

To cite this article: Fatmir Bërdica, Assoc. Prof. Mirela Miti (Ujkani) PhD and Jona Kastrati (2026). INTEGRATING FORENSIC ACCOUNTING AND DIGITAL TECHNOLOGIES FOR RISK DETECTION IN HEALTHCARE AND LIFE INSURANCE: EVIDENCE FROM ALBANIA, International Journal of Education and Social Science Research (IJESSR) 9 (3): 152-172 Article No. 1236, Sub Id 1903

INTEGRATING FORENSIC ACCOUNTING AND DIGITAL TECHNOLOGIES FOR RISK DETECTION IN HEALTHCARE AND LIFE INSURANCE: EVIDENCE FROM ALBANIA

Fatmir Bërdica¹, Assoc. Prof. Mirela Miti (Ujkani) PhD² and Jona Kastrati³

¹PhD. Candidate on Accounting Field, Department of Accounting
University of Tirana, Albania
ORCID: 0009-0001-0482-9735

²Department of Accounting, Faculty of Economy
University of Tirana, Albania
ORCID: 0000-0001-7896-8001

³Student of Master of science in accounting and auditing, Department of Accounting
University of Tirana, Albania

DOI : <https://doi.org/10.37500/IJESSR.2026.9310>

ABSTRACT

This study examines the role of forensic accounting as a preventive mechanism for identifying financial fraud risks and strengthening good governance through the integration of digital information technologies in two high-risk sectors: life insurance and healthcare clinics. In the context of Albania, the role of forensic accounting has become increasingly significant, given the ongoing reforms in the insurance market and healthcare sectors, as well as the need to align with international accounting and transparency standards. The study's methodology is based on a descriptive and comparative analysis, combining financial statement analysis with forensic accounting tools to identify risk through the detection of red flags. The research applies a Red Flag Index constructed on key indicators of liquidity, profitability, capital structure, and leverage to assess exposure to financial risk in four private clinics and in the health insurance sector over the period 2020–2024. The analysis is further supported by an examination of the legal and regulatory framework in Albania, as well as the market data. The results indicate significant differences in financial performance and risk levels among the clinics. The findings suggest that integrating forensic accounting techniques with digital technology enables the early detection of financial anomalies, enhances internal control systems, and supports decision-making processes in the life insurance and healthcare sectors.

KEYWORDS: Forensic Accounting, Red Flag Index, Health insurance, Services, Information technology

Jel Codes: M41; I13:I18; G22

Contribution: The study contributes to the existing literature by providing empirical evidence from a developing economy and by proposing a practical model for integrating forensic accounting with technology to prevent financial fraud and

strengthen good governance. The findings have direct implications for policymakers, auditors, and managers, emphasizing the need to adopt digital systems and forensic accounting instruments in high-risk sectors.

1. INTRODUCTION

Healthcare services and life insurance represent two key sectors in the modern economy, as they directly affect the well-being of individuals. However, these sectors are characterized by a high level of risk due to uncertainties related to illness, unforeseen medical expenses, and events that may affect the settlement of insurance claims. Effective management of these risks is essential for the sustainability of the respective institutions and for maintaining customer trust, thereby requiring advanced tools and methodologies for data analysis and the forecasting of potential developments.

In this context, forensic accounting techniques supported by information technology provide a powerful tool for enhancing transparency, preventing potential fraud, and promoting effective management. Based on a published study employing statistical and evaluative analyses, it is estimated that the total value of fraud and abuse in health insurance and healthcare services accounts for approximately 3–6% of total expenditure in these sectors, corresponding to an estimated USD 450–600 billion annually (Najar V. A. et al 2025). This exceptionally high figure underscores the critical importance of robust processes for the collection, validation, and control of financial data and information. Through transaction data analysis, advanced auditing procedures, and real-time monitoring, these techniques enable healthcare institutions and insurance companies to identify suspicious events or transactions, minimize financial losses, and enhance strategic decision-making. Furthermore, the application of artificial intelligence allows these sectors to manage risks more effectively and to deliver safer and more reliable services to clients.

Forensic accounting constitutes one of the fundamental pillars of modern financial management and good governance, providing a structured framework for the recording, monitoring, and verification of financial activities in both public and private entities. It also serves as a mechanism for ensuring transparency, accuracy, and accountability, thereby contributing to the prevention of financial fraud and irregularities.

In Albania, where economic and institutional reforms are still evolving, forensic accounting plays a decisive role in strengthening institutional credibility and supporting decision-making based on objective data. Consequently, forensic accounting is not merely an administrative tool but also a strategic instrument for effective management and for ensuring the sustainability of the financial and healthcare systems.

In the context of life insurance services, the importance of forensic accounting becomes particularly evident. Life insurance services are fundamentally based on financial risk management and on ensuring the sustainability of the funds that back policyholders' insurance coverage. Financial processes in this sector include premium collection, investment fund management, claims settlement,

and reporting to shareholders and regulatory authorities. Given that insurance policies may be short-term—primarily in the case of health insurance or long-term, as in life insurance, proper accounting recognition, accurate financial presentation, and compliance with applicable accounting standards enable management to obtain reliable information and, consequently, to make informed decisions. Forensic accounting allows these processes to be monitored rigorously, facilitating the identification of potential violations and reducing the risk of fraud. Moreover, forensic accounting contributes to strengthening the trust of consumers and financial partners, as transparency and accurate reporting are essential for decision-making related to life insurance. In Albania, the adoption of forensic accounting practices can assist insurance companies in building sustainable management structures and in achieving effective integration within the life and health insurance sectors.

Meanwhile, the healthcare sector represents another significant challenge for forensic accounting. The management of financial resources in healthcare institutions, particularly in public hospitals and entities providing subsidized services, requires careful monitoring and accurate reporting. Forensic accounting ensures the efficient use of funds, facilitates auditing processes, and supports the identification of financial violations or errors. For instance, detailed financial records can support expenditure planning for medical equipment, treatments, staff salaries, and other critical services, ensuring that resources are allocated optimally and that patients receive high-quality care. In this sense, forensic accounting is not merely a financial management instrument but also a mechanism for promoting social accountability and enhancing good governance within the healthcare sector.

The effectiveness of forensic accounting in both sectors is closely linked to the role of information technology. The integration of digital systems, financial management software, and electronic patient records facilitates process automation, real-time data analysis, and the monitoring of complex transactions. This integration enhances operational efficiency, minimizes the risk of errors, and improves the speed and accuracy of financial reporting. Furthermore, it strengthens strategic decision-making by providing administrators and managers with immediate access to detailed information regarding expenditures, resources, and services.

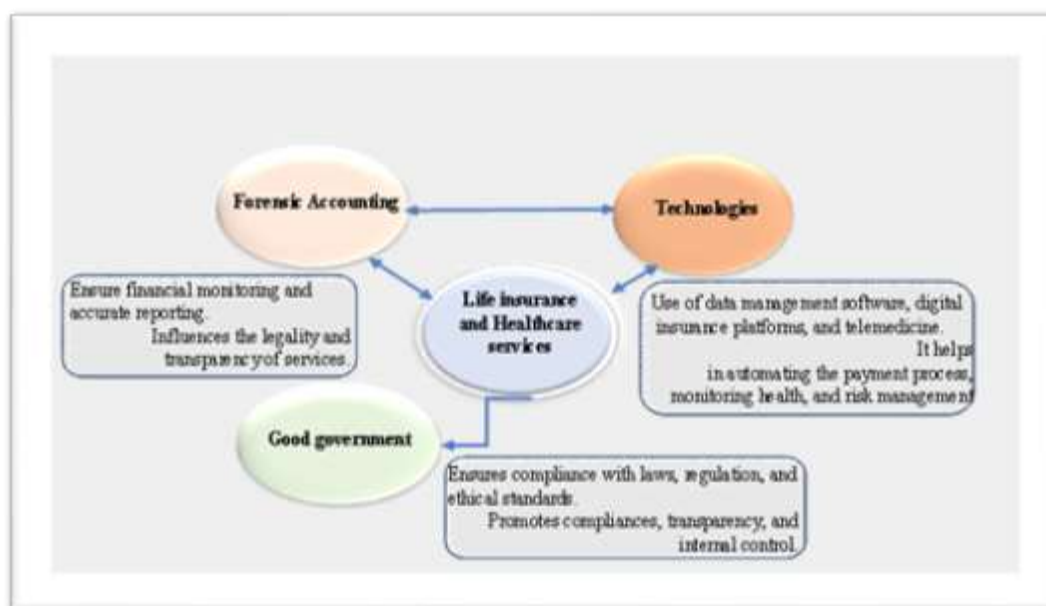
In Albania, efforts to adopt technology and enhance service management are gradually expanding, creating opportunities for more sustainable and innovative management practices. Despite ongoing legal and infrastructural challenges, there is a clear trend toward the adoption of forensic accounting practices integrated with digital solutions. Such integration enables effective monitoring of financial flows, detection of irregularities, and optimization of life insurance and healthcare services. For instance, insurance companies can employ software or artificial intelligence to analyze premiums and investment funds, while healthcare institutions can manage expenditures and patient records in real time. Consequently, forensic accounting supported by information technology not only improves efficiency and transparency across sectors but also reinforces public trust and institutional confidence.

From this perspective, the present study aims to examine the role of forensic accounting as a mechanism for integrating technology and strengthening good governance in the management of life insurance and healthcare services in Albania. It addresses the challenges and opportunities associated with the adoption of digital practices, assesses their impact on transparency, efficiency, and reliability, and explores the potential for developing a sustainable model for financial management and governance in these sectors. Forensic accounting integrated with information technology represents a sustainable model for efficient management and the enhancement of good governance. It provides a systematic approach for monitoring financial resources, preventing fraud, increasing transparency, and improving the quality of services in the life insurance and healthcare sectors. In Albania, this integration offers an opportunity to develop sustainable management practices by harmonizing national standards with international benchmarks and establishing a solid foundation for data-driven decision-making and institutional accountability.

2. LITERATURE REVIEW

The complex systems of life insurance and healthcare provision demand transparency, accountability, efficiency, and reliability not only from a medical perspective but also from financial and managerial standpoints. In this context, forensic accounting becomes a fundamental pillar of good governance. The integration of forensic accounting with modern technologies (e.g., digital systems, blockchain, electronic records) can further enhance integrity, transparency, and automation—elements that are essential for managing life insurance, healthcare services, claims processing, and invoice control. This interaction between *forensic accounting and technology* provides opportunities to reduce misuse, fraud, and delays, while improving trust among insurers, service providers, and citizens. (diagram 1).

Diagram no 1 “*The relationship between Forensic Accounting, Technology, and Good Governance in Life Insurance and Healthcare Services*”

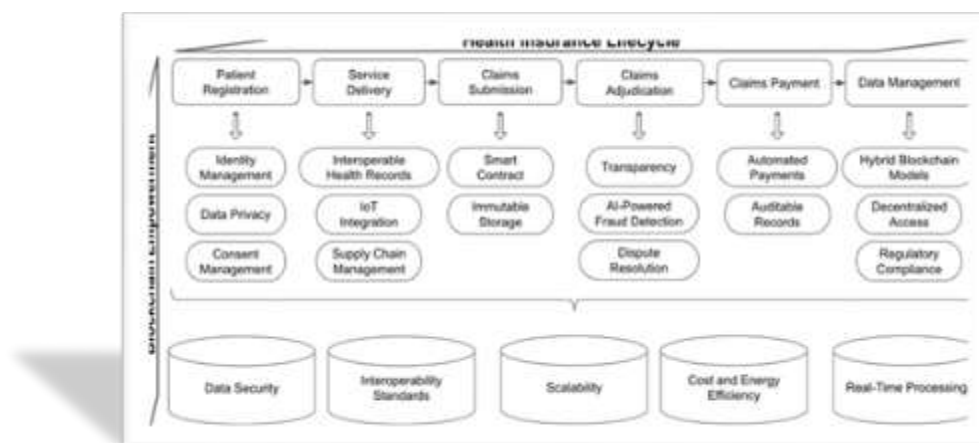


Source: The authors

Contemporary literature has increasingly begun to examine the interaction between forensic accounting, insurance management, and the use of digital technologies such as blockchain and artificial intelligence (AI) in the healthcare sector.

Blockchain-based systems have emerged as one of the most significant trends in the financial and healthcare sectors in recent years. The study by Chen Y. et al. (2025) identifies that blockchain provides a high level of efficiency, transparency, and data integrity, reducing the likelihood of fraud and increasing the reliability of claims processing across the entire lifecycle of health insurance from patient registration to claims processing and data management. Figure 1 illustrates the impact of blockchain across these stages.

Figure 1. Health Insurance Lifecycle with Blockchain Applications.



Source: Chen Y., Zhao Ch., GaoY (2025) *Blockchain applications in health insurance: a review of applications, challenges, and prospects*

However, the development of a digitized information system must also provide and ensure the availability of adaptable interfaces and tools, enabling users to customize the system according to their specific needs. In this context, the system should also support control activities, such as rules and procedures to ensure that management plans are properly implemented, helping the company achieve its objectives and manage risks. These controls strengthen internal systems (Bala Murugan, 2024).

In a competitive market, an important aspect is that digitized information systems also provide financial and non-financial analytics, which not only assist in real-time management of various objectives but also help identify “ranges” that represent high risk during service delivery. Entities that offer services and implement strong managerial strategies primarily aim to increase profitability. To

determine how profitable each client is, a company must link costs and revenues to individual clients. This concept is known as client profitability, which measures the value a business derives from its relationships with customers. To increase revenues from healthcare and non-healthcare services, hospitals must provide high-quality care that enhances patient satisfaction, which can in turn boost visits and revenue. Therefore, hospital administrators should prioritize the development of reliable accounting information systems that accurately process hospital data (Haryaningsih S., et al., 2023). However, studies indicate that fewer than one-third of companies know how profitable their clients are. Many rely on estimates or approximate methods, which can lead to poor business decisions (Alobaidy, 2024). Implementing a Management Information System (MIS), however, can be costly and complex, making careful planning essential. A well-managed MIS not only helps clinic managers make better decisions but also benefits the public by enhancing transparency and service quality (Tasmara S., et al., 2024).

Healthcare providers have long relied on manual processes, ranging from patient registration and insurance verification to claims submission and payment tracking. However, this manual approach is prone to errors and delays, leading to high claim rejection rates and significant revenue losses. Mistakes often occur when entering patient data into outpatient and hospital systems. Implementing an appropriate information system can help ensure accurate management of incoming and outgoing data, particularly for hospital operations. Such systems support managerial decision-making, enable accurate billing, improve cash flow tracking, and assist in monitoring organizational progress (Haryaningsih S., et al., 2023).

By integrating Electronic Health Records (EHR) with artificial intelligence (AI)-based tools, healthcare providers can forecast billing trends, optimize financial performance, and reduce risks. Real-time financial data enables entities to make more informed decisions, improving cash flow and minimizing losses (Abdullah al Mamun et al., 2025). Studies indicate that hospitals utilizing health information technology can reduce operating costs by 20–30% within five years, thanks to task automation, better inventory control of medications, and faster billing processes. These systems also enhance staff productivity, as physicians gain quicker access to diagnostic data without manual delays, leading to improved patient experiences and strengthening the hospital's reputation (Rachmanda, 2024).

One of the primary responsibilities of healthcare entities is to ensure the financial stability of the healthcare system. The healthcare sector faces increasingly complex and strict regulations related to data protection and patient accountability. However, the use of artificial intelligence (AI) and analytical tools can further increase the risk of data breaches, particularly when these tools are not properly managed. Furthermore, alternative payment sources, such as non-standard or government-provided insurance, come with their own unique requirements. Providers who fail to meet these regulatory standards risk having their claims denied or delayed, resulting in financial losses (Mohammed, 2025). A sustainable infrastructure is essential for uninterrupted digital operations,

requiring funding from internal budgets, grants, or private partnerships. Adequate resources must also cover staff training to ensure proper use of new systems—a particular challenge for smaller hospitals with limited budgets. Strategic planning and collaborations with technology providers can facilitate smoother digital transitions (Rachmanda, 2024).

International Standards for Insurance Contract Accounting IFRS 17 provides a comprehensive accounting framework for how insurance companies should measure liabilities, reserves, and future cash flows, while ensuring financial transparency, including the “contractual service margin (CSM).” For effective implementation of the standard, Winkler Michael and Kansal K. Sunil (2024) provide practical guidance on applying IFRS 17, which assists accountants and actuaries in structuring financial reporting in accordance with the standard.

Zhao Y., et al. (2021) in their study propose a method for claims reserving in accordance with IFRS 17, a highly valuable approach for forensic accountants when performing forecasting of insurance liabilities. The study examines risk management of insurance policies in line with the implementation of the new International Financial Reporting Standard 17. It applies the paid-incurred chain method to model future unpaid losses by combining information from both incurred claims and paid losses. They propose recovering the empirical distribution of unpaid claim liabilities associated with a portfolio of contracts through density matching. Furthermore, using *Monte Carlo* simulation and approximate distributions, the study determines risk measures and adjustments that comply with IFRS 17.

Ganesh Gupta et al. (2024), in their study, identify that integrating blockchain technology with machine learning models achieves high accuracy and a low rate of false information/data, thereby improving fraud detection in the management of health insurance claims compared to traditional methods. The blockchain framework ensures data security, transparency, and integrity, while machine learning models accurately detect fraudulent claims.

Life insurance and healthcare institutions require accurate reporting of reserves, claim payments, and benefits. Studies (Huang X., 2023; Chen, T., 2022) show that blockchain can record every transaction in an immutable manner, thereby enhancing auditing and financial control.

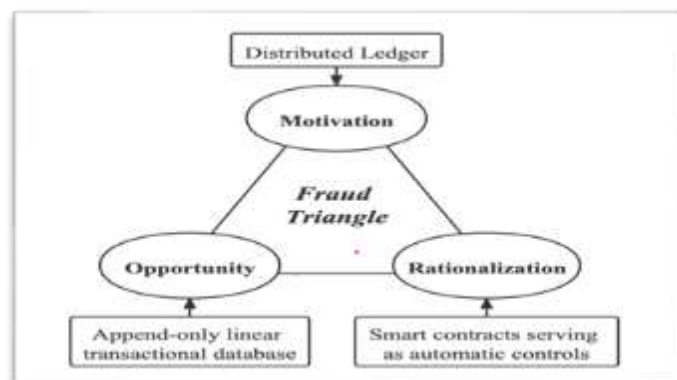


Figure 2 *How blockchain characteristics helps to break the fraud triangle*

Source: Chen, T. (2022)

The study analyzes how a blockchain-based accounting and auditing system can disrupt the fraud triangle and, consequently, significantly enhance the efficiency and accuracy of fraud prevention and detection. While blockchain reduces the risk of fraud, it also raises new concerns in the business world, such as issues related to privacy.

In the Albanian context, where the legal frameworks for life insurance and healthcare services as well as accounting are still evolving, an integrated analysis of these two areas can contribute to better management and good governance. Table 1 presents the basic legal framework in Albania within the scope of our study, identifying the primary objective of each legislative act. From the review of the complete legal framework, it is evident that Albania has a comprehensive system aligned with EU requirements in the healthcare and life insurance sectors, aiming to establish and operate a complete information system. An increasingly recognized challenge is the integration of information technology into these high-risk and key sectors. However, a notable issue is the lack of awareness of the forensic accountant profession and the underutilization of forensic accounting tools and techniques by accounting professionals. Research in Albania in this field remains very limited, but the importance of forensic accounting and its techniques for fraud detection is clearly emphasized (Zaçaj E., Miti M., 2024).

Table no 1 “*The Basic Legal Framework in Albania and Its Connection with Forensic Accounting Integrated with Information Technology*”

No	Law	The purpose of the law	The connection with forensic accounting, integrated with IT.
1	Law No. 25/2018 “ <i>On accounting and financial statements</i> ” as amended	To identify the general principles and rules for the preparation and components of financial statements, the determination of applicable accounting standards, and the maintenance of accounting records.	It also identifies the concept of an accounting document derived from software: “ <i>“Information carrier” is any accounting document authorized by the relevant bodies, written on computer media, according to non-manipulating and printable computer programs at any time. ”</i> (point 15, article 3). Public interest entities, as well as regulators of public interest entities operating in the field of credit and insurance, must apply IFRS for the preparation of financial statements. Only public interest entities, according to Article 2, point 23, letter “ç”, of Law No. 10 091, dated 5.3.2009, “On statutory audit, organization of the profession of statutory auditor and approved accountant”, as amended, are exempt from the mandatory

			application of IFRS and apply the SKK, which do not exceed the criteria set out in Article 4, point 1.3. of this law.
2	Law No. 10 091, dated 5.3.2009, “ <i>On statutory audit, organization of the profession of statutory auditor and approved accountant</i> ”, as amended	Improve and strengthen public oversight of the statutory auditor profession, as well as the regulation of the chartered accountant profession.	There is no provision for the profession of legal accountant and the integration of legal accounting tools and instruments with IT.
3	Order No. 16 dated 9.2.2024 “ <i>On the Promulgation of Updated National Accounting Standards</i> ” of the Minister of Finance	It presents the complete set of National Accounting Standards (NAS) and IFRS, updated	N/A
4	Order No. 140, dated 7. 11/ 2025 " <i>On the extension of the deadline for the application of the International Financial Reporting Standard (IFRS) 17 "Insurance Contracts</i> " of the Minister of Finance	Implementation of IFRS 17 begins on January 1, 2028	Ongoing process
5	Law No. 52, dated 22.05.2014 “ <i>On insurance and reinsurance activity</i> ”, as amended	To regulate the establishment, operation and supervision of insurance, reinsurance and brokerage companies, in order for the insurance market to operate in a safe, stable and transparent environment, in protection of consumer rights and interests.	Identification of the use of legal accounting tools and techniques in the life insurance sector.
6	Law No. 10 107/2009 “ <i>On healthcare in the</i>	To define the main principles and legal framework for the regulation, organization and	The purpose of quality management is to measure, evaluate and

	<i>Republic of Albania</i> ”, as amended	functioning of the healthcare system in the Republic of Albania.	improve the provision of patient care, as well as <i>to develop and implement effective disease management programs, clinical protocols and medical guidelines</i> . (point 3, article 22) Articles 23,24,25 identify supervision Article 30 identifies the establishment and maintenance of a health information system based on European health information standards.
7	Law No. 10 383/2011 <i>On Compulsory Health Care Insurance in the Republic of Albania</i> , as amended	Identifies the legal framework for the regulation, organization and functioning of the healthcare system in the Republic of Albania	The healthcare system operates based on efficiency and quality of service, guaranteeing patient safety and impartiality (point c, article 2).
8	Law No. 107/2015 “ <i>On electronic identification and trust services</i> ”, as amended	Secure electronic identification, electronic seals, electronic transmission service and authentication of websites in the Republic of Albania.	Connecting IT with services
9	Law No. 43/2023 “ <i>On electronic governance</i> ”	It defines the rights, obligations and responsibilities of public authorities and/or private entities in relation to <i>the creation, development and management of information infrastructure systems</i> , the obligation of public authorities	Connecting IT with services

		and/or private entities in the implementation of information technology standards, the definition of rules for the creation and provision of electronic services in the Republic of Albania, as well as <i>access, processing and protocolization of electronic documents.</i>	
--	--	--	--

Source: the authors

The literature review identifies that the role of forensic accounting and the potential integration of technologies in the insurance and healthcare sectors, in the context of technological development, are essential for ensuring fair decision-making. This supports the implementation of the principles of equity, whereby every citizen receives appropriate, high-quality healthcare services.

3. METHODOLOGY OF RESEARCH

This study adopts a multiple case study approach, combining descriptive, comparative, and forensic financial analysis to evaluate risk, transparency, and potential anomalies in the life insurance and healthcare sectors in Albania.

The research is designed to examine the role of forensic accounting in enhancing financial control, transparency, and risk detection. It integrates traditional financial analysis with forensic accounting techniques and selected technological concepts relevant to auditing and financial governance. The study is developed in two main phases. The first phase consists of an in-depth review of the contemporary literature on forensic accounting, international financial reporting standards, financial management in insurance and healthcare sectors, and technologies supporting auditing and financial control (e.g., blockchain, artificial intelligence, ERP systems, and electronic health records). This phase establishes the conceptual framework of the study. The second phase focuses on empirical analysis based on financial data collected from the life insurance and healthcare sectors.

The study is based on secondary data obtained from publicly available financial reports and anonymized institutional data covering the period 2020–2024. The life insurance data are derived from annual reports of insurance companies and include premiums, claims paid, technical reserves, cash flows, and key financial indicators. These data are used to assess financial performance, transparency, and risk exposure within the insurance sector. The healthcare sector data are collected from financial statements of four private diagnostic clinics. These institutions are anonymized to ensure confidentiality. The dataset includes key financial indicators such as liquidity ratios (current ratio, acid-

test ratio), profitability measures (EBITDA, EBT, ROA, ROE, ROCE), leverage indicators (equity multiplier), asset efficiency (asset turnover), and debt structure (short-term debt ratio, solvency ratio).

The limited sample size reflects the lack of publicly available and reliable financial data in the Albanian healthcare system. The analytical framework combines several complementary methods:

- (i) *Descriptive analysis* is used to summarize and interpret financial trends, including premiums, claims, liquidity, profitability, and solvency indicators.
- (ii) *Financial statement analysis* is applied to evaluate liquidity, financial structure, operational efficiency, and profitability. These indicators also serve as proxies for detecting anomalies and potential financial irregularities.
- (iii) *Comparative analysis* is conducted across sectors and over time to identify differences in financial performance and risk exposure between the life insurance and healthcare sectors.
- (iv) *A Red Flag Index* is developed and applied as a simplified forensic accounting tool. This index integrates selected financial ratios commonly used in forensic accounting to identify irregular patterns, elevated risk levels, and areas requiring further investigation.

In addition to traditional financial analysis, the study incorporates forensic accounting techniques to enhance the detection of anomalies and potential fraud risks. Tools such as ratio analysis, red flag indicators, and data-driven approaches (e.g., Benford's Law) are used to identify irregular patterns in financial statements. The Red Flag Index serves as a practical instrument for early detection of potential financial manipulation and risk exposure, particularly in environments characterized by limited transparency and data availability.

Data reliability is ensured through cross-verification of financial statements, logical consistency checks, and compliance with applicable accounting standards, including IFRS 4 and IFRS 17 for insurance contracts.

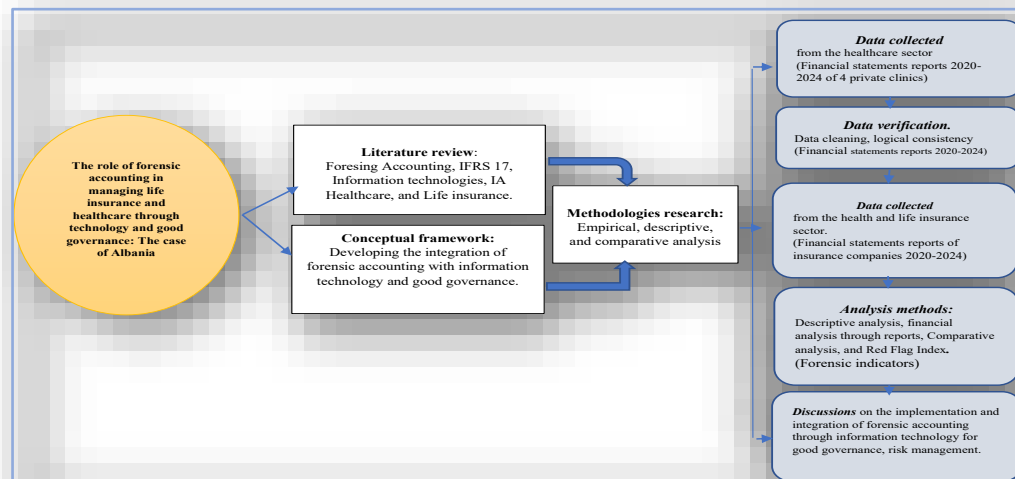


Figure 3 Flowchart methodology

Source: the authors

The study has several limitations. The life insurance data are partially limited to publicly disclosed financial reports, while the healthcare data are restricted to a small number of institutions. Additionally, the absence of a unified and comprehensive financial database in Albania limits the scope of the analysis.

4. ANALYSIS AND DISCUSSION

The data analysis, based on the financial statements of four clinics for the period 2020–2024 and focusing on short-term liquidity and profitability indicators, shows varying performance among the institutions. Specifically, the following indicators were analyzed: current ratio, short-term liabilities ratio, acid-test ratio, ROA, ROCE, ROE, earnings before interest and taxes adjusted for non-cash depreciation, pre-tax profit, and equity multiplier. The analysis reveals that Clinic 4 stands out from the others, exhibiting high liquidity and higher returns on capital and assets. In contrast, Clinics 2 and 3 face significant financial challenges, evidenced by negative returns on assets (ROA) and equity (ROE), as well as greater reliance on debt, measured by the equity multiplier. The acid-test and current ratio indicate unstable liquidity in some of the clinics, suggesting a need for improvement in working capital management. In this context, it is recommended that managerial levels focus on optimizing the financing structure by reducing reliance on short-term debt and improving the efficiency of asset utilization to increase operational returns. More careful capital management and a sustainable financial strategy would help stabilize performance and improve the overall resilience of the clinics (Charts 1 and 2).

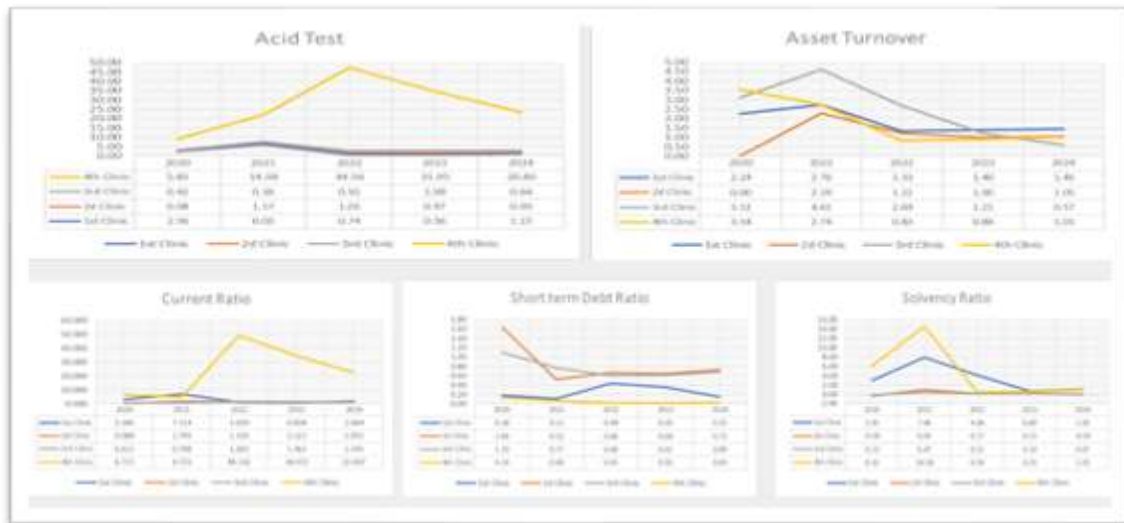


Chart 1: “Liquidity Ratios – Four Diagnostic Clinics 2020–2024”

Source: the authors



Chart 2: “Profitability Ratios – Four Diagnostic Clinics 2020–2024”

Source: the authors

However, the study does not focus merely on calculating the ratios; rather, it emphasizes how these ratios provide potential signals for identifying issues that require further verification or investigation. Based on the analysis of the ratios for all four clinics, a **Red Flag Index** was calculated (Chart 3).

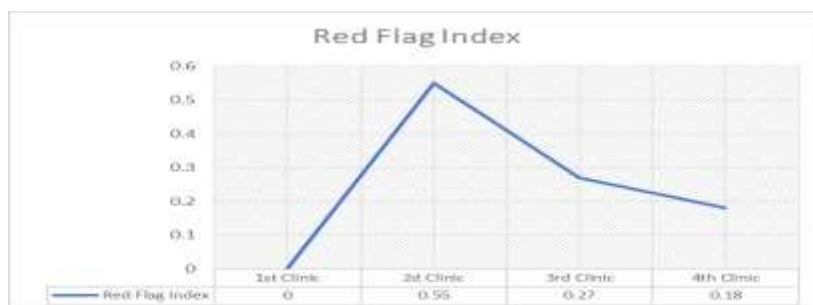


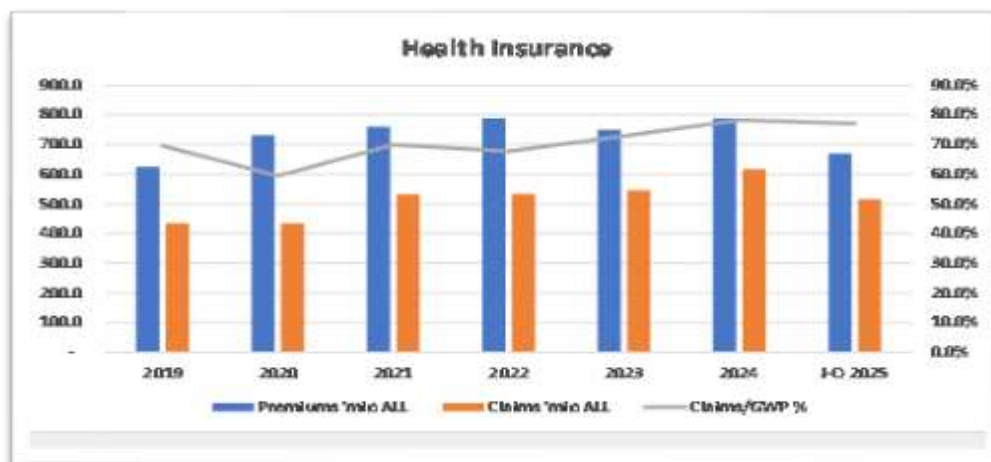
Chart 3: Red Flag Index

Source: the authors

A detailed analysis of the four clinics shows that the 2nd Clinic presents a high financial risk due to very low capital and unstable indicators (Red Flag Index 0.55), requiring capital increase and strict monitoring of liquidity and operational performance. The 1st Clinic and 3rd Clinic are relatively stable, with minimal to moderate risk. The 4th Clinic, although profitable and well-capitalized, experienced a rapid increase in capital over a very short 4-month period (from 1.1M to 65.1M), producing a minor red flag signal (Red Flag Index 0.18), indicating the need for oversight regarding transparency and auditing. For all clinics, continuous monitoring of liquidity, asset utilization, and capital efficiency is recommended to ensure financial and operational stability.

If these simple yet meaningful reports could be integrated into the software provided by financial statement producers, the analysis could be performed in real time. At the same time, it would serve as a signal to raise awareness among the preparers of financial statements against using manipulation or fraud techniques, or any practices that could have negative consequences in the future.

The study also delved into the health insurance sector by analysing data for the period 2019–2025, based on indicators such as premiums, claims expenses, and the Claim/Premium ratio for insurance companies in Albania. The data analysis shows a steady increase in insurance revenues, but an even faster rise in claims expenses. Premiums increased from 626,133 thousand ALL in 2019 to 789,122 thousand ALL in 2024, while claims expenses reached 618,039 thousand ALL in the same year. The Claim/Premium ratio worsened from 59.5% in 2020 to 78.3% in 2024, indicating that the company is facing increasing financial pressure (Graph 4).



Graph 4 “Health insurance premium and claims in Albania insurances sector.”

Source: the authors

From the perspective of forensic accounting principles as a mechanism for integrating technology and good governance, these data highlight the importance of applying strong accounting practices and information management systems to ensure transparency and financial stability. Effective management of life and health insurance services requires continuous monitoring of the Claims/Premium ratio, the use of technology for risk assessment and improvement of the claims process, as well as the implementation of governance standards that ensure insurance revenues are utilized optimally.

The analysis of the above data provides a practical study, albeit limited in sample size for Albania, showing that forensic accounting and technology are not merely administrative tools but essential instruments for increasing the efficiency and sustainability of the insurance sector. Based on the reviewed literature and the analysis conducted in this paper, Table 2 identifies the main benefits derived from the use of forensic accounting techniques and tools in the insurance and healthcare sectors.

Table no 2: Forensic Accounting Tools and Their Use in the Insurance and Healthcare Sectors

Forensic Accounting Tool / Instrument	Use in the Insurance and Healthcare Sectors	Key Benefits
Analysis of Financial Data and Transactions	<i>Analysis Techniques:</i> Signals for analyzing medical bills, insurance payments, and suspicious transactions.	Detects fraud and financial deviations. Helps in risk management.
Risk-Based Audits	<i>Focus on High-Risk Areas:</i> e.g., unusual expenses or capital adjustment procedures.	Minimizes losses and ensures financial sustainability.
Forecasting Software and Artificial Intelligence	<i>Financial Indicators Prediction:</i> Provides alerts for potential irregularities.	Improves planning and strategic decision-making.
Internal Control and Electronic Monitoring	<i>Real-Time Monitoring:</i> Tracks transactions and financial activities as they occur.	Prevents fraud; ensures data integrity.
Reporting and Transparency	<i>Financial Reports and Risk Indicators:</i> Supports risk management and decision-making.	Enhances governance, reliability, and transparency toward clients and auditors.

Source: the authors

The effectiveness of information transfer depends on the purpose for which it is used and is influenced by factors at both the micro level (such as individual skills) and the macro level (such as regulations or industry indicators). When regulations are implemented, businesses signal the required information to stakeholders, and the transparency of these signals varies based on the recipients' ability to interpret and respond to them. (Bischof, Gassen, Rostam-Afschar, Rohlfing Bastian, and Sureth-Sloan, 2024)

5. Conclusion, Recommendations, and Limitations

The analysis of financial indicators of clinics in Albania highlights significant challenges and opportunities for the effective integration of technology and good governance practices in healthcare service management. Financial reports showed that while some clinics demonstrate good liquidity and operational efficiency, others face difficulties in capital management and optimal use of assets, reflecting the need for a stronger accounting system and legal mechanisms to ensure transparency and financial control. Through the use of forensic accounting as a key tool, institutions can improve financial reporting and management, facilitating the adoption of new technologies and good governance practices.

Based on the study's findings, several key recommendations for stakeholders are proposed: (i) Financial and healthcare regulators should encourage and institutionalize the use of forensic accounting techniques as an integral part of internal control systems and risk-based auditing,

particularly in the insurance and healthcare sectors; (ii) Insurance companies and healthcare institutions should invest in digital information systems that integrate forensic accounting indicators and automated risk analysis, enabling real-time monitoring and early identification of financial anomalies; (iii) Accounting professionals (auditors and accountants) should be trained in forensic accounting and the use of digital technologies, shifting the focus from a reactive approach to a proactive model for fraud prevention; and (iv) in the context of IFRS 17 implementation, the use of forensic accounting tools and financial analysis techniques can support more accurate reporting of insurance liabilities, reduce the risk of accounting manipulation, and enhance the credibility of the insurance market.

However, challenges remain: privacy, data quality, institutional adoption, and the lack of local empirical literature. This underscores the need for further studies and comparative analyses in Albania to adapt international practices to local regulations and capacities.

Funding: This research received no specific grant from public, commercial, or not-for-profit funding agencies.

Disclosure statement: No potential conflict of interest was reported by the authors.

Ethical declarations: This study relied exclusively on secondary data from publicly available reports and anonymized institutional financial data. No human participants were involved.

REFERENCE

Abdullah al Mamun, Muhammad Saqib Jalil, Mohammad Tonmoy Jubaeer Mehedy, Maham Saeed, Esrat Zahan Snigdha, MD Nadil khan, & Nahid Khan. (2025). Optimizing Revenue Cycle Management in Healthcare: AI and IT Solutions for Business Process Automation. *The American Journal of Engineering and Technology*, 7(03), 141–162.

<https://doi.org/10.37547/tajet/Volume07Issue03-14>

Ali Vafae Najar, leili Alizamani , Marziye Zarqi, Elaheh Hooshmand, (Shkurt 2025) A global scoping review on the patterns of medical fraud and abuse: integrating data-driven detection, prevention, and legal responses; DOI:10.1186/s13690-025-01512-8

Alobaidy, R. J. A. E. (2024). *The role of modern techniques of management accounting and cost accounting in improving cost efficiency and quality of care in urology: A theoretical study*.

Anggaran: Jurnal Publikasi Ekonomi dan Akuntansi, 2(4), 140–156.

DOI: [10.61132/anggaran.v2i4.949](https://doi.org/10.61132/anggaran.v2i4.949)

Bischof, J., Gassen, J., Rostam-Afschar, D., Rohlfing Bastian, A., & Sureth-Sloan, C. (2024).

Accounting for transparency: A framework and three applications in tax, managerial, and financial

accounting. *Journal of Accounting, Auditing & Performance Evaluation*. Schmalenbach Journal of Business Research, Springer, vol. 76(4), pages 573-611: DOI: 10.1007/s41471-024-00200-7

Chen Y, Zhao C and Gao Y (2025) “Blockchain applications in health insurance: a review of applications, challenges, and prospects” *Front. Blockchain* 8:1699290. DOI: 10.3389/fbloc.2025.1699290.

Chen, T. (2022). *Blockchain and accounting fraud prevention: A case study on Luckin Coffee*. In Proceedings of the 2022 7th International Conference on Social Sciences and Economic Development (ICSSSED 2022) (Vol. 652, pp. 44-50). Atlantis Press International B.V. Advances in Economics, Business and Management Research, volume 215: ISBN: 978-94-6239-572-5

Ganesh Gupta. (2024). *Integrating Blockchain with Machine Learning for Fraud Detection in Health Insurance Claims Management*. International Journal of Intelligent Systems and Applications in Engineering, 12(23s), 128–139. Retrieved from <https://ijisae.org/index.php/IJISAE/article/view/6604>

Haryaningsih, S., Elyta, E., Nikodimus, N., & Apriyanto, D. (2023). *Benefits of Accounting Information Systems to Improve Service Quality at Regional General Hospital (RGH) dr. Agoesdjam Ketapang District*. JASa (Jurnal Akuntansi, Audit Dan Sistem Informasi Akuntansi), 7(3), 482–496. DOI: <https://doi.org/10.36555/jasa.v7i3.2268>

Huang,X. (2023). *Review on Research of Blockchain's Impact on Bookkeeping, Fraud Detection and Trust of Auditing Process*. Advances in Economics, Management and Political Sciences, Vol.22, 60-65. <https://doi.org/10.54254/2754-1169/22/20230287>

IFRS 17- Insurance Contracts. <https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2023/issued-annotated/part-a/ifrs-17-insurance-contracts.pdf?bypass=on>

Law no. 10 107/2009 *Për kujdesin shëndetësor*, amended

Law no 10 383/2011 *Për sigurimin e detyrueshëm shëndetësor*, amended

Law no 25/2018 *Për kontabilitetin dhe pasqyrat financiare* amended

Mohammed, S. S. (2025). *The digital evolution of the healthcare revenue cycle: AI and analytics at the forefront*. International Journal of Science and Research (IJSR) 14(3); 1178-1182. ISSN 2319-7064. DOI: [10.21275/SR25324011728](https://doi.org/10.21275/SR25324011728)

Pflueger, D. (2015). *Accounting for quality: On the relationship between accounting and quality improvement in healthcare*. BMC Health Services Research, 15, 178. <https://doi.org/10.1186/s12913-015-0769-4>

Rachmanda, N. A. (2025). *Transforming healthcare: Addressing financial barriers in private hospital digitalization*.

https://www.researchgate.net/publication/388779965_Transforming_Healthcare_Addressing_Financial_Barriers_in_Private_Hospital_Digitalization

Standardet Kombëtare të Kontabilitetit (SKK) dhe SNRF/IFRS për njësitë me interes publik të përditësuar: <https://kkk.gov.al/standardet-nderkombetare-te-kontabilitetit-dhe-raportimit-financiar/>

Sundara Bala Murugan, P., Arasuraja Ganesan, Prabakaran Paranthaman, and V. Aruna. (2024). "Feasibility Design and Analysis of Process-Aware Accounting Information System for Business Management". *Indian Journal of Information Sources and Services* 14 (2):56-62.

DOI: [10.51983/ijiss-2024.14.2.09](https://doi.org/10.51983/ijiss-2024.14.2.09)

Tasmara S., Harahap, A. M. (2024). *Management information system of Ummi Primary Clinic in improving service and loyalty using WEB-based customer relationship management*. Brilliance: Research of Artificial Intelligence Journal, 4(2): 880-889. DOI: [10.47709/brilliance.v4i2.5169](https://doi.org/10.47709/brilliance.v4i2.5169)

Vankov, V. V., Artemova, O. R., & Gusev, A. V. (2024). *Digital transformation of healthcare in the Russian Federation*. The BRICS Health Journal, 1(1), 20-34. DOI: [10.47093/3034-4700.2024.1.1.20-34](https://doi.org/10.47093/3034-4700.2024.1.1.20-34)

Winkler Michael dhe Kansal K. Sunil (2024) *Navigating IFRS 17: A Practical Guide to Accounting & Actuarial Implementation* BOOK, Publisher VVW GmbH, 2024, ISBN 3862988805, 9783862988808

Zaçaj, E. & Miti, M., (2024). *Using Financial Statements Analysis as a Tool on Identifying the Solvency of SMES And Its Relation with Forensic Accounting; Evidence from Albania*. Revista De Gestão - RGSA, 18(5), e06932. <https://doi.org/10.24857/rgsa.v18n5-144>

Zhao, Y., Mamon, R. & Xiong, H. (2021) *Claim reserving for insurance contracts in line with the International Financial Reporting Standards 17: a new paid-incurred chain approach to risk adjustments*. Financ Innov 7, 71 (2021). <https://doi.org/10.1186/s40854-021-00287-5>

Web Site:

https://amf.gov.al/pdf/publikime2/edukimi/SigurimiJetes_1.pdf

<https://qkb.gov.al/en/home-3/>