

Exploring Financial Information Management in Higher Education Institutions Under the Context of Business-Finance Integration

Xin Lyu

Yancheng Teachers University, Yancheng, Jiangsu, 224051, China

ABSTRACT

Against business-finance integration, promoting deep synergy and data sharing between financial and operational activities has become an inevitable choice for universities to enhance resource utilisation efficiency and mitigate operational risks. Based on this, this paper explores the practical value of financial information management in universities under business-finance integration, the current primary challenges, and feasible optimisation strategies. It aims to provide methodological references and insights for universities to advance financial information system development scientifically, break down information silos, and truly achieve data-driven management decisions in practice.

KEYWORDS

Business-finance integration; Higher education financial management; Information system development; Data-driven decision-making

1 Introduction

Higher education institutions exhibit increasingly diversified funding sources and financial activities due to their public sector nature and complex structures. Their financial management models predominantly rely on post-event accounting and oversight, resulting in suboptimal information exchange between finance departments and academic/research units. This not only elevates management costs but also hinders strategic goal attainment. In recent years, the concept of "business-finance integration" has formally emerged, emphasising real-time information sharing and organic process integration. This facilitates deeper integration between financial activities and academic, research, and administrative operations, transforming university management functions into proactive value creation. It elevates the precision and effectiveness of resource allocation. Simultaneously, this approach enables real-time monitoring of major economic activities while enhancing risk prevention and response capabilities. Building upon this foundation, this paper focuses on analysing the practical challenges encountered in the financial informatisation process of universities. It then explores optimisation pathways and strategies from multiple perspectives to promote the orderly development of efficient financial management and support the institutions' long-term growth.

2 Theoretical foundations of business-finance integration and financial management informatisation in higher education institutions

2.1 The essence of business-finance integration

Business-finance integration is the organic combination of an enterprise's business operations and financial functions to achieve more efficient operations and management. It emphasises deep integration and synergy between business and finance. Under traditional models, employees primarily focus on business processes and market expansion, while financial professionals' responsibilities centre on accounting, working capital management, and report preparation. Without effective communication and collaboration, corporate decisions often deviate from objective realities. A key requirement of business-finance integration is the comprehensive involvement of finance professionals throughout the entire business planning, implementation, and evaluation process. They must understand the financial implications and resource consumption of business actions to assist the enterprise in allocating resources efficiently, enhancing operational effectiveness, and mitigating business risks ^[1]. This integration applies not only to enterprises but also to non-profit institutions like universities. Educational, research, and social service operations all involve resource allocation. Linking financial management to these activities helps universities better understand the benefits derived from capital returns. This prevents misuse of public funds and promotes greater transparency and precision in operational and financial management.

2.2 Enhancing financial management efficiency through business-finance integration

Without business-finance integration, universities store operational and financial data in separate departments using

disparate systems, preventing direct data exchange and sharing. Integration establishes a unified information platform connecting research management, teaching operations, asset procurement, and other functions with financial systems, enabling automatic data transmission and real-time sharing. When new business activities occur, the associated data is synchronously transmitted to the financial module, generating accounting vouchers and budget control records. This significantly reduces the information entry workload and cross-departmental communication costs for economic and operational staff. Higher education institutions rely on diverse funding sources. Their daily teaching, research, infrastructure development, and administrative activities require capital and resource investments. Resource allocation and utilisation must comply with corresponding budget management and internal control requirements ^[2]. Business-finance integration enables financial personnel to engage earlier in the business planning phase, providing feedback on actual operational needs. Budgeting based on this input becomes more rational, significantly reducing resource wastage and overspending issues.

3 Key challenges in information system development for university financial management

3.1 Financial staff's digital competencies struggle to match system requirements

When advancing financial management informatisation, universities frequently encounter a problem: financial personnel's knowledge structure and skill levels cannot effectively adapt to the introduced information systems. Many long-term financial staff are proficient only in basic computerised operations. When faced with new financial platforms, they often cannot independently complete tasks such as voucher generation and report extraction. Their work efficiency not only fails to improve with the launch of new systems but actually declines significantly, increasing error rates. This challenge is particularly pronounced among older employees, who may feel intimidated by complex software and instinctively revert to traditional methods—relying on paper documents and manual verification. Rather than boosting efficiency, digital systems often increase institutional training costs and system maintenance burdens. Modern financial systems integrate data querying, analysis, and early warning functions. However, many university finance personnel only master basic data entry and voucher creation, lacking knowledge of utilising the system for budget execution analysis, project benefit tracking, or real-time fund monitoring. They also cannot extract decision-supporting insights from financial data. This gap between personnel capabilities and system functionality impacts operational efficiency and limits the information system's potential to deliver greater value in supporting management decisions ^[3].

3.2 Low compatibility between system functions and customised financial operations

The management of economic affairs in higher education institutions is complex and diverse, encompassing research project funds, centrally allocated government funds, student tuition fees, and scholarship/grant disbursements. While existing institutional frameworks provide relatively comprehensive foundational accounts and reporting, they often fail to address the specific functional requirements of various specialised tasks. Frequent adjustments to budgets, fund allocations, and final audit requirements necessitate dynamic monitoring and categorised statistical analysis for research projects. Yet many systems only provide static account management, forcing financial staff to spend significant time and effort on manual record-keeping and offline coordination—a highly cumbersome workflow. Furthermore, standardised systems provide only generic templates for business processes. In reality, some universities require certain project-related expenses to undergo dual approval by the business and finance managers. However, standardised systems typically support only single-line linear approval. Finance personnel must therefore maintain separate records of approval statuses externally, leading to discrepancies between internal and external work information. When preparing financial reports, university administrators require consolidated data on research investments, output benefits, and operational costs. However, standardised systems only generate standardised financial statements, failing to meet practical operational needs and creating difficulties for staff.

3.3 Financial data value fails to support management decisions

University financial management information systems accumulate vast amounts of operational and financial data during daily operations. However, this data fails to be effectively transformed into information that directly supports management decisions. For instance, research project information involving personnel hours and equipment purchases cannot be automatically synchronised to the financial system for cost allocation. As a result, financial staff must manually aggregate and calculate this data, which is inefficient and makes it difficult to ensure data accuracy and timeliness. In this context, while the data objectively exists, its potential to assist decision-making remains untapped due to inadequate integration and cleansing. Furthermore, many universities' financial systems are underutilised. Financial staff primarily employ only the accounting and reporting functions, generating monthly expenditure details and budget execution

progress reports. Rarely do they forecast future funding needs based on historical data or evaluate the effectiveness of specialised investments ^[4]. Management is thus constrained to making decisions based on static, lagging data. Furthermore, financial personnel possess limited analytical capabilities, and data presentation primarily relies on numerical spreadsheets. The absence of visual charts and trend analysis means that, despite vast data storage within systems, this information fails to genuinely support universities in optimising resource allocation, conducting performance evaluations, or implementing risk control measures.

4 Optimisation strategies for financial management information systems in higher education institutions under business-finance integration

4.1 Tiered training to enhance financial personnel's digital competencies

Building a capable and high-calibre team of accounting information professionals in business-finance integration is fundamental and critical to advancing financial management informatisation in higher education institutions. Accordingly, tiered and role-specific training should be implemented based on the job functions, existing knowledge base, and skill requirements of financial staff. Training should focus on foundational financial software operations for cashiers and bookkeepers, primarily handling repetitive tasks like invoice entry, reimbursement processing, and data queries. This means teaching "how to do it" and explaining "why it's done," enabling staff to grasp underlying principles and rules. This approach prevents blind execution and reduces operational errors. When training financial managers and key operational personnel, the focus should be on advanced system application skills and enhanced data analysis capabilities. These individuals must not only master the information system but also use the data it provides to make informed management decisions. Training should enable them to scientifically control budgets, monitor project funding in real time, and effectively address various issues arising during the university's financial informatisation process, thereby significantly improving financial management standards.

4.2 Custom modules enhance system business adaptability

Dedicated modules should be developed separately to improve system-business alignment during university financial IT development. Priority should be given to creating a distinct module for managing university research funding operations. Given the diverse types, numerous projects, and stringent management requirements of university research funding, developing a dedicated research project funding management module enables cyclical adjustments to project budgets. The system should maintain detailed records of each change while complying with relevant regulations. It should automatically monitor expenditure scope during reimbursement processes and verify compliance with project applicant requirements, thereby reducing staff review workload and enhancing management precision. Customised modules can bridge financial and operational systems for cross-departmental collaborative tasks, including inventory management and contract payment/fulfilment. This enables single-entry data utilisation across multiple systems, eliminating redundant work and data inconsistencies. Customised modules align with internal control requirements while significantly boosting departmental efficiency ^[5].

4.3 Building data analysis models to facilitate data-driven decision-making

Higher education financial management systems accumulate vast amounts of data. Effectively transforming this data into actionable management insights requires establishing a data analysis model. This model comprehensively analyses and processes financial and operational data based on business logic and institutional financial management objectives to derive meaningful conclusions. Specifically, a budget execution monitoring and early warning model can be constructed. This model analyses the university's overall revenue and expenditure and the budget execution status of individual departments and projects. It generates easy-to-understand charts and briefings that visually display which units or projects are progressing smoothly and which face execution obstacles, helping managers identify issues and intervene promptly. University management decisions require not only retrospective analysis but also proactive forecasting. To this end, a funding demand forecasting model should be established. This model predicts future funding requirements and potential shortfalls over a specified period based on historical income and expenditure data, enrollment trends, research activity patterns, and other variables. It provides a critical reference for budget preparation, better supports university financial decision-making, and enhances financial management information.

5 Conclusion

Against the backdrop of business-finance integration, the process of financial information management in higher education institutions still faces practical challenges such as insufficient digital skills among financial personnel, low compatibility between systems and operations, and weak data-driven decision support. This paper proposes three key strategies: tiered training, customised module development, and data model construction. These aim to drive the transformation of financial management from traditional accounting-oriented practices toward modern value-creating approaches. As technology advances and financial management philosophies evolve, university financial management will progress toward greater intelligence and foresight, better serving teaching, research, and overall institutional operations.

About the Author

Xin Lyu, Female, Han nationality, native place: Yancheng City, Jiangsu Province, Master's degree, Assistant Researcher, Research Interests: Financial Accounting in Colleges and Universities, Higher Education Management.

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