

Payments Processing Efficiency and Accounts Payable Internal Controls of Selected Biotechnology and Allied Research Companies in Metro Manila: Inputs to Action Plan

Justin D. Abutin, Mba©

Eulogio “Amang” Rodriguez Institute of Science & Technology Graduate School- MBA Program

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ABSTRACT

Efficient payment processing and effective accounts payable internal controls are essential for maintaining financial accuracy, operational efficiency, and regulatory compliance in biotechnology and allied research companies. This study assessed the payment processing efficiency and accounts payable internal controls of selected biotechnology and allied research companies in Metro Manila as a basis for developing an action plan. A descriptive research design was employed using a validated survey questionnaire administered to 247 managers, staff, and clients selected through purposive sampling. Data was analyzed using frequency, percentage, weighted mean, Analysis of Variance (ANOVA), and Pearson correlation coefficient. Result revealed that payment processing efficiency obtained a grand weighted mean of 4.37, verbally interpreted as Highly Evident, while accounts payable internal controls obtained a grand weighted mean of 4.47, interpreted as Highly Evident. The challenges encountered in payment processing efficiency and accounts payable internal controls were assessed as Least Encountered, indicating that existing financial systems and control mechanisms are generally effective. Correlation analysis further revealed significant very strong to perfect positive relationships between payment processing efficiency and accounts payable internal controls, confirming that stronger internal control practices contribute to more efficient payment processing. Based on these results, an action plan was developed to strengthen financial processes, improve internal controls, enhance automation, and sustain organizational efficiency.

Keywords: Payment Processing Efficiency, Accounts Payable, Internal Controls, Financial Management, Automation, Payment Systems, Biotechnology Companies.

INTRODUCTION

Financial management plays a critical role in ensuring the operational efficiency, financial stability, and long-term sustainability of organizations. Among its essential functions are payment processing efficiency and accounts payable internal controls, which directly influence the accuracy of financial transactions, regulatory compliance, vendor relationships, and organizational performance. In highly specialized industries such as biotechnology and allied research, efficient financial processes are necessary to support research activities, laboratory operations, procurement of scientific materials, and compliance with both organizational policies and accounting standards.

Biotechnology and allied research companies in Metro Manila operate in a research-intensive environment where financial transactions involve laboratory supplies, research equipment, technical services, regulatory compliance costs, and vendor contracts. These organizations depend on timely payments and reliable accounts payable systems to ensure uninterrupted operations and maintain productive relationships with suppliers. Consequently, payment processing efficiency and strong internal controls have become essential components of sound financial management.

Payment processing efficiency refers to an organization's ability to process invoices and release payments accurately, promptly, and consistently while minimizing delays, manual errors, and unnecessary operational costs. It includes timeliness of vendor payments, accuracy of invoice processing, automation in payment

systems, reduction of manual errors, cycle time from invoice receipt to payment, coordination with procurement and project teams, and vendor satisfaction with the payment process. Efficient payment processing contributes to improved operational performance, stronger supplier relationships, enhanced financial reliability, and better organizational decision-making.

Accounts payable internal controls consist of policies, procedures, and monitoring mechanisms established to safeguard financial resources and ensure that payment transactions are properly authorized, verified, recorded, and reported. These controls include segregation of duties, authorization and approval procedures, verification and reconciliation processes, audit trail and monitoring systems, compliance with Philippine Financial Reporting Standards (PFRS) and International Financial Reporting Standards (IFRS), policy enforcement, and staff training and awareness. Effective internal controls minimize the risk of fraud, financial misstatements, unauthorized transactions, and operational inefficiencies while strengthening accountability and transparency.

Despite technological developments in financial management systems, many organizations continue to encounter operational challenges such as delayed vendor payments, invoice processing errors, incomplete supporting documents, lengthy approval procedures, limited automation, and inconsistent implementation of internal control policies. These challenges may affect cash flow management, vendor confidence, operational efficiency, and organizational productivity. Continuous assessment of payment processing efficiency and accounts payable internal controls is therefore necessary to identify opportunities for improvement and strengthen financial management practices.

Although previous studies have examined financial management and internal control systems in various industries, limited research has focused specifically on biotechnology and allied research companies in the Philippines. Existing literature primarily concentrates on manufacturing, banking, retail, and other commercial sectors, leaving a gap regarding payment processing efficiency and accounts payable internal controls within research-oriented organizations. Addressing this gap provides valuable information that can assist management in improving financial processes and strengthening internal control systems.

The present study assessed the payment processing efficiency and accounts payable internal controls of selected biotechnology and allied research companies in Metro Manila. Specifically, it evaluated payment processing efficiency in terms of timeliness of vendor payments, accuracy of invoice processing, automation in payment systems, reduction of manual errors, cycle time from invoice receipt to payment, coordination with procurement and project teams, and vendor satisfaction. It also examined accounts payable internal controls in terms of segregation of duties, authorization and approval controls, verification and reconciliation procedures, audit trail and monitoring systems, compliance with accounting standards (PFRS/IFRS), policy enforcement and adherence, and staff training and awareness. Based on the findings, an Integrated Payment Processing and Internal Controls Action Plan was developed to enhance financial operations, strengthen internal controls, improve operational efficiency, and support the long-term sustainability of biotechnology and allied research companies in Metro Manila.

LITERATURE-BASED RESEARCH FRAMEWORK

The study was anchored on the Business Process Re-engineering (BPR) Theory developed by Hammer and Champy (1990) and the Systems Theory of Ludwig von Bertalanffy (1950). These theories provide a comprehensive framework for understanding how payment processing efficiency and accounts payable internal controls contribute to organizational performance.

Business Process Re-engineering emphasizes the fundamental redesign of organizational processes to achieve significant improvements in operational performance, service quality, processing speed, and cost efficiency. Rather than making incremental improvements, the theory advocates redesigning workflows to eliminate unnecessary activities, reduce manual intervention, improve coordination among departments, and maximize the use of information technology. In the context of this study, the theory supports the assessment of payment processing efficiency through timely vendor payments, accurate invoice processing, automation in payment systems, reduction of manual errors, shortened invoice-to-payment cycle time, effective coordination among procurement and finance units, and improved vendor satisfaction.

Systems Theory explains that organizations operate as interconnected systems composed of several interdependent subsystems working together to accomplish common objectives. Financial management, procurement, operations, and accounting are closely related organizational functions in which changes in one component directly influence the performance of the others. Within the accounts payable process, invoices, supplier information, financial resources, and supporting documents serve as inputs that undergo verification, authorization, reconciliation, monitoring, and payment processing before producing outputs such as completed financial transactions, reliable reports, and strengthened organizational performance. Feedback generated through internal audits, compliance reviews, monitoring reports, and performance evaluations enables organizations to continuously improve their financial management systems.

The integration of these theories explains that efficient payment processing cannot be achieved without effective internal control systems. Business Process Re-engineering provides the framework for improving operational efficiency through automation, workflow redesign, and process standardization, while Systems Theory emphasizes coordination, communication, monitoring, and integration among organizational units responsible for financial operations.

METHODOLOGY

Research Design

This study employed a descriptive research design to assess the payment processing efficiency and accounts payable internal controls of selected biotechnology and allied research companies in Metro Manila. Descriptive research was considered appropriate when the objective of the study is systematically describing existing conditions and practices without manipulating the variables under investigation. The design enabled the researcher to obtain a comprehensive assessment of the respondents' based on payment processing efficiency, accounts payable internal controls, challenges encountered, and the proposed action plan.

Research Locale and Participants

The study was conducted among selected biotechnology and allied research companies operating in Metro Manila, namely Thermo Fisher Scientific, Alcon Laboratories (Philippines), Inc., Novartis, Merck Group, Roche, Manila HealthTek Inc., and Scientific Biotech Specialties Inc. The respondents consisted of 247 participants, including 24 managers, 148 staff members, and 75 clients/vendors, who were directly involved in payment processing and accounts payable activities. Purposive sampling was employed to ensure that only individuals with direct knowledge and experience in accounts payable operations participated in the study.

Research Instrument

A structured survey questionnaire served as the primary data-gathering instrument. The questionnaire consisted of five major sections: respondents' demographic profile, assessment of payment processing efficiency, assessment of accounts payable internal controls, challenges encountered in payment processing efficiency and accounts payable internal controls, and acceptability of the proposed action plan. Payment processing efficiency was assessed in terms of timeliness of vendor payments, accuracy of invoice processing, automation in payment systems, reduction of manual errors, cycle time from invoice receipt to payment, coordination with procurement and project teams, and vendor satisfaction with the payment process. Accounts payable internal controls were evaluated in terms of segregation of duties, authorization and approval controls, verification and reconciliation procedures, audit trail and monitoring systems, compliance with accounting standards (PFRS/IFRS), policy enforcement and adherence, and staff training and awareness. Responses were measured using a five-point Likert scale.

Data Gathering Procedure

Prior to data collection, permission was obtained from the participating organizations. The researcher distributed the validated survey questionnaires to qualified respondents through appropriate channels. Completed questionnaires were collected, checked for completeness, encoded, and prepared for statistical analysis. Confidentiality of all responses and voluntary participation were maintained throughout the conduct of the study.

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Statistical Treatment

Descriptive and inferential statistical tools were utilized to analyze the data. Frequency counts and percentages were used to describe the demographic profile of the respondents. Weighted mean was employed to determine the level of payment processing efficiency, accounts payable internal controls, challenges encountered, and acceptability of the proposed action plan. Analysis of Variance (ANOVA) was used to determine whether significant differences existed among the assessments of managers, staff, and clients. Pearson Product-Moment Correlation Coefficient was applied to determine the relationship between payment processing efficiency and accounts payable internal controls. All statistical analyses were conducted using a 0.05 level of significance.

RESULTS AND DISCUSSION

Profile of the Respondents

The study involved 247 respondents composed of 24 managers (9.72%), 148 staff members (59.92%), and 75 clients/vendors (30.36%) from selected biotechnology and allied research companies in Metro Manila. Most respondents belonged to the 26–30 years old age group, were female, single, and bachelor's degree holders. The respondents' demographic characteristics indicate that they possess sufficient educational qualifications and practical experience to provide reliable assessments of payment processing efficiency and accounts payable internal controls.

Assessment of Payment Processing Efficiency

Among the assessed dimensions, Timeliness of Vendor Payments ranked first (WM = 4.45), indicating that organizations consistently release payments on or before agreed due dates and maintain systematic monitoring of payment schedules. This finding is consistent with Kumar (2025), who emphasized that timely supplier payments strengthen vendor relationships, improve cash flow management, and contribute to organizational efficiency.

Coordination with Procurement and Project Teams ranked second (WM = 4.40), demonstrating effective communication and collaboration among departments involved in financial transactions. This supports the findings of Cooper (2024), who concluded that effective collaboration between procurement and finance functions enhances operational efficiency, reduces delays, and improves overall procurement performance.

Accuracy of Invoice Processing (WM = 4.37) and Vendor Satisfaction with Payment Process (WM = 4.36) were likewise assessed as Highly Evident, reflecting strong verification procedures and positive vendor relationships. These findings agree with Pruetz (2025), who emphasized that accurate invoice processing minimizes financial errors and improves accounts payable efficiency, and with Awatara et al. (2024), who found that efficient and transparent payment systems enhance vendor satisfaction, trust, and long-term business relationships.

Automation in payment systems, reduction of manual errors, and cycle time from invoice receipt to payment were also evaluated as Highly Evident, indicating that organizations effectively utilize digital technologies and standardized workflows to improve processing efficiency and minimize operational errors. These findings support Christiano (2023), who reported that automation significantly improves payment processing speed, accuracy, and productivity, and Shetty (2025), who emphasized that reducing manual processing lowers operational costs and minimizes processing errors.

Table 1 Summary on Payment Processing Efficiency

Dimension	Interpretation
Timeliness of Vendor Payments	Highly Evident
Accuracy of Invoice Processing	Highly Evident
Automation in Payment Systems	Highly Evident
Reduction of Manual Errors	Highly Evident
Cycle Time from Invoice Receipt to Payment	Highly Evident
Coordination with Procurement and Project Teams	Highly Evident
Vendor Satisfaction with Payment Process	Highly Evident
Overall Mean = 4.37	Highly Evident

The overall findings on payment processing efficiency, with a grand Mean of 4.37 as Highly Evident, support Moy's (2023) assertion on the importance of efficient and reliable payment systems. High ratings in Timeliness of vendor payments, Coordination with procurement and project teams, Accuracy of invoice processing, and Vendor satisfaction with payment process indicate strong performance aligned with key performance indicators (KPIs) such as speed and reliability. Positive results in Automation in payment systems, Reduction of manual errors, and Cycle time from invoice receipt to payment reflect the organization's ability to streamline processes and minimize inefficiencies. Moreover, favorable evaluations from clients, staff, and managers suggest enhanced trust and operational continuity. Overall, the results confirm that an efficient payment system is essential for maintaining reliability and sustaining organizational performance.

Assessment of Accounts Payable Internal Controls

Among the evaluated dimensions, Staff Training and Awareness on Accounts Payable Controls ranked first (WM = 4.50), indicating that organizations consistently invest in employee capability development to strengthen compliance and operational competence. This finding supports Sassisegarane (2023), who explained that continuous training improves employee awareness, strengthens compliance, and minimizes financial errors.

Policy Enforcement and Adherence ranked second (WM = 4.48), reflecting the consistent implementation of organizational policies governing accounts payable activities. This finding agrees with Khan (2022), who emphasized that effective policy enforcement and continuous monitoring strengthen regulatory compliance and organizational governance.

Segregation of duties, authorization and approval controls, compliance with accounting standards, audit trail and monitoring systems, and verification and reconciliation procedures were likewise assessed as Highly Evident. These findings indicate that organizations effectively implement preventive and detective controls that strengthen accountability, reduce operational risks, and promote financial transparency. Similar findings were reported by Mohamed et al. (2022), D'Andrea (2025), Maniraguha (2023), and Vyas (2024), who highlighted the importance of authorization controls, audit trails, reconciliation procedures, and compliance with accounting standards in ensuring financial integrity.

The results support established internal control principles emphasizing that strong control environments improve financial reliability, organizational accountability, and compliance with regulatory requirements (Ruiz, 2024; Sabanal et al., 2025).

Significant Difference in the Assessment of Payment Processing Efficiency and Accounts Payable Internal Controls

Analysis of Variance (ANOVA) revealed that most dimensions of payment processing efficiency and accounts payable internal controls showed no significant differences among the assessments of managers, staff, and clients. The computed F-values for timeliness of vendor payments, accuracy of invoice processing, automation in payment systems, reduction of manual errors, coordination with procurement and project teams, vendor satisfaction, segregation of duties, authorization controls, verification procedures, audit trail systems, compliance with accounting standards, policy enforcement, and staff training were all lower than the critical value.

Only Cycle Time from Invoice Receipt to Payment showed a statistically significant difference. However, post hoc analysis indicated that no specific respondent group differed significantly from another, suggesting that the observed variation resulted from overall response variability rather than differences among managers, staff, and clients. This observation supports Kothari (2026), who explained that workflow delays are more often influenced by organizational processes and approval mechanisms than by differences among personnel.

Table 2 Summary on Accounts Payable Internal Controls

Dimension	Interpretation
Segregation of Duties in AP Transactions	Highly Evident
Authorization and Approval Controls	Highly Evident
Verification and Reconciliation Procedures	Highly Evident
Audit Trail and Monitoring Systems	Highly Evident
Compliance with Accounting Standards (PERS/IFRS)	Highly Evident
Policy Enforcement and Adherence	Highly Evident
Staff Training and Awareness on AP Controls	Highly Evident
Overall Mean = 4.47	Highly Evident

The findings on accounts payable internal controls, with a grand mean of 4.47 indicated as Highly Evident, support Ruiz (2024), who revealed that strong control systems ensure accuracy, prevent fraud, and enhance accountability. High ratings for Staff training and awareness on AP controls, Policy enforcement and adherence, segregation of duties in AP transactions, Authorization and approval controls, and Compliance with accounting standards (PFRS/IFRS) indicate that preventive and detective controls are effectively implemented. The presence of Audit trail and monitoring systems, and Verification and reconciliation procedures further strengthens transaction integrity and transparency. These results confirm that well established internal controls improve financial reliability, reduce risks, and ensure proper authorization and documentation in accounts payable processes, consistent with the related literature.

Challenges Encountered

Although payment processing efficiency and accounts payable internal controls were generally assessed positively, respondents identified several operational challenges.

Payment processing efficiency challenges obtained an overall weighted mean of 2.47, verbally interpreted as Least Encountered. Delays in processing and releasing vendor payments ranked highest among the identified concerns, while limited automation, documentation issues, and interdepartmental coordination problems were also reported, although only to a minimal extent. These findings support Calderon (2024), who concluded that digital payment systems reduce operational delays, improve processing speed, and minimize transaction errors.

Similarly, accounts payable internal control challenges obtained an overall weighted mean of 2.09, also interpreted as Least Encountered. Respondents indicated that issues related to segregation of duties, authorization procedures, reconciliation activities, monitoring systems, policy enforcement, and staff training occurred infrequently, suggesting that existing control mechanisms are generally effective. This finding is consistent with Orillosa et al. (2025), who emphasized that effective internal control systems significantly reduce operational risks and improve financial performance.

Significant Relationship Between Payment Processing Efficiency and Accounts Payable Internal Controls

One of the major findings of the study was the existence of very strong to perfect positive relationships between payment processing efficiency and accounts payable internal controls.

Correlation analysis revealed that segregation of duties, verification and reconciliation procedures, policy enforcement, and staff training demonstrated very strong positive correlations, while authorization and approval controls, audit trail and monitoring systems, and compliance with accounting standards exhibited perfect positive correlations with payment processing efficiency. All computed t-values exceeded the critical value at the 0.05 level of significance, leading to the rejection of the null hypothesis.

The findings indicate that organizations with stronger internal control systems consistently demonstrate higher levels of payment processing efficiency. Effective authorization procedures, segregation of duties, continuous monitoring, compliance practices, and employee competency contribute significantly to accurate, timely, and reliable payment processing operations. These findings agree with Sabanal et al. (2025), Ruiz (2024), and Doxey (2021), who concluded that robust internal control systems significantly improve financial efficiency, accountability, and organizational performance.

Acceptability of the Proposed Action Plan

The proposed Integrated Payment Processing and Accounts Payable Internal Controls Action Plan obtained an overall weighted mean of 4.70, verbally interpreted as Highly Acceptable.

Respondents strongly agreed that the proposed interventions are aligned with organizational goals, practical to implement, supported by available resources, and capable of improving payment processing efficiency, strengthening internal controls, and enhancing overall organizational performance. The high acceptability rating indicates strong stakeholder support for implementing the proposed recommendations to improve financial management practices within biotechnology and allied research companies. This finding supports Manongsong (2023), who emphasized that well-designed organizational improvement programs strengthen internal control systems and contribute to sustainable organizational performance.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

First, the selected biotechnology and allied research companies in Metro Manila demonstrate a high level of effectiveness in implementing payment processing efficiency practices. Timeliness of vendor payments, accuracy of invoice processing, automation in payment systems, reduction of manual errors, cycle time from invoice receipt to payment, coordination with procurement and project teams, and vendor satisfaction were all assessed as Highly Evident. These findings indicate that the organizations maintain efficient financial processes that support accurate, timely, and reliable payment transactions.

Second, the assessments of managers, staff, and clients generally revealed no statistically significant differences across most dimensions of payment processing efficiency and accounts payable internal controls. Only the cycle time from invoice receipt to payment showed a significant difference; however, post hoc analysis indicated that no specific respondent group differed significantly from another. This suggests that the respondents share similar perceptions regarding the organizations' financial management practices.

Third, the participating organizations maintain effective accounts payable internal control systems. Segregation of duties, authorization and approval controls, verification and reconciliation procedures, audit trail and monitoring systems, compliance with accounting standards (PFRS/IFRS), policy enforcement and adherence, and staff training and awareness were all assessed as Highly Evident. These practices contribute to financial accuracy, accountability, regulatory compliance, and operational efficiency.

Fourth, although minor operational challenges were identified, both payment processing efficiency and accounts payable internal control issues were generally assessed as Least Encountered. This indicates that the organizations have established effective financial systems capable of minimizing operational risks while maintaining efficient payment processing activities.

Fifth, the study established significant positive relationships between payment processing efficiency and accounts payable internal controls. Strong internal control practices were found to contribute directly to improved payment processing efficiency, financial reliability, compliance with accounting standards, and overall organizational effectiveness.

Finally, the proposed Integrated Payment Processing and Accounts Payable Internal Controls Action Plan was assessed as Highly Acceptable by managers, staff, and clients. The favorable evaluation demonstrates that the proposed interventions are practical, relevant, and capable of strengthening payment processing systems, internal controls, and organizational financial management within biotechnology and allied research companies in Metro Manila.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are offered:

1. To sustain the high level of Payment Processing Efficiency, organizations may continuously improve their payment systems through automation, digitalization, and process standardization. Implementing integrated financial technologies can help reduce delays, minimize errors, and improve transaction turnaround time.
2. To further strengthen Accounts Payable Internal Controls, organizations may regularly review and update policies, procedures, and compliance practices to ensure alignment with accounting standards and organizational requirements. Continuous monitoring and evaluation of internal controls should also be conducted to maintain accountability and transparency.
3. The management may focus on streamlining approval workflows, reducing bottlenecks, and implementing real-time monitoring systems to improve payment processing speed and consistency across departments.
4. Organizations may continue investing in staff capability development through regular training, seminars, and refresher courses on accounts payable procedures, fraud prevention, compliance standards, and digital financial systems. This will enhance employee competence and strengthen adherence to internal controls.
5. Organizations should implement the proposed Integrated Payment Processing and Accounts Payable Internal Controls Action Plan to strengthen payment processing efficiency, improve internal control systems, enhance financial reporting accuracy, and support organizational sustainability.
6. Future researchers are encouraged to expand the scope of the study by including additional variables related to financial management, operational efficiency, and organizational performance. Researchers may also consider conducting similar studies in other industries or geographic locations and incorporating qualitative approaches to gain deeper insights into accounts payable management practices and internal control systems.

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