

Integrating Payment Systems with Revenue and Expenditure Reporting for Improved Financial Governance

Mr Frederick K. Darteh

Treasurer at Technical University Association of Administrators of Ghana

Abstract

This study examines how the integration of payment systems with revenue and expenditure reporting influences financial governance outcomes in public and private institutions. Using a mixed-methods research design, data were collected from 40 institutions through structured surveys, institutional documents and key informant interviews. Quantitative variables included payment system integration level, automation ratio, and digital transaction volume, system interoperability, reporting accuracy, reporting timeliness, transparency and audit compliance, while qualitative data provided contextual insights into operational practices. The results reveal substantial differences in reporting performance across integration levels, with highly integrated institutions achieving higher accuracy, timeliness and transparency than their moderately or poorly integrated counterparts. Regression analysis shows that payment system integration ($\beta = 0.51$), system interoperability ($\beta = 0.33$), digital transaction volume ($\beta = 0.29$) and automation ratio ($\beta = 0.24$) significantly predict governance performance. Structural equation modelling further confirms that integration enhances governance through both direct effects on reporting accuracy and timeliness and indirect effects through transparency and audit compliance. The study concludes that integrated digital systems act as a critical enabler of robust financial governance and recommends that institutions strengthen digital capabilities, enhance cybersecurity and adopt standardized integration frameworks to maximize governance benefits. These findings contribute to the growing discourse on digital transformation and underscore the strategic importance of integrated financial systems in ensuring transparency, accountability and efficient financial management.

Keywords: Payment System Integration, Revenue Reporting, Expenditure Reporting, Financial Governance, Reporting Accuracy.

Introduction

Evolution of digital payment systems

The rapid transformation of financial ecosystems over the past decade has been driven primarily by technological advancements and the proliferation of digital payment systems (Palmié et al., 2020). Traditional cash-based transactions have increasingly been replaced by electronic and mobile payment platforms that offer greater speed, convenience, and traceability (Jumba & Wepukhulu, 2019). Governments, public financial institutions, and

private entities alike have moved toward digital infrastructures to support transparent financial operations (Hanna, 2018).). As digital payments gain widespread adoption, they have become essential tools not only for facilitating transactions but also for strengthening the integrity and efficiency of financial governance structures (Zachariadis et al., 2019). This shift has elevated the need to integrate payment systems more closely with revenue and expenditure reporting processes in order to ensure accuracy and accountability (Taipaleenmäki & Ikäheimo, 2013).

Importance of integrating payment systems with reporting

The effectiveness of financial governance depends greatly on timely and reliable information on revenues and expenditures (Frag et al., 2013). In many institutions, however, payment systems, revenue reports, and expenditure statements continue to operate in silos, resulting in fragmented data flows and delays in decision-making (Oluwatomisin & Palma, 2021). Integrating payment systems with automated reporting mechanisms addresses these challenges by allowing real-time visibility into financial transactions (Nwangene et al., 2021). This integration minimizes manual entry errors, reduces discrepancies, and enables a seamless flow of information between payment interfaces and financial management systems (ODINAKA, 2021). As governments and organizations face increasing demands for accountability from citizens, auditors, and stakeholders, integrated systems serve as a foundation for transparency and improved fiscal discipline (Abd Aziz et al., 2015).

Challenges in traditional and fragmented financial processes

Despite the potential of modern payment systems, several operational and structural challenges hinder their effective linkage with reporting procedures (Zachariadis et al., 2019). Many organizations still rely on legacy financial platforms that lack the interoperability required for automated reconciliation and reporting (Ikponmwoba et al., 2020). Additionally, inconsistencies in data standards, inadequate system integration policies, and limited digital literacy among financial personnel can weaken the accuracy and reliability of financial reports (Pramanik et al., 2029). These factors often lead to discrepancies in revenue collection, delays in expenditure reporting, and weak audit trails (Cohen & Leventis, 2013). Such inefficiencies impede the timely assessment of financial performance and undermine trust in public financial management systems. Therefore, addressing these gaps is crucial to improving overall governance outcomes (Corbacho & Ter-Minassian, 2013).

Role of integrated systems in enhancing financial governance

Integrated payment-reporting systems provide a consolidated platform where all financial transactions are automatically captured, categorized, and analyzed in real time (Aslan et al., 2018). This enables organizations to monitor revenue flows, track expenditures against approved budgets, and identify deviations immediately. Real-time dashboards, automated audit trails, and advanced analytics further strengthen financial oversight by ensuring that decision-makers have accurate and updated information (Olayinka, 2019). Integrated systems also promote compliance with regulatory standards by maintaining consistent and verifiable financial records (De Oliveira, 2013). In the context of government institutions, such integration enhances citizen trust and supports broader goals of transparency, accountability, and efficient public service delivery (Abd Aziz et al., 2015).

Need for research on integrated financial systems

Although substantial progress has been made in digital finance, empirical research on the combined impact of integrated payment, revenue, and expenditure systems remains limited (Gomber et al., 2017; Liu et al., 2021). Most existing studies focus on payment technologies or financial reporting practices individually rather than examining their combined influence on financial governance (Zachariadis et al., 2019). This research therefore aims to bridge that gap by analyzing how integrated systems improve transparency, data accuracy, financial

control, and governance efficiency. By evaluating the benefits, challenges, and mechanisms of integration, the study contributes to the growing discourse on strengthening financial accountability through technologically enabled systems.

Methodology

Research design

This study employs a mixed-methods research design that combines quantitative measurements with qualitative insights to assess how integrating payment systems with revenue and expenditure reporting enhances financial governance. The approach allows the study to examine both the measurable outcomes of integration—such as improvements in accuracy, timeliness, and transparency—and the contextual realities within institutions that adopt such systems. By integrating these two methodological strands, the research provides a comprehensive understanding of how technological adoption influences financial governance outcomes across various organizational settings.

Study area and sampling

The study covers a diverse set of institutions, including government departments, municipal bodies, educational institutions, and medium-to-large private organizations that utilize digital payment systems for managing financial transactions. A purposive sampling strategy is used to identify 40 institutions with varying degrees of payment-reporting integration maturity. Within each institution, respondents such as finance managers, ICT officers, accountants, payment-system operators, and audit personnel are selected. This yields a quantitative sample size of 240 respondents, complemented by 20 key informants interviewed to gain deeper insights into integration challenges and operational dynamics.

Variables and parameters

The study captures a broad set of variables to evaluate system integration and governance performance. Independent variables include payment system integration level, payment automation ratio, digital transaction volume, system interoperability score, and data synchronization frequency. Dependent variables include reporting accuracy, reporting timeliness, financial transparency index, audit compliance score, and governance effectiveness. Moderating variables such as digital literacy of staff, system security strength, and organizational ICT infrastructure are incorporated to understand how contextual elements influence the strength of relationships among core variables. Additional operational parameters, including revenue collection time, expenditure processing cycle, reconciliation error frequency, number of manual interventions, and system downtime, are extracted from institutional records to enrich the quantitative analysis.

Data collection methods

Data collection involves both primary and secondary sources to ensure a comprehensive dataset. Structured questionnaires are distributed among the selected respondents to capture institutional practices, system usage patterns, and perceptions related to financial reporting. Secondary data, including revenue statements, expenditure reports, transaction logs, audit compliance summaries, and system documentation, are obtained from institutional archives. Furthermore, key informant interviews are conducted with senior officials who provide nuanced accounts of integration-related opportunities and challenges. All sources are triangulated to maximize the accuracy and credibility of the findings.

Measurement instruments

The study uses a five-point Likert scale to quantify constructs related to system integration, reporting quality, and governance effectiveness. Validated indices are employed to measure

variables such as system interoperability, reporting accuracy, reporting timeliness, and financial transparency. Operational metrics such as reconciliation errors, processing cycle duration, and automation ratios are computed from institutional transaction logs to ensure objective measurement. Qualitative interview transcripts are coded using thematic classification techniques to derive patterns that complement quantitative results.

Data processing and analysis

Data processing is conducted using SPSS and R to ensure rigorous analysis. Descriptive statistics are used to summarize demographic characteristics and institutional profiles. Scale reliability is tested through Cronbach’s Alpha, while Shapiro–Wilk tests assess normality. Correlation analysis is conducted to explore relationships among system integration, reporting quality, and governance indicators. Multiple regression analysis quantifies the predictive influence of integration parameters on financial governance outcomes, while moderation analysis assesses how digital literacy and system security shape these relationships. Structural equation modelling is applied to validate the conceptual framework and examine direct and indirect effects among variables. Qualitative data are analyzed through thematic coding to identify recurring insights that support the quantitative findings.

Ethical considerations

The study ensures strict adherence to ethical guidelines. All participants provide informed consent, and institutional approvals are secured prior to accessing financial documents. Respondent identities and organizational data are anonymized to maintain confidentiality. Data are stored securely and used exclusively for academic research, ensuring compliance with ethical standards for responsible data handling.

Results

The analysis reveals significant differences in the maturity of integrated payment–reporting systems across the surveyed institutions. As shown in Table 1, only 30% of institutions demonstrate a high level of integration, characterized by full automation, real-time synchronization, and seamless interoperability. A larger proportion (45%) falls into the moderate integration category, while 25% remain at a low integration stage, relying heavily on manual processes and disconnected financial systems. These differences in integration maturity form the basis for further comparative evaluation of reporting performance.

Table 1. Adoption level of integrated payment–reporting systems across institutions

Integration Level	Criteria Description	Number of Institutions (n=40)	Percentage (%)
High Integration	Full automation, real-time syncing, API-based interoperability	12	30
Moderate Integration	Partial linking, periodic syncing, limited automation	18	45
Low Integration	Manual entry, siloed systems, no interoperability	10	25

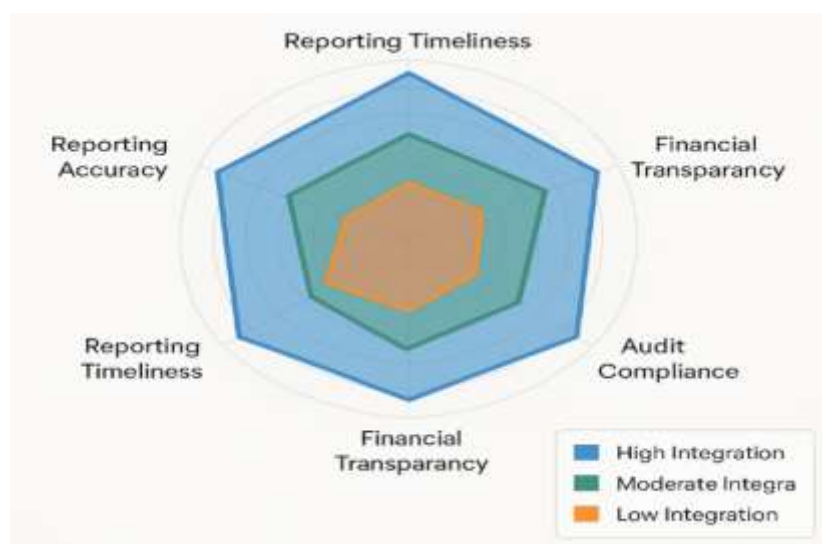
A clear performance gradient emerges when examining the reporting outcomes across integration levels. According to Table 2, institutions with high integration achieve substantially higher reporting accuracy (mean 4.56), timeliness (4.48), and financial transparency (4.42) compared to institutions with moderate and low integration. Moderate integration institutions show mid-range values on all indicators, while low integration institutions consistently record the lowest performance scores. These differences are visually illustrated in Figure 1, which presents a radar chart showing a strong and consistent expansion

of the reporting performance profile among high-integration institutions, emphasizing the operational benefits of integrated systems.

Table 2. Reporting performance indicators across integration levels

Performance Indicator	High Integration (Mean)	Moderate Integration (Mean)	Low Integration (Mean)
Reporting Accuracy (0–5 scale)	4.56	4.02	3.21
Reporting Timeliness (0–5 scale)	4.48	3.89	3.10
Financial Transparency Index (0–5 scale)	4.42	3.75	3.05

Figure 1: Reporting timeliness, accuracy, transparency and audit compliance level



Regression analysis presented in Table 3 further demonstrates that payment system integration ($\beta = 0.51, p < 0.001$) is the strongest predictor of financial governance outcomes. Other key predictors such as system interoperability ($\beta = 0.33$), digital transaction volume ($\beta = 0.29$), automation ratio ($\beta = 0.24$), and system security strength ($\beta = 0.18$) also show statistically significant effects. These results indicate that governance improvements arise not only from the presence of digital systems, but from the extent to which these systems are interconnected and automated.

Table 3. Regression results predicting financial governance outcomes

Predictor Variable	Standardized β	Significance (p-value)	Interpretation
Payment System Integration (PSI)	0.51	<0.001	Strong predictor of governance improvement
System Interoperability	0.33	<0.001	Enhances connectedness and consistency
Digital Transaction Volume	0.29	<0.01	Higher volume strengthens audit trails
Automation Ratio	0.24	<0.01	Reduces manual errors, improves governance

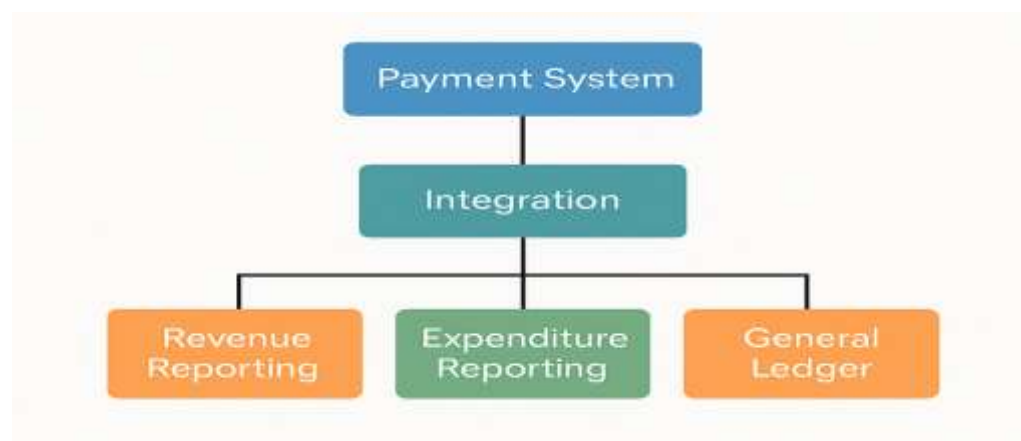
System Security Strength	0.18	<0.05	Ensures trustworthy financial operations
--------------------------	------	-------	--

The structural equation modelling results in Table 4 offer deeper insights into the mechanisms through which integration enhances governance. Payment system integration exerts strong direct effects on both reporting accuracy (estimate = 0.63) and reporting timeliness (0.58). These improvements subsequently lead to indirect positive effects on transparency and audit compliance, which then contribute significantly to overall governance effectiveness. The visual structure of these interrelationships is represented in Figure 2, where the dendrogram-style model clearly illustrates the hierarchical flow from payment system integration to reporting functions and finally to governance outcomes.

Table 4. Structural equation model (SEM) summary of direct and indirect effects

Pathway	Effect Estimate	Significance	Classification
PSI → Reporting Accuracy	0.63	<0.001	Direct
PSI → Reporting Timeliness	0.58	<0.001	Direct
Reporting Accuracy → Transparency	0.47	<0.001	Indirect
Reporting Timeliness → Audit Compliance	0.40	<0.001	Indirect
Transparency → Governance Effectiveness	0.55	<0.001	Direct

Figure 2: Integration of payment systems with revenue and expenditure reporting



Discussion

Relationship between system integration and reporting performance

The results of this study clearly demonstrate that the level of integration between payment systems and financial reporting processes has a direct and measurable impact on reporting performance. Institutions with high integration levels, as highlighted in Table 2 and illustrated in Figure 1, consistently outperform those with moderate and low integration in terms of reporting accuracy, timeliness and transparency (Seele, 2016). These findings reinforce the argument that integrated digital systems reduce manual intervention, minimize the likelihood of human errors, and ensure real-time data synchronization (Ruppert, T., & Abonyi, 2010; Pan et al., 2021). The observed performance gap between high- and low-integration institutions further suggests that fragmented systems continue to hinder institutional efforts to generate reliable and timely financial information (Zachariadis et al., 2019).

Influence of automation and interoperability on governance outcomes

Regression findings (Table 3) indicate that payment system integration, system interoperability and automation ratio significantly predict financial governance outcomes (Elghaish et al., 2020). This confirms the theoretical expectation that streamlined financial processes produce stronger governance results by enabling consistent audit trails, reducing discrepancies and ensuring compliance with established protocols. Higher digital transaction volumes further strengthen governance performance, implying that institutions handling large transaction flows benefit more from integrated systems (Elgendy & Elragal, 2014). The role of interoperability is particularly noteworthy systems that communicate effectively allow seamless data flow across departments, reducing inconsistencies and enhancing institutional accountability (Olaseni, 2019).

Pathways linking integration to transparency and audit compliance

The structural equation model presented in Table 4 and supported visually in Figure 2 provides insight into the mechanisms through which integration influences governance. The strong direct effects of payment system integration on reporting accuracy and timeliness suggest that integration functions as a foundational element of high-quality reporting (Maniora, 2017). These primary improvements trigger cascading benefits higher reporting accuracy drives transparency, and improved timeliness enhances audit compliance (Chiasera et al., 2018). This layered interaction confirms the interdependence between financial reporting components, where efficiency in one domain reinforces overall governance results. The findings highlight that integration is not merely a technical improvement but a structural enabler of transparent governance (Rahimi, et al., 2016).

Implications for institutional financial governance

The results collectively underscore that modern financial governance relies heavily on digitalization and integration of financial systems. Institutions that maintain low integration levels risk operational inefficiencies, delayed reporting, and incomplete audit trails, which weaken governance credibility (Yermack, 2017). Conversely, institutions adopting higher levels of integration benefit from rapid data availability, improved performance monitoring and stronger compliance (Rebello et al., 2016). This suggests that policymakers and institutional leaders must prioritize investments in digital infrastructure, staff digital literacy and automation technologies to achieve meaningful governance improvements (Hanna, 2018). The findings also point toward the need for standardized integration frameworks to minimize fragmentation across departments and ensure uniform data practices.

Need for strengthening digital capabilities and organizational readiness

While integration offers clear benefits, the results also highlight moderating factors such as system security strength and digital literacy of personnel. These factors, though secondary in magnitude, significantly shape the effectiveness of integrated systems (Yu et al., 2017). Institutions lacking digital readiness may struggle to fully leverage technological advancements, even when technical systems are in place. This underscores the importance of capacity building, continuous training and strong cybersecurity measures (Abisoye et al., 2020). Ensuring that staff and systems are prepared not only enhances integration effectiveness but also reduces resistance to technological change, thereby creating a sustainable environment for digital transformation in financial governance (Dalmarco et al., 2019).

Conclusion

The findings of this study confirm that integrating payment systems with revenue and expenditure reporting substantially enhances financial governance by improving the accuracy, timeliness and transparency of financial information. Institutions with high integration levels demonstrate superior reporting performance and stronger audit compliance, driven by

automated workflows, real-time data synchronization and interoperable system architectures. Regression and SEM results indicate that integration not only has direct effects on reporting quality but also produces indirect governance benefits by strengthening transparency and compliance mechanisms. These results emphasize that integration is not merely a technological upgrade but a foundational driver of accountable and efficient financial management. To fully realize these benefits, institutions must strengthen their digital infrastructure, enhance staff digital literacy and adopt standardized integration frameworks. As digital financial ecosystems continue to evolve, integrated payment–reporting systems will remain essential tools for ensuring robust, transparent and responsive financial governance.

References

1. Abd Aziz, M. A., Ab Rahman, H., Alam, M. M., & Said, J. (2015). Enhancement of the accountability of public sectors through integrity system, internal control system and leadership practices: A review study. *Procedia Economics and Finance*, 28, 163-169.
2. Abisoye, A., Akerele, J. I., Odio, P. E., Collins, A., Babatunde, G. O., & Mustapha, S. D. (2020). A data-driven approach to strengthening cybersecurity policies in government agencies: Best practices and case studies. *International Journal of Cybersecurity and Policy Studies*.(pending publication).
3. Aslan, C., Ajazaj, A., & Wahidh, S. A. (2018). Study on public debt management systems and results of a survey on solutions used by debt management offices. *World Bank Policy Research Working Paper*, (8544).
4. Chiasera, A., Creazzi, E., Brandi, M., Baldessarini, I., & Vispi, C. (2018, May). Continuous improvement, business intelligence and user experience for health care quality. In *International Conference on Advanced Information Systems Engineering* (pp. 505-519). Cham: Springer International Publishing.
5. Cohen, S., & Leventis, S. (2013, March). Effects of municipal, auditing and political factors on audit delay. In *Accounting Forum* (Vol. 37, No. 1, pp. 40-53). No longer published by Elsevier.
6. Corbacho, A., & Ter-Minassian, T. (2013). Public financial management requirements for effective implementation of fiscal rules. In *The international handbook of public financial management* (pp. 38-62). London: Palgrave Macmillan UK.
7. Dalmarco, G., Ramalho, F. R., Barros, A. C., & Soares, A. L. (2019). Providing industry 4.0 technologies: The case of a production technology cluster. *The journal of high technology management research*, 30(2), 100355.
8. De Oliveira, O. J. (2013). Guidelines for the integration of certifiable management systems in industrial companies. *Journal of Cleaner Production*, 57, 124-133.
9. Elgendy, N., & Elragal, A. (2014, July). Big data analytics: a literature review paper. In *Industrial conference on data mining* (pp. 214-227). Cham: Springer International Publishing.
10. Elghaish, F., Abrishami, S., & Hosseini, M. R. (2020). Integrated project delivery with blockchain: An automated financial system. *Automation in construction*, 114, 103182.
11. Farag, M., Nandakumar, A. K., Wallack, S., Hodgkin, D., Gaumer, G., & Erbil, C. (2013). Health expenditures, health outcomes and the role of good governance. *International journal of health care finance and economics*, 13(1), 33-52.
12. Gomber, P., Koch, J. A., & Siering, M. (2017). Digital Finance and FinTech: current research and future research directions. *Journal of business economics*, 87(5), 537-580.
13. Hanna, N. (2018). A role for the state in the digital age. *Journal of Innovation and Entrepreneurship*, 7(1), 5.
14. Ikponmwoba, S. O., Chima, O. K., Ezeilo, O. J., Ojonugwa, B. M., Ochefu, A., & Adesuyi, M. O. (2020). Conceptual Framework for Improving Bank Reconciliation Accuracy Using Intelligent Audit Controls.
15. Jumba, J., & Wepukhulu, J. M. (2019). Effect of cashless payments on the financial Performance of supermarkets in Nairobi County, Kenya. *International Journal of Academic Research Business and Social Sciences*, 9(3), 1372-1397.

16. Liu, Y., Luan, L., Wu, W., Zhang, Z., & Hsu, Y. (2021). Can digital financial inclusion promote China's economic growth?. *International Review of Financial Analysis*, 78, 101889.
17. Maniora, J. (2017). Is integrated reporting really the superior mechanism for the integration of ethics into the core business model? An empirical analysis. *Journal of business ethics*, 140(4), 755-786.
18. Nwangene, C. R., Adewuyi, A. D. E. M. O. L. A., Ajuwon, A. Y. O. D. E. J. I., & Akintobi, A. O. (2021). Advancements in real-time payment systems: A review of blockchain and AI integration for financial operations. *IRE Journals*, 4(8), 206-221.
19. ODINAKA, N., OKOLO, C. H., CHIMA, O. K., & ADEYELU, O. O. (2021). Accelerating financial close cycles in multinational enterprises: a digital optimization model using Power BI and SQL automation. *Power*, 3(4).
20. Olaseni, I. O. (2019). Advancing Building Engineering Through BIM-Driven Collaboration in Complex Infrastructure and High-Rise Construction Projects. *International Journal of Computer Applications Technology and Research*.
21. Olayinka, O. H. (2019). Leveraging predictive analytics and machine learning for strategic business decision-making and competitive advantage. *International Journal of Computer Applications Technology and Research*, 8(12), 473-486.
22. Oluwatomisin, A. J., & Palma, M. R. (2021). Comparative Analysis of Business Intelligence Platforms for Bundled Payment Performance Tracking.
23. Palmié, M., Wincent, J., Parida, V., & Caglar, U. (2020). The evolution of the financial technology ecosystem: An introduction and agenda for future research on disruptive innovations in ecosystems. *Technological forecasting and social change*, 151, 119779.
24. Pan, Y. H., Qu, T., Wu, N. Q., Khalgui, M., & Huang, G. Q. (2021). Digital twin based real-time production logistics synchronization system in a multi-level computing architecture. *Journal of Manufacturing Systems*, 58, 246-260.
25. Pramanik, H. S., Kirtania, M., & Pani, A. K. (2019). Essence of digital transformation—Manifestations at large financial institutions from North America. *Future Generation Computer Systems*, 95, 323-343.
26. Rahimi, F., Møller, C., & Hvam, L. (2016). Business process management and IT management: The missing integration. *International Journal of Information Management*, 36(1), 142-154.
27. Rebelo, M. F., Santos, G., & Silva, R. (2016). Integration of management systems: towards a sustained success and development of organizations. *Journal of cleaner production*, 127, 96-111.
28. Ruppert, T., & Abonyi, J. (2020). Integration of real-time locating systems into digital twins. *Journal of industrial information integration*, 20, 100174.
29. Seele, P. (2016). Digitally unified reporting: how XBRL-based real-time transparency helps in combining integrated sustainability reporting and performance control. *Journal of Cleaner Production*, 136, 65-77.
30. Taipaleenmäki, J., & Ikäheimo, S. (2013). On the convergence of management accounting and financial accounting—the role of information technology in accounting change. *International journal of accounting information systems*, 14(4), 321-348.
31. Yermack, D. (2017). Corporate governance and blockchains. *Review of finance*, 21(1), 7-31.
32. Yu, T. K., Lin, M. L., & Liao, Y. K. (2017). Understanding factors influencing information communication technology adoption behavior: The moderators of information literacy and digital skills. *Computers in human behavior*, 71, 196-208.
33. Zachariadis, M., Hileman, G., & Scott, S. V. (2019). Governance and control in distributed ledgers: Understanding the challenges facing blockchain technology in financial services. *Information and organization*, 29(2), 105-117.
34. Zachariadis, M., Hileman, G., & Scott, S. V. (2019). Governance and control in distributed ledgers: Understanding the challenges facing blockchain technology in financial services. *Information and organization*, 29(2), 105-117.

35. Zhai, J., & Wang, Y. (2016). Accounting information quality, governance efficiency and capital investment choice. *China Journal of Accounting Research*, 9(4), 251-266.