, use them to revise the control rules, decide whether to change the budget, assign responsibilities and improvement plans to the relevant parties, etc. Therefore, an independent closed-loop system of "observation-analysis-feedback-correction" is formed.

3.3 Construction of a Dynamic Risk Assessment and Coordinated Resource Allocation Mechanism

3.3.1 A Dynamic Risk Assessment Model for the Entire Budget Cycle

First of all, in order to build a dynamic risk assessment model, we will continuously monitor for any changes in the risk to the budget project and be informed of them. Combine the data from the financial and business processes in the system with external environment information in the model. According to the risk indicators and prediction algorithms, at various times, such as when making project risk assumptions, during the schedule and cost phases of construction, and after the project is completed, regular risk assessments need to be carried out to determine the actual results. Therefore, at different times during the life of the project, risk assessment will be repeated several times. It will show changes in the risk situation and the extent of risk, help management make informed decisions at all times.

3.3.2 Coordinated Resource Allocation and Dynamic Adjustment Mechanism Based on Risk Intelligence

According to the results of the dynamic risk assessment, we will allocate resources. The new internal control system should be able to organise and allocate resources flexibly according to the set rules and permissions. Based on the analysis of dynamic risk, it will be determined that some projects are too risky and will not proceed, or new investment opportunities will be found. Under the direction of internal audit, there will be a review and coordination of resources in all departments and projects. It may be necessary to modify the project budget, revise the construction schedule or change the performance objectives. Therefore, colleges and universities can adjust their budget funds more flexibly and promptly in response to changes within and outside the institution, and maintain good

control over the total amount. Therefore, the goal of internal control should be to promote the good health and development of the whole company, not to restrict it.

Conclusion

This paper will present the general situation of the improvement of internal control at colleges and universities under the integrated fiscal and budgetary management system. Based on the above research, there have been changes in the structure of internal control at all levels due to the standardisation of the process and the improvement in data availability, specifically in the control environment, internal control mechanisms and information bases. However, based on the actual conditions of the study, there are already some problems with the convergence of the two, such as conflicts in the adaptation of business processes, bias in the direction of risk management ability, and barriers to information interaction. Given the problems mentioned above, the following three-pronged plan will be put in place to improve the management and allocation of the budget. First, we will build all-encompassing internal control, and then we will talk about the concept and contents of restructuring. Secondly, to enhance the efficiency of process control, continuous observation will be carried out during the execution of the budget and data-driven management will be employed. Third, to improve the adaptability and continuous improvement capability of the internal control system, a dynamic risk assessment model for the entire budget cycle will be established, and a corresponding resource coordination and allocation mechanism will be set up. The first goal of this paper is to build a general analysis system for the integration of budget management and the strengthening of internal control. In the future, all kinds of optimisation will be carried out at various levels in all kinds of higher education institutions, and new ways to apply intelligent technology in risk assessment and control systems will be explored to promote the synergy of theory and practice in university internal control.

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