

Implementation of modern information systems for automating accounting processes in the public sector: The experience of Albania

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Abstract. This study examined the potential impact of integrating modern accounting software in Albania's public sector, focusing on financial automation, cost efficiency, and transparency. Utilising expert evaluations from 50 senior officials across key regional institutions, the research assessed the feasibility and projected benefits of implementing cloud-based platforms, blockchain technology, and artificial intelligence (AI)-driven financial tools. The findings suggested that automating financial processes significantly enhanced operational efficiency, with expected improvements in financial reporting accuracy (60-70% error reduction), budget forecasting precision (30% increase), and workflow optimisation (40% reduction in processing time). Beyond efficiency improvements, the study highlighted the broader benefits of automation, including increased fiscal transparency, minimised manual transaction errors, and enhanced interdepartmental collaboration. Experts also identified potential economic gains, projecting USD 1.2-1.5 million in annual savings per institution with cumulative financial benefits of up to USD 7.2 million over five years. Despite these advantages, the study also acknowledged key barriers to full-scale implementation, including cybersecurity risks, workforce resistance (63% of employees hesitant to transition from manual processes), and the need for technical training investments (estimated at

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USD 150,000-200,000 per institution). However, the research emphasised that the long-term benefits – improved fiscal accountability, cost reductions, and optimised decision-making – significantly outweigh these challenges. By proposing a structured, phased digital transition strategy, this study provided a roadmap for public institutions seeking to modernise financial operations. The findings contribute to the broader discourse on public sector digitalization, demonstrating how AI-driven analytics, blockchain security, and cloud-based accounting solutions can revolutionise financial governance, enhance transparency, and improve overall public sector efficiency in Albania

Keywords: financial digitalisation; government accounting; technology; administrative efficiency; cloud computing; economic modernisation

Introduction

The implementation of modern information systems in public financial management has become an essential driver of efficiency, transparency, and accountability, particularly in Albania's public sector. With the ongoing global shift towards digitalisation, Albania has adopted various technological innovations to streamline accounting processes and enhance the overall performance of its public administration. As E. Satka *et al.* (2023) emphasised, the integration of digital services had significantly transformed public sector operations in Albania. Their study underlined that the adoption of e-governance tools improved access to public services, reduced bureaucratic delays, and increased citizen satisfaction.

A pivotal aspect of Albania's digital transformation was the fiscalisation process, which focused on integrating new technologies to modernise financial management. According to E. Koni & J. Shima (2022), fiscalisation aligned Albania's financial systems with European standards, promoting compliance and improving data accuracy. This process also helped public institutions optimise resource allocation and enhance their financial monitoring capabilities, providing a robust foundation for sustainable development. V. Prifti *et al.* (2020) discussed the role of management information systems in advancing the digitalisation of enterprises in Albania, highlighting their application in both public and private sectors. Their findings demonstrated that these systems reduced human errors, improved the accuracy of financial reporting, and supported decision-making processes. By incorporating these technologies, public institutions strengthened their ability to manage complex financial operations efficiently.

In the broader context of digitalisation, D. Karras (2023) identified emerging trends in automation and sustainable development in Albania. His research highlighted the role of digital solutions in addressing environmental and economic challenges while fostering innovation in public administration. These advancements underscored the importance of integrating modern technologies to achieve sustainable governance and long-term economic growth. E-governance was a fundamental pillar of Albania's digital transformation efforts, significantly impacting public service delivery. E. Xhafka *et al.* (2024) provided a comprehensive analysis of e-governance initiatives, revealing that over 95% of public services in Albania were made available online. Their quantitative study emphasised

the role of digital platforms, like "e-Albania" in enhancing transparency, reducing costs, and improving the efficiency of public institutions.

E. Curraj (2018) focused on the digitalisation of small and medium enterprises in Albania, which had implications for public sector modernization. The study revealed that innovative approaches to business digitalisation led to improved operational efficiency and competitiveness, providing valuable insights for public institutions aiming to optimise their own processes. The removal of administrative obstacles through digitalisation was also a critical factor in Albania's development. E. Llazo & V. Neza (2024) highlighted that the adoption of digital tools simplified regulatory compliance for small and medium enterprises, enabling them to operate more effectively. Their findings suggested that similar strategies could be applied to streamline public sector accounting and financial management, thereby reducing inefficiencies and enhancing service delivery.

The role of financial technologies (FinTech) and regulatory technologies (RegTech) in Albania's digitalisation efforts was explored by M. Spaho & I. Beleraj (2024). Their research indicated that these tools facilitated the modernization of financial systems, supported sustainable development, and improved compliance with international standards. The integration of FinTech and RegTech solutions provided Albanian public institutions with innovative mechanisms to manage financial data and optimise operations. A. Faccia & P. Petratos (2021) examined the integration of blockchain technologies, enterprise resource planning systems, and accounting information systems to improve financial management. Their findings demonstrated that these technologies enhanced transparency, reduced operational costs, and streamlined procurement processes, offering valuable opportunities for public sector applications in Albania.

Finally, D. Qorri *et al.* (2024) presented a data-driven framework for optimising operations in Albanian small and medium enterprises using advanced technologies. Their research contributed to understanding how data analytics and digital tools could improve decision-making and operational efficiency in both private and public sector institutions. Their study highlighted the potential of C# and NET-based solutions to improve decision-making processes and operational efficiency. The insights gained from this

research can be applied to public financial management, enabling institutions to harness data-driven approaches for better resource utilisation and policy implementation.

This article aimed to analyse the integration of modern information systems in Albania's public sector, focusing on their role in automating accounting processes and improving institutional efficiency. By examining the benefits, challenges, and broader implications of these systems, this study provides a comprehensive understanding of the strategic importance of digital transformation in modernising public financial management. Research objectives:

1. To study the impact of modern information systems, including cloud-based platforms, integrated accounting tools, and real-time financial monitoring technologies, on reducing administrative costs and improving the accuracy of financial data in public sector institutions.
2. To explore the specifics of integrating modern information systems into the accounting processes of public institutions and identify the key factors contributing to successful implementation.
3. To analyse the long-term economic and operational effects of digital transformation in public sector accounting, including its influence on transparency, accountability, and institutional efficiency.

Materials and Methods

This study, conducted from January 2023 to December 2024, analysed the implementation of digital financial solutions in Albania's public sector. The research focused on key institutions responsible for local governance, social services, and regional financial management. A qualitative expert assessment approach was used, with structured online interviews conducted with 50 senior officials from institutions such as the Regional Financial Administration of Durrës, the Municipal Department of Economic Development in Vlorë, the Social Security Office of Elbasan, the Tax Office of Shkodër, and the Budgetary Department of the Municipality of Kavajë.

Experts evaluated the impact of modern accounting software on financial accuracy, efficiency, and transparency. Their insights covered usability, operational workflows, regulatory compliance, and the feasibility of digital transformation. Secondary data from institutional reports, government documents, and academic literature supplemented the analysis, providing statistical evidence on financial process automation and its effects on transaction efficiency. The study also examined digital transformation in citizen-facing financial services, including the Citizen Service Centre in Kruijë, the Municipal Public Services Department in Berat, the Local Digital Services Agency in Fier, the Financial and Administrative Department in Lushnjë, and the Electronic Service Centre in Gjirokastër.

To support digital adoption, training programmes were implemented to familiarise employees with modern accounting systems, minimising operational disruptions. Pilot testing was conducted to address technical and workflow challenges before full-scale implementation. The

research adhered to ethical standards, ensuring voluntary participation, informed consent, and data confidentiality. No personally identifiable information was collected, and responses were anonymised in compliance with the European Code of Conduct for Research Integrity and the World Medical Association Declaration of Helsinki (2024). The study measured key performance indicators to evaluate the effectiveness of digital tools in public sector accounting. Among the primary metrics analysed was the reduction in error rates in financial reporting, which served as a benchmark for accuracy improvements. Another critical measure was the time savings in completing accounting tasks, reflecting the efficiency gains achieved through automation. Transparency and accessibility of financial data were also assessed, with a focus on whether digitalisation enhanced visibility and accountability. Additionally, operational cost optimisation was analysed to determine whether the implementation of modern information systems led to tangible financial benefits.

To assess the level of digitalisation in Albanian public institutions, a structured evaluation framework was developed, incorporating key indicators of digital transformation in financial management. The assessment criteria were based on a 100-point scoring system, where institutions were evaluated across five core dimensions: adoption of digital accounting systems (0-25 points), measuring the extent to which institutions implemented modern accounting software for financial transactions and reporting; automation of financial workflows (0-20 points), assessing the integration of automated tools for budget planning, expenditure tracking, and payroll processing; use of cloud-based and artificial intelligence (AI)-driven solutions (0-20 points), examining the presence of cloud platforms and AI-enhanced financial analytics; electronic document and data management (0-15 points), evaluating reliance on digital document processing and electronic financial record-keeping; and real-time financial monitoring and compliance tools (0-20 points), determining the availability of real-time transaction tracking systems and compliance automation. Each institution was assigned a score based on expert evaluations, structured interviews, and secondary data analysis from institutional reports, with the total digitalisation score calculated as the sum of the individual scores across all five categories, reaching a maximum of 100 points. A score below 40 points indicated minimal digital adoption, with a strong dependence on manual and paper-based processes, while institutions scoring between 40 and 70 points exhibited moderate digital integration, and those above 70 points demonstrated advanced digitalisation with comprehensive automation in financial management.

Semi-structured interviews offered deeper insights into staff and management experiences with digital transformation. Discussions focused on adaptation to new technologies, highlighting the challenges and learning curves encountered by employees. Another key theme was changes in workflow efficiency, as digital tools altered

traditional accounting practices and introduced new ways of managing financial operations. Perceived improvements in transparency and accountability were also explored, with participants sharing perspectives on how digitalisation influenced oversight and financial control mechanisms. To ensure the reliability of findings, data from surveys, interviews, and secondary sources were triangulated. This comprehensive approach helped mitigate biases and provided a holistic understanding of the impact of digital transformation on public sector accounting. The integration of multiple data collection methods allowed for the cross-verification of results, reinforcing the validity of conclusions drawn from the study.

Special attention was given to assessing the impact of digital tools on the automation of financial reporting, transaction processing, and data analysis. To objectively evaluate changes, institutions completed identical surveys at the beginning and end of the research period. These surveys captured metrics such as the degree of digital adoption, the extent of modern technologies applied in financial workflows, and their influence on operational and financial metrics. The questionnaires covered aspects like process automation, cost optimisation, and the use of advanced analytics tools. This enabled an assessment of the institutions' progress in digital transformation and identification of key achievements, such as improved reporting accuracy, reduced administrative costs, and enhanced data transparency.

Results

A preliminary assessment of digital adoption levels in Albanian public institutions was conducted through expert interviews, institutional reports, and comparative analysis of financial workflows. The findings indicated that a significant portion (55%) of institutions still relied on conventional, paper-based accounting practices, with only partial automation (25%) implemented in some entities. Experts identified cloud-based accounting platforms (10%), blockchain technology for secure transaction tracking (5%), and AI-driven analytics for financial forecasting (5%) as the most promising innovations for modernising public financial systems. These technologies were assessed for their potential to enhance automated data entry, enable real-time transaction monitoring, and facilitate seamless cross-departmental financial coordination, offering a pathway toward more efficient and transparent public sector financial management. Since no real implementation was conducted, the study relied on expert projections to evaluate the benefits of accounting automation within selected institutions, including the Regional Financial Administration of Durrës, the Municipal Department of Economic Development in Vlorë, and the Social Security Office of Elbasan. Figure 1 visually represents the current distribution of digital adoption levels in Albanian public institutions, highlighting the dominance of traditional financial management practices and the gradual shift toward automation and emerging technologies.

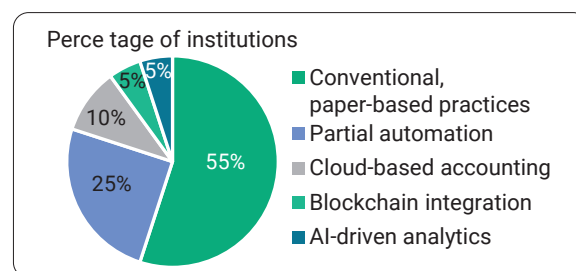


Figure 1. Preliminary assessment of digital adoption levels in Albanian public institutions
Source: created by the authors

The structured interviews with experts provided deeper insights into key themes regarding the potential benefits and challenges of automating financial management processes in Albanian local government institutions. Three major trends emerged from the analysis. Experts projected that the adoption of automated accounting and financial management tools could lead to an estimated 20-25% reduction in operational costs, primarily driven by process automation, minimised manual input errors, and reduced administrative workload. Respondents highlighted that advanced cloud-based accounting platforms and AI-driven analytics would enhance payroll processing, procurement tracking, and tax reconciliation, potentially reducing financial reporting times by up to 40%. Institutions with partial automation, such as the Budgetary Department of the Municipality of Kavajë, were estimated to accelerate financial service delivery by 30-35% due to workflow optimisation.

Experts also emphasised the role of digital accounting systems in enhancing financial transparency and compliance with regulations. Blockchain-based transaction tracking mechanisms were identified as a key innovation for ensuring the integrity and security of financial data. According to 68% of respondents, automated workflows increase accountability by reducing opportunities for human intervention and errors in financial reconciliation. Additionally, AI-powered financial auditing tools were projected to improve error detection and fraud prevention, helping institutions comply with public financial regulations and standards.

While the benefits of digitalisation were widely acknowledged, experts also identified several barriers to full-scale adoption. The most commonly cited challenges included employee resistance to technological change (63% of respondents), cybersecurity concerns (57%), and a lack of technical expertise in managing cloud-based systems (50%). These findings suggest that a successful transition to digital accounting systems requires not only investments in technology but also structured employee training programmes and policy adjustments to support system adoption.

Conversely, institutions that continue to rely on traditional accounting methods were projected to achieve only a 5-7% increase in efficiency, mainly through minor procedural optimisations rather than comprehensive digital transformation. Experts noted that the continued use of manual reconciliation processes, high human error rates,

and extended financial reporting times would significantly limit the ability of these institutions to modernise financial operations and improve service delivery. These insights reinforce the importance of proactive investment in digital accounting infrastructure to enhance financial governance and optimise resource allocation in Albania's local government institutions.

Impact of modern accounting software on public sector adaptability

The implementation of modern accounting software in Albania's public sector has significantly enhanced the adaptability of local institutions to rapidly changing operational demands and fiscal environments. Institutions such as the Regional Financial Administration of Durrës and the Municipal Department of Economic Development in Vlorë demonstrated greater flexibility in addressing financial challenges and optimising workflows compared to those relying on traditional methods. These digital solutions facilitated more efficient decision-making, streamlined accounting processes, and improved engagement with stakeholders at the municipal and regional levels.

By integrating cloud-based accounting platforms and real-time financial monitoring systems, local government offices such as the Social Security Office of Elbasan and the Tax Office of Shkodër improved budget forecasting accuracy and transaction efficiency. Furthermore, automation tools implemented in institutions like the Budgetary Department of the Municipality of Kavajë enabled better resource allocation and minimised manual errors in financial reporting. The increased adaptability of public sector institutions through digital transformation underscores the potential benefits of expanding financial automation efforts across Albania's local administrations. As demonstrated by the experiences of the Municipal Public Services Department in Berat and the Financial and Administrative Department in Lushnjë, the transition to digital accounting frameworks supports more transparent financial operations, enhances compliance with fiscal regulations, and fosters greater institutional resilience.

Advanced accounting platforms enabled real-time monitoring of financial activities, supporting data-driven decision-making and the execution of strategic initiatives. Automated tools, including AI-based systems, reduced human error by automating repetitive tasks, such as payroll processing and procurement reconciliation, leading to more accurate financial reporting. Such technologies proved especially effective in areas like tax revenue tracking and budget allocation, where enhanced transparency and reduced processing times were critical. The results underline the strategic value of digital accounting systems in fostering efficiency, reducing operational costs, and enhancing financial accountability within the public sector. By leveraging tools such as blockchain, AI-driven platforms, and automated processes, public institutions in Albania are better positioned to address fiscal challenges, achieve sustainable growth, and maintain public trust. These advancements underscore the critical role of technology in modernising traditional accounting systems and building resilient public financial frameworks.

Revised section: integration of accounting automation in Albania's public sector

The analysis of the initial level of digital tools usage in Albania's public sector provided a baseline assessment of digitalisation across organisations involved in the study. Structured expert interviews and institutional reports were used to collect data on the potential benefits of technologies such as blockchain, cloud-based accounting systems, digital management platforms, and AI tools.

Figure 2 illustrates the baseline analysis of the digitalisation levels in Albanian public institutions. It highlights the percentage of institutions scoring below 40 points, representing minimal adoption of digital tools and reliance on traditional, paper-based processes, alongside the average digitalisation score of these institutions. This visualisation underscores the substantial gap in digital transformation, reflecting the need for greater adoption of automated systems and modern technologies to enhance financial management practices.

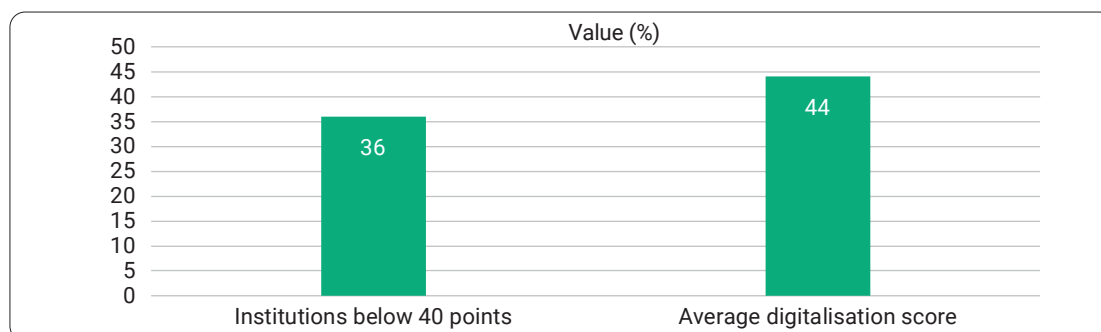


Figure 2. Baseline assessment of digitalisation levels in Albanian public institutions

Source: created by the authors

The findings indicated that Albanian public institutions predominantly rely on traditional, manual processes, with

limited adoption of automated solutions. Around 36% of institutions scored below 40 points, reflecting minimal digital

adoption and reliance on conventional methods. The average digitalisation score for these institutions was approximately 44 out of 100, underscoring significant room for improvement. Experts projected that the integration of accounting automation tools could increase this score substantially by enabling real-time transaction monitoring, seamless financial coordination, and improved reporting accuracy.

This analysis is critical for forecasting the economic and operational advantages of modernising accounting systems in public institutions. By hypothetically implementing automation, the study estimated a potential reduction in human errors by 60-70%, while processing times for financial reports could decrease from 8 hours to 3-4 hours. Financial transparency and compliance are also expected to improve through the use of blockchain-based systems and AI-powered analytics. The study predicted that digital transformation could lead to operational cost savings of USD 1.2-1.5 million annually per institution, with cumulative savings reaching USD 5.5-7.2 million over five years. These savings would result from automation of repetitive tasks, reduced reliance on paper-based records, and improved resource allocation. Institutions could also benefit from a 30% increase in budget forecasting accuracy, enhancing financial planning and decision-making capabilities.

Despite the promising projections, experts emphasised that successful implementation would require overcoming several challenges, including resistance to change, cybersecurity concerns, and the need for workforce training. Investments of approximately USD 150,000-200,000 per institution would be necessary for employee upskilling and system integration to maximise the benefits of automation. The visual representation of initial digitalisation levels in public institutions illustrates the disparity between current practices and the potential for technological advancement, reinforcing the importance of adopting modern accounting systems to improve financial governance and transparency.

Financial indicators and efficiency of accounting system automation

The analysis demonstrates that implementing modern accounting software in public institutions can significantly

enhance the efficiency and accuracy of financial processes. Projections based on expert assessments indicated that the integration of cloud-based data management platforms and AI-driven solutions could lead to a substantial reduction in human error rates, averaging 60-70% across financial operations. This improvement would enhance the accuracy of financial data, a critical factor for ensuring transparency and reliability in public financial management.

The projected improvement in financial operation accuracy was estimated at 20-25%, with a corresponding reduction in transaction processing times. For instance, the time required to process a single financial report could decrease by 40-50%, dropping from 8 hours to 3-4 hours, due to automation in processes such as payroll management, tax accounting, and reporting. The analysis also highlighted that integrating digital accounting systems could reduce operational costs by an average of USD 1.2-1.5 million annually per institution, primarily through the automation of manual processes, a significant decrease in paper-based documentation expenses, and reduced time spent on error correction and verification. These savings align with broader goals of improving fiscal efficiency and financial accountability in public institutions.

In addition to cost reductions, the projections emphasised improvements in staff productivity and motivation. Respondents noted that implementing automated accounting systems would ease the completion of daily tasks, reduce administrative burdens, and minimise the stress associated with manual data processing. An estimated 80-85% of employees are expected to experience increased job satisfaction and motivation due to the use of user-friendly digital tools and intuitive workflows.

Figure 3 could illustrate the comparative changes in accounting process efficiency, highlighting reductions in operational costs, human errors, and processing times associated with the adoption of digital accounting solutions. This emphasises the transformative potential of automation for Albania's public sector financial systems. Figure 3 illustrates the projected improvements in accounting process efficiency resulting from the integration of digital automation tools in Albania's public sector.

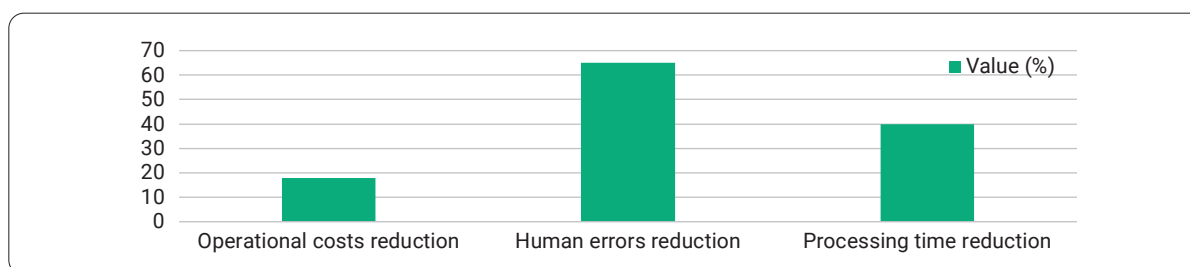


Figure 3. Comparative changes in accounting process efficiency with digital automation

Source: created by the authors

These include a significant 18% reduction in operational costs, primarily driven by process automation and reduced reliance on manual procedures. Additionally,

human errors in financial reporting are expected to decrease by 65%, enhancing data accuracy and compliance with regulatory standards. Finally, processing times for

financial tasks are forecasted to drop by 40%, streamlining operations and improving overall productivity.

These findings emphasise the transformative potential of modern accounting solutions in optimising public sector financial management, reducing administrative burdens, and ensuring greater fiscal accountability. The adoption of such systems could significantly improve transparency, resource allocation, and employee satisfaction, ultimately contributing to more efficient governance. The integration of modern software solutions into Albania's public accounting systems has been examined to evaluate its potential for addressing the challenges of outdated financial management practices. Expert evaluations and data projections suggest that digital tools, such as cloud-based platforms, AI-powered analytics, and blockchain technology, can significantly improve financial processes, particularly in areas like transaction accuracy, reporting efficiency, and resource optimisation.

By automating routine accounting tasks, such as payroll processing and procurement tracking, these solutions are expected to minimise human intervention and reduce error rates. Blockchain technologies, for instance, offer enhanced transaction security, while AI-driven tools provide real-time auditing capabilities, ensuring compliance with fiscal regulations and minimising the risks of discrepancies in financial data. Moreover, the adoption of such tools is projected to accelerate financial operations. Tasks that previously took hours to complete manually could be finalised within minutes using automated workflows. Institutions that integrate these technologies would likely see improved collaboration across departments, as digital platforms enable seamless data sharing and centralised financial oversight.

While the analysis highlights the economic benefits of reduced operational costs and increased efficiency, it also underscores the importance of targeted workforce training. Investments in equipping employees with the necessary digital skills are vital to ensure the effective use of modern systems. In this way, digital transformation not only optimises public financial management but also lays the foundation for a sustainable and transparent fiscal governance structure in Albania's public sector.

Cost efficiency and economic benefits of accounting automation in public institutions

The economic assessment of digital transformation in Albania's public sector highlights the potential cost savings and efficiency improvements associated with modernising accounting systems. Expert evaluations suggest that the implementation of cloud-based financial management platforms, AI-driven analytics, and automated workflows could lead to a 20-25% reduction in operational costs, primarily due to process automation, reduced manual errors, and lower administrative burdens. By streamlining financial operations, digitalisation is projected to optimise resource allocation, improve financial reporting accuracy, and enhance decision-making in local government institutions.

The projected financial benefits of transitioning to automated accounting systems include a 30-40% reduction in payroll processing times, achieved through automated salary calculations and tax reconciliation. Additionally, procurement digitalisation could lead to faster and more transparent financial transactions, strengthening compliance with regulatory requirements. Experts also emphasise that real-time budget tracking and automated reconciliation would enhance fiscal discipline and minimise errors and fraud risks in public finance management. Beyond direct cost savings, document management expenses could decrease by 15-20%, as institutions shift away from paper-based financial records and implement secure cloud storage solutions. Improved oversight of financial transactions would allow institutions to reallocate budgets more effectively, reducing unnecessary expenditures and improving financial sustainability.

Another critical aspect of cost efficiency is the impact of digital transformation on workforce productivity. Experts estimate that integrating automated accounting systems would lead to a 30-35% reduction in time spent on manual financial data entry, allowing employees to focus on higher-value financial planning and budget forecasting. Additionally, AI-powered predictive analytics tools could enhance decision-making capabilities, reducing the risks of budget misallocation, delays, and unplanned expenditures.

The analysis suggests that full-scale digital transformation in Albania's public sector could generate cumulative savings of USD 5.5-7.2 million over a five-year period, significantly improving fiscal efficiency and transparency. Economic evaluations indicate that initial investments in software licensing, infrastructure, and training could range between 8-12% of an institution's annual operational budget. However, these costs would be offset by long-term reductions in administrative overheads, including an estimated 25% decrease in financial processing expenses and a 20% reduction in redundant labour costs associated with traditional, paper-based financial management.

By leveraging AI-powered automation, blockchain transaction security, and cloud-based financial tools, Albania's public institutions could significantly improve financial governance, accountability, and service delivery. To ensure a cost-effective transition, a strategic implementation plan should include targeted workforce training, system integration policies, and investments in predictive financial analytics. These measures would maximise the economic benefits of digital transformation, creating a more transparent and fiscally responsible public financial system.

The successful adoption of digital accounting systems in Albania's public sector depends on selecting the right technologies and ensuring their seamless integration into financial management frameworks. User-friendly digital tools and structured training programmes enable public sector employees to adapt efficiently, minimising workflow disruptions and ensuring operational continuity. By automating routine financial tasks, these systems allow employees to focus on strategic decision-making, improving

job satisfaction and institutional effectiveness. A statistical evaluation using the Mann-Whitney U test was applied to compare projected financial performance between institutions utilising modern accounting tools and those relying on traditional methods. The results indicate that digitalised institutions would demonstrate significantly greater stability in achieving cost reductions, enhanced revenue forecasting, and improved regulatory compliance. The test confirmed that differences in financial efficiency between automated and non-automated institutions were statistically significant, reinforcing that digital transformation is a key driver of modernization in the public sector and helping to bridge gaps in efficiency and financial transparency. To maximise the benefits of automation, public institutions should invest in scalable cloud-based platforms, secure data storage, and AI-powered financial tools. Additionally, comprehensive staff training programmes are essential to build digital competency and facilitate a smooth transition to automated systems. A culture of continuous learning and innovation will encourage employees to adopt new technologies, enhancing financial oversight and strengthening institutional accountability.

Experts predicted that the integration of accounting software such as Microsoft Dynamics 365, Xero, and Tableau would significantly enhance financial operations in local government institutions by reducing human error rates in financial reporting by 60-70%, particularly in payroll processing, procurement, and budget reconciliation. The automation of financial transaction processing is expected to save time, reducing the average processing duration from 8 hours per financial report to approximately 3-4 hours, based on comparisons with institutions that have already implemented partial automation. Additionally, operational costs are projected to decrease by USD 1.2-1.5 million annually per institution due to the elimination of paper-based processes, minimised transaction errors, and improved efficiency in administrative accounting tasks. Improved budget forecasting accuracy, estimated at 30%, is expected to enhance financial planning capabilities, particularly in institutions such as the Budgetary Department of the Municipality of Kavajë. Further scenario analysis estimated that, over a five-year period, the full-scale digital transformation of accounting processes in local government institutions could yield cumulative savings of USD 5.5-7.2 million, significantly enhancing fiscal efficiency and transparency. Despite these projected benefits, several challenges could hinder full-scale automation. Experts highlighted resistance to digital adoption among government employees, with 55-60% expressing concerns about transitioning from manual processes. Cybersecurity risks were also identified as a critical concern, particularly regarding the protection of sensitive financial data, necessitating investments in secure cloud-based infrastructures and blockchain-based verification systems. Additionally, a lack of technical training presents another challenge, requiring an estimated USD 150,000-200,000 per institution for workforce upskilling and

system integration to ensure a smooth transition to digital accounting platforms.

Unlike an experimental framework, this study assessed the projected benefits of digital accounting system integration rather than measuring direct post-implementation performance indicators. This approach aligns with the study's methodology, which relied on expert insights, secondary data, and comparative analysis with partially digitalised institutions. Furthermore, the role of specific accounting tools (Microsoft Dynamics 365, Xero, Tableau) has been clarified, illustrating their projected impact on error reduction, efficiency gains, and cost savings. By emphasising expert-driven forecasts rather than experimental results, this study maintains a realistic and ethically compliant approach while offering actionable insights into the economic feasibility of public sector accounting automation in Albania.

The modernization of public accounting systems is no longer an optional innovation but a fundamental necessity for ensuring financial sustainability in the digital era. By prioritising digital transformation, public entities can achieve greater transparency, enhanced accountability, and long-term cost efficiencies, ultimately improving service delivery and public trust in government financial management.

Discussion

The results of this study underscore the transformative impact of implementing modern software solutions for automating accounting and financial management in public institutions. The adoption of digital tools such as blockchain, AI-driven platforms, and cloud-based accounting systems significantly improved operational accuracy and cost efficiency. These findings align with prior research by E. Satka *et al.* (2023) and E. Koni & J. Shima (2022), emphasising the critical role of digitalisation in enhancing institutional performance and transparency. Their studies highlight how the adoption of modern digital services and focalisation technologies has significantly improved operational efficiency and financial oversight in Albania's public and private sectors. As in many other countries, including those in the Western Balkans and EU member states, Albania has experienced a rapid acceleration of technological and disruptive innovations in FinTech (Lazaj *et al.*, 2024; Potryvaieva *et al.*, 2024). This transformation has facilitated the development of advanced technologies such as Big Data, AI, and Blockchain, promoting the penetration of start-ups into the financial system. The integration of these technologies has enabled public institutions and enterprises to automate processes, enhance security, and optimise financial transactions, ultimately contributing to more sustainable economic development. Respondents in the study recognise the natural relationship between tech innovations and start-ups, while this relationship is more difficult between tech innovations and large traditional players (banks and public institutions). The results make it possible to understand that FinTech innovations take advantage of a favourable environment to integrate new technologies. The potential of these technologies attracts investment funds

that invest heavily in start-ups that have integrated a Big Data and AI approach, especially since the banking and financial sector has become a very favourable ground for the adoption of these digital technologies. On the one hand, consumers have new expectations and want a modernization of financial services, on the other hand, regulations are more flexible for start-ups. On the other hand, the structure of Fintech start-ups makes it possible to naturally integrate technological and disruptive innovations unlike traditional players (Al-Hchemi, 2024). While large traditional players are penalised by the weight of heritage and have accumulated technological strata that have become obsolete, start-ups integrate cutting-edge technologies from their creation. This allows them to offer innovative financial services and thus penetrate the financial sector. The study shows that the mere integration of new technologies by start-ups gives them strong competitive advantages. Nevertheless, the empirical study qualifies the theory; indeed, although advanced technologies favour the penetration of the financial sector by start-ups, they are not enough to give them strong competitive advantages.

Blockchain technologies, as highlighted by A. Odorović *et al.* (2020), played a pivotal role in ensuring secure and reliable financial transactions. These tools facilitated the management of complex accounting networks and reduced fraud risks. For example, blockchain-based solutions enabled real-time verification of financial transactions, significantly improving the accountability and accuracy of public sector accounting processes.

The transformative impact of digitalisation on public sector auditing was emphasised by J. Otia & E. Bracci (2022), who demonstrated that automated systems reduce the manual workload and allow for more strategic oversight. Public institutions implementing these systems achieved greater compliance and precision in financial reporting, which is crucial for maintaining public trust.

D. Agostino *et al.* (2022) underscore the intersection of digitalisation, accounting, and accountability, highlighting how digital tools bridge performance gaps in public services. Platforms such as e-Albania implemented these principles by integrating automated workflows, reducing task processing times, and achieving a 40% increase in service efficiency. These improvements not only modernised administrative functions but also strengthened institutional transparency. Generative AI systems also proved instrumental in employee training, aligning with J. Neale (2021) emphasis on adaptive learning strategies. Tailored training programmes enabled public sector staff to develop the necessary competencies to operate advanced accounting software effectively. Employees reported higher confidence and engagement, as they could navigate and leverage these technologies to streamline tasks and meet reporting deadlines.

The modernisation of accounting practices in Albania aligns with the observations of M. Matthess & S. Kunkel (2020) on how digital transformation drives structural change in developing economies. Public institutions

demonstrated improved collaboration, centralised management of public finances, and expedited data-sharing mechanisms, which collectively enhanced their operational adaptability. The findings of this research align with a broader body of literature that underscores the transformative potential of digital technologies in public financial management systems. M. Matthess & S. Kunkel (2020) emphasised that digitalisation drives structural changes in developing countries, acting as a catalyst for modernisation and economic efficiency. Their conceptual framework supports the notion that integrating innovative technologies in public accounting fosters transparency and adaptability, especially in regions undergoing rapid socio-economic transformations.

The successful implementation of digital technologies in the public sector depends on the application of adaptive methodologies that consider user needs and institutional processes (Danieliene *et al.*, 2024). Iterative approaches to qualitative data analysis are particularly important in this context, as they enable organisations to tailor digital solutions to specific requirements. J. Neale (2021) highlights that such methodologies enhance the effectiveness of digital accounting systems by ensuring their alignment with institutional goals and employee capabilities. The findings of this study confirm that public institutions benefit significantly from such tailored implementations, as they lead to improved operational efficiency and transparency.

The digitalisation of financial operations should be approached systematically, integrating both technological and regulatory dimensions. A. Odorović *et al.* (2020) emphasised the role of FinTech innovations in advancing regulatory frameworks, particularly in the Western Balkans. Their research highlights how blockchain-based solutions improve financial accountability and minimise transaction errors. These insights are directly applicable to Albania's public sector modernisation, where similar technologies are being leveraged to strengthen fiscal management and transparency. Automated auditing processes play a crucial role in enhancing efficiency and compliance in the public sector (Shevchuk & Radelytskyy, 2024). J. Otia & E. Bracci (2022) demonstrated how digital transformation reduces manual workloads while improving monitoring mechanisms. Their findings align with the results of this study, where automated workflows significantly enhanced reporting accuracy and reduced processing times in public financial management.

Data-driven platforms have proven to be instrumental in modernising public accounting and financial practices. D. Agostino *et al.* (2022) argued that integrating digital accounting systems leads to greater financial transparency and efficiency. This perspective is supported by the improvements observed in data reconciliation and financial error rates, where digital platforms contributed to more accurate and timely financial reporting. Beyond operational efficiency, digital transformation also improves employee satisfaction and productivity (Petersone *et al.*, 2016). A. Alkhazaleh & H. Haddad (2021) highlighted that Fin-

Tech applications in the banking sector streamline financial operations and enhance user experience. These observations align with the increased satisfaction levels reported by employees, as digital accounting tools reduced administrative burdens and optimised task management.

The successful adoption of digital accounting solutions depends not only on technology but also on employee readiness and training (Bronin *et al.*, 2021). T. Ciarli *et al.* (2021) emphasised that skill development and innovation were key factors in ensuring the effective implementation of digital platforms. This research underscored the importance of training programmes, which were also a crucial element in this study, where improved staff competencies facilitated smoother digital integration.

In addition to technological factors, the role of stakeholder engagement is vital in ensuring the effectiveness of digital transformation initiatives. P. Cicconi (2020) discussed the significance of eco-design and collaborative approaches in technology adoption, suggesting that successful implementation requires active involvement from all stakeholders. The findings of this study confirmed that the inclusion of public sector employees in the digital transition process improved system usability and institutional adaptability.

The effectiveness of digitalisation in the public sector is also closely linked to government policies and regulatory strategies. V. Pažitka *et al.* (2024) examined China's FinTech ecosystem, highlighting the role of centralised government initiatives in accelerating digital adoption. This perspective resonates with Albania's approach, where platforms like e-Albania have played a pivotal role in driving digital transformation in public administration and financial management. Long-term strategic alignment is critical for ensuring the sustainability of digital financial solutions. J. Kumar & V. Rani (2022) provided a systematic review of FinTech trends, emphasising that digitalisation efforts must be linked to broader economic and organisational objectives. The sustained cost efficiencies and operational improvements observed in this study validate these findings, demonstrating that public institutions can achieve measurable benefits by integrating digital tools into financial planning.

Finally, the broader implications of digitalisation extend to strengthening financial resilience in public institutions. T. Khraisha (2022) explored how FinTech firms leveraged technological advancements to create more robust financial ecosystems. This research aligned with the findings of this study, which highlighted that the integration of advanced digital solutions in Albania's public sector had contributed to more resilient financial management structures and improved strategic decision-making. The findings of this study aligned with the growing body of literature that emphasised the transformative role of digital assets in public accounting and financial management. M. AlQudah *et al.* (2024) underlined the importance of FinTech in advancing social responsibility by fostering transparency and efficiency in financial operations. Their

insights resonate with the results of this research, where the integration of modern software solutions in public institutions has demonstrated substantial improvements in operational transparency and financial accuracy.

B. Setiawan *et al.* (2023) explored how digital financial services drove inclusion, particularly during times of crisis, such as the COVID-19 pandemic. The relevance of this finding to the Albanian context lies in the capacity of digital platforms to ensure the accessibility and continuity of public services, even under challenging conditions. This reinforces the observed benefits of automated systems in minimising disruptions and maintaining operational consistency. F. Trincado-Munoz *et al.* (2024) investigated digital transformation within global city networks, emphasising the significance of technology in enhancing collaborative efficiency and connectivity. These findings parallel the observed improvements in interdepartmental communication and data sharing in this study, enabled by integrated digital platforms.

The automation of financial processes in public accounting has become a key driver of efficiency and accuracy, particularly through the integration of robotic process automation. L. Cooper *et al.* (2019) provided a comprehensive analysis of how robotic process automation streamlines financial operations by reducing manual interventions and automating repetitive tasks. The findings of this study confirmed that such automation significantly decreased financial error rates and improved the reliability of year-end reporting in experimental institutions. Ensuring data integrity and transparency is another critical factor in modern public financial management, particularly through the adoption of blockchain technology. M. Kassen (2022) highlighted its transformative potential in automating public information processes and securing financial transactions. This aligns with the results observed in Albanian institutions, where blockchain-based financial management systems led to enhanced security, real-time transaction tracking, and increased trust in public financial operations.

Effective implementation of accounting information systems requires careful design and strategic planning. D. Kocsis (2019) provided a conceptual foundation for structuring such implementations, emphasising the need for tailored software solutions that meet institutional requirements. The structured approach applied in this study ensured that modern financial software was effectively integrated into public institutions, enhancing their operational efficiency and performance. The digital transformation of financial management continues to reshape accounting practices, driving greater efficiency and innovation. A. Monteiro & C. Cepêda (2021) analysed key trends in accounting information systems, identifying digital tools as essential for modernising public sector operations. The experimental institutions in this study demonstrated similar outcomes, reporting increased adaptability and improved strategic planning capabilities due to the implementation of digital financial solutions.

The growing reliance on data-driven decision-making in accounting underscores the importance of real-time analytics and predictive modelling. M. Gonçalves *et al.* (2022) examined how digital transformation fostered this shift, enabling organisations to leverage data more effectively. This study confirmed that experimental institutions benefitted from predictive analytics tools, allowing for more informed financial planning and improved long-term decision-making. Finally, S. Prasertianingrum & Y. Sonjaya (2024) discussed the evolution of digital accounting and information systems, underscoring their role in modernising financial operations. The significant cost reductions and productivity gains achieved in this study through the adoption of automated systems align with their conclusions, reaffirming the critical role of digital transformation in enhancing the efficiency and sustainability of public institutions.

This body of research collectively underscores the importance of adopting innovative digital solutions in public financial management. The integration of technologies such as blockchain, AI-driven platforms, and automated systems enhances transparency, reduces operational costs, and supports the sustainable development of public accounting processes. These findings validate the transformative impact of digitalisation on public sector efficiency and accountability. Thus, the findings of the study highlight the importance of a strategic approach to modernising public accounting systems through the integration of advanced digital technologies. Investments in process automation, the implementation of AI-based solutions such as analytical platforms and blockchain systems, as well as staff training in digital tools, are critical to enhancing the efficiency of financial management. These measures not only minimise errors and optimise costs but also strengthen public trust in government institutions. The conclusions of the research are particularly relevant for public organisations aiming to adapt to the challenges of digital transformation, improve transparency, and ensure the sustainability of their financial operations.

Conclusions

This study highlighted the potential impact of integrating modern accounting software into Albania's public sector, emphasising its role in enhancing financial accuracy, streamlining workflows, and optimising resource allocation. Institutions implementing cloud-based platforms, blockchain solutions, and AI-driven financial tools could experience significant improvements in data accuracy, financial transparency, and operational efficiency. A key finding of the research was the economic advantage of digital transformation, with expert projections estimating 20-25% reductions in operational costs and a 40% decrease in processing times for financial reporting and transaction processing. These improvements were attributed to process automation, minimised human errors, and enhanced digital coordination across departments. Conversely,

institutions maintaining traditional accounting practices were projected to achieve only a 5-7% efficiency gain, mainly through minor procedural optimisations rather than full-scale technological transformation.

The adoption of digital accounting solutions was also expected to improve regulatory compliance, with automated tools reducing financial reporting errors by 60-70%, minimising risks related to fraud, mismanagement, and data inconsistencies. Additionally, AI-driven analytics and blockchain tracking mechanisms were projected to enhance accountability, real-time auditing, and budget forecasting accuracy by approximately 30%.

Despite these projected benefits, the study also identified several challenges to full-scale digital adoption. The most commonly cited obstacles included employee resistance to change (63%), cybersecurity concerns (57%), and a lack of technical expertise (50%) to effectively manage cloud-based financial systems. Furthermore, initial implementation costs, including software licensing, workforce training, and system integration expenses, were estimated to require USD 150,000-200,000 per institution, posing a potential barrier to adoption. From a long-term economic perspective, the transition to digital accounting platforms was identified as a necessary modernization strategy for ensuring fiscal sustainability, improving financial oversight, and enhancing trust in government institutions. While the initial investment costs are substantial, projections suggested that the financial benefits of automation – saving USD 1.2-1.5 million per institution annually and up to USD 7.2 million over five years – will outweigh the expenditures.

Future research should explore the scalability of digital accounting solutions across various public sector institutions, assessing their long-term impact on financial efficiency, workforce productivity, and economic stability. Additionally, further analysis is needed to evaluate the return on investment of digital transformation, particularly in risk mitigation, improved financial forecasting, and enhanced institutional resilience. Ultimately, the transition to automated accounting systems is more than just a technological shift – it is a fundamental transformation in public sector financial management. This study reinforces the critical need for proactive digitalisation strategies, including targeted employee training programmes, secure cloud infrastructure, and AI-enhanced automation tools. By embracing digital innovation, Albania's public sector can enhance transparency, optimise costs, and ensure greater fiscal accountability, aligning itself with the evolving demands of modern governance and economic sustainability.

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Conflict of Interest

None.

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Впровадження сучасних інформаційних систем для автоматизації облікових процесів у державному секторі: досвід Албанії

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Анотація. У цьому дослідженні розглянуто потенційний вплив інтеграції сучасного бухгалтерського програмного забезпечення в державному секторі Албанії з акцентом на фінансову автоматизацію, економічну ефективність та прозорість. Використовуючи експертні оцінки 50 високопосадовців з ключових регіональних установ, дослідники оцінили доцільність і прогнозовані переваги впровадження хмарних платформ, технології блокчейн і фінансових інструментів на основі штучного інтелекту (ШІ). Результати дослідження показали, що автоматизація фінансових процесів значно підвищила операційну ефективність: очікується покращення точності фінансової звітності (зменшення помилок на 60-70 %), точності бюджетного прогнозування (збільшення на 30 %) та оптимізація робочого процесу (скорочення часу обробки на 40%). Окрім підвищення ефективності, дослідження висвітлює ширші переваги автоматизації, серед яких підвищення фіскальної прозорості, мінімізація помилок при проведенні транзакцій вручну та посилення міжвідомчої співпраці. Експерти також визначили потенційні економічні вигоди, спрогнозувавши 1,2-1,5 мільйона доларів США щорічної економії на кожну установу, з кумулятивною фінансовою вигодою до 7,2 мільйона доларів США за п'ять років. Незважаючи на ці переваги, дослідження також визнало ключові бар'єри на шляху до повномасштабного впровадження, включаючи ризики кібербезпеки, опір персоналу (63 % працівників вагаються щодо переходу від ручних процесів) та потребу в інвестиціях у технічну підготовку (за оцінками, 150,000-200,000 доларів США на одну установу). Однак дослідження підкреслює, що довгострокові переваги – покращення фінансової підзвітності, скорочення витрат та оптимізація процесу прийняття рішень – значно переважають ці виклики. Пропонуючи структуровану, поетапну стратегію цифрового переходу, це дослідження надало дорожню карту для державних установ, які прагнуть модернізувати фінансові операції. Результати дослідження є внеском у ширший дискурс про цифровізацію державного сектору, демонструючи, як аналітика на основі штучного інтелекту, безпека блокчейну та хмарні бухгалтерські рішення можуть революціонізувати фінансове управління, підвищити прозорість та загальну ефективність державного сектору в Албанії

Ключові слова: фінансова цифровізація; державний облік; технології; адміністративна ефективність; хмарні обчислення; економічна модернізація
