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ENHANCING CORPORATE TRANSPARENCY AND ACCOUNTABILITY THROUGH PUBLIC AUDITING: A CROSS-COUNTRY ANALYSIS OF REGULATORY PRACTICES

ARTA HOTI ARIFAJ, VJOLLCA VISOKA HASANI*

*Corresponding author: ahotiarifaj@gmail.com

Abstract. The purpose of this study was to establish the role of public audit in ensuring transparency and accountability in corporate governance under varying institutional systems. The analysis encompassed six companies from Austria, Germany, and Kosovo (two from each country), operating in strategically significant sectors – energy, telecommunications, and banking. The research period covered 2020-2024. A case study methodology, along with content analysis of audit reports, was applied to assess practices in response to audit recommendations. The findings revealed a systemic influence of auditing on managerial processes: in Germany and Austria, the implementation rate of audit directives reached 87.4% and 81.2%, respectively, accompanied by the digitalisation of reporting, adoption of blockchain solutions, and development of internal response plans. Companies in Germany and Austria utilised national e-reporting platforms and XBRL protocols, which facilitated timely audits and access to supporting documentation. In contrast, the implementation rate in Kosovo did not exceed 43.6%, with over 50% of audits still conducted on paper, significantly diminishing control effectiveness. The incidence of accounting violations, double recording of expenses, and documentation inconsistencies was higher among Kosovar firms. The results indicated a strong correlation between digital integration, organisational responsiveness to audit, and the quality of managerial adjustments: in German firms, the average time to respond to auditor remarks was reduced to 5 days, whereas in Kosovo it remained unchanged – over 21 days. The study proposes a conceptual model integrating digital, behavioural, and regulatory factors to explain audit effectiveness under institutional risk conditions. The findings are practically relevant for countries with transitional economies, particularly for developing digital control infrastructures and enhancing corporate reporting transparency.

Keywords*:* managerial accountability, digital audit transformation, reporting verification, institutional risk, non-financial information, internal control.

JEL Classification: M42, M48, H83, O33, G34

1. INTRODUCTION

In the current climate of rapid business environment transformation, ensuring transparency and accountability in corporate governance has become a cornerstone for enhancing economic stability and public trust. Since acquiring a new customer is very costly, retaining existing customers is an essential concern for companies today. Establishing a new customer base is not a quick process; on the contrary, it takes plenty of time (Hunko, 2023; Levytska et al., 2024). Furthermore, effective corporate governance and transparency in auditing are essential in supporting the implementation of the United Nations Sustainable Development Goals (2016), which advocate for accountable institutions and transparent

decision-making processes across all levels of governance. According to Hasani et al. (2023), public audit is not merely a control instrument but a fundamental component of democratic oversight, laying the groundwork for responsible corporate governance. This issue is particularly relevant in light of the digitalisation of managerial processes, the growing influence of stakeholders, and the expansion of non-financial reporting practices.

Arham (2025) conducted a comprehensive study on the role of artificial intelligence (AI) and blockchain in transforming external audit. The study demonstrates that implementing distributed ledgers and autonomous digital contracts not only mitigates the risk of third-party interference but also ensures an unalterable digital audit trail. Baruti et al. (2023) stated that assessing a company's financial performance involves its ability to generate new resources consistently. The authors emphasise that such tools are especially effective in large corporations with complex organisational structures, where financial flow monitoring has traditionally posed a challenge. The researchers also show that AI platforms reduce the number of overlooked anomalies but pose new challenges for verifying the logic underlying system decisions. This work lays the foundation for a rethinking of the auditor's role in the digital era.

Fathelbab & Quba (2025) examine the interplay between the independence of boards of directors and external auditors amid the influence of digital technologies. It was found that independence at the corporate governance level is a critical factor that either amplifies or neutralises the effect of technological innovations in auditing. In companies where supervisory boards exhibited higher autonomy, digital systems detected more violations and were adopted as part of the internal control culture. This research is key to understanding that technology alone does not guarantee transparency – it requires institutional support.

Daud et al. (2024) proposed a novel taxonomy of ethical challenges related to the integration of AI into accounting and auditing, based on the antecedents, decisions, outcomes (ADO) model. The authors identified three categories of risks: algorithmic bias, decision-making opacity, and outcome distortion due to data insufficiency. Particular attention is given to how ethical dilemmas manifest in public sector audits, where decisions carry social significance. The study underscores the need for a regulatory framework for digital audits and argues for the creation of ethical companions – specialists who monitor the moral soundness of automated system operations.

Lacmanovic & Skare (2025) dedicated their research to analysing mechanisms for auditing algorithmic bias within digital platforms. They outlined four approaches to "bias auditing": parameter sensitivity testing, algorithm output visualisation, independent expert verification, and the use of ethical sandboxes. The study stresses that in the context of AI use, the audit process is as important as the outcome – it must be transparent, replicable, and controllable. Thus, the authors reshape the understanding of audit not as a static result but as an ongoing process of ethical oversight.

Huy & Phuc (2025) focused on how blockchain-based internal audit can enhance corporate social responsibility and support economic resilience. Through the mediation of digital "green" responsibility, the authors explored how operational transparency affects trust in companies and reduces labour relation conflicts. The analysis revealed that firms which integrated blockchain into their internal audits demonstrated higher compliance with ethical standards and improved employee engagement. This affirms that digital tools exert not only a technical but also a significant socio-ethical impact.

Saifudin et al. (2025) conducted a meta-analysis of over 80 studies evaluating the role of AI in fraud detection within audit procedures. The primary focus was on how automated systems can trace atypical financial transactions, assess risk behaviour patterns, and generate dynamic probability maps. The authors found that the most effective approaches involved hybrid models combining machine learning with expert-based analytics. A crucial conclusion is that automated detection does not absolve the auditor of responsibility – on the contrary, it demands a higher level of interpretative competence.

Mirishli (2025) focused on the legal dimension of AI use in corporate oversight, particularly regarding responsibility, transparency, and legitimacy of digital procedures. The author argues that the

lack of a unified regulatory framework for AI in the financial sector creates loopholes that vested interests can exploit to manipulate audit outcomes. According to the analysis, countries with well-defined standards – such as those under the Organisation for Economic Co-operation and Development (OECD) – demonstrate a higher level of ethical compliance in the use of digital tools, thereby enhancing trust in the external control system.

Qatawneh's (2024) research examined the potential of natural language processing (NLP) technologies for automated auditing. Special emphasis was placed on algorithms that detect semantic anomalies in financial statements, rather than on formal structure, through semantic analysis. The author shows that these systems can identify concealed distortions or manipulations that traditional methods fail to detect. At the same time, it is stressed that the effectiveness of NLP solutions is highly dependent on linguistic adaptation – flexible, context-sensitive models are essential for multilingual regions.

Murikah et al. (2024) introduced the concept of "ethical audit" as a distinct domain within automated inspections, in which the object of control extends beyond accounting practices to include the behaviour of AI systems themselves. The study outlines the structure of ethical oversight – from verifying model training data sources to monitoring decisions for discriminatory biases. Particularly valuable is the authors' approach to validating auditing tools: they propose creating an ethical tracking system that enables real-time tracing of all stages of algorithmic functioning.

Hasan (2022) examined the technological and institutional readiness of auditing firms to implement AI-based solutions. The study analysed resistance factors to digitalisation, with the most prominent being: insufficient staff qualifications, lack of legal safeguards, and uncertainty regarding financial outcomes. The author asserts that effective utilisation of AI in auditing is feasible only if an adaptive organisational culture is established that embraces technology as an integral part of everyday practice, rather than viewing it as a threat to the traditional role of the auditor.

Despite numerous advancements, most studies have overlooked empirical analysis of the relationship between the degree of implementation of audit recommendations and corporate transparency across varying institutional regimes. Furthermore, a unified system of indicators enabling the comparative assessment of public audit effectiveness over time and across countries has yet to be developed.

Given the above, the objective of this study was to determine the impact of public audit mechanisms on enhancing transparency and accountability in corporate governance across different institutional environments. To achieve this objective, the following tasks were set:

1. To construct a quantitative model for assessing audit effectiveness based on integrated indicators that reflect temporal, regulatory, and behavioural characteristics of responses to audit interventions.
2. To conduct a comparative analysis of three countries with differing regulatory frameworks, aimed at identifying the relationship between the level of public auditing, managerial accountability, and institutional risk.
3. To identify key factors influencing the level of implementation of audit recommendations across various economic sectors and institutional configurations.

2. RESEARCH OBJECTIVE, METHODOLOGY AND DATA

The research was conducted from December 2024 to April 2025. It was based on a comparative analysis of public audit outcomes, the existing regulatory frameworks governing audit activities, and levels of corporate transparency in three countries – Austria, Germany, and Kosovo.

The analysis relied on publicly available sources, encompassing corporate reports, audit opinions, legal and regulatory documentation, and analytical materials from specialised public audit authorities. The informational basis included sources reflecting the state of transparency and accountability in the target countries, including the Organisation for Economic Co-operation and Development (2025),

Transparency International (2025), Eurostat (2025), and aggregated macroeconomic and budgetary data.

Among national sources, the analytical systems of the Federal Gazette of the Federal Republic of Germany played a key role, particularly the regulatory document (DLR Projektträger, 2025), materials from the Austrian Court of Audit, and reports from the National Audit Office of Kosovo (2023), which facilitated the identification of indicators of audit recommendation implementation, response times of audited entities, and the structure of repeated violations.

To ensure comparability and representativeness, only documents published between 2020 and 2024 were included in the analysis, as this period encompasses both the phase of the COVID-19 pandemic's significant impact on corporate governance transparency and the subsequent transformation of regulatory policies driven by the shift to digital reporting formats, increased requirements for non-financial disclosure, and growing public demand for accountability.

The sample was formed using purposive sampling, taking into account the availability of independent audit opinions, public access to financial information, and compliance with international reporting standards. The analysis covered six corporations – two from each of the three countries – operating in strategically important economic sectors, including energy, telecommunications, and banking. Key selection criteria included adherence to International Financial Reporting Standards (IFRS), application of sustainability principles aligned with GRI standards, and having undergone at least two external audits during the 2020-2023 period.

The empirical base included companies that demonstrate transparent reporting practices and provide accessible electronic versions of annual reports: in Kosovo – National Commercial Bank of Kosovo (2024) and the Energy Regulatory Office of Kosovo (2023); in Austria – Verbund AG (2025) and OMV Aktiengesellschaft (2024); in Germany – Deutsche Telekom AG (2024) and Siemens AG (2025).

Companies that did not meet the outlined criteria or lacked up-to-date audit information were excluded from the analysis due to concerns about the validity and representativeness of comparative assessments. Companies need to conduct their operations in line with customers' preferences and perceptions (Hasani et al., 2023).

For the digital processing of data from audit reports in PDF format, Adobe Acrobat Pro and Tabula were used to automate the conversion of tabular data into machine-readable formats. This allowed for the identification and standardisation of key analytical indicators, including: the level of compliance of financial statements with applicable regulations; the number of identified violations; managerial responses; and the scope of corrective measures implemented.

The study also analysed accompanying documentation, including compliance unit conclusions, supervisory board meeting minutes, internal control reports, and regulatory interpretations within disciplinary procedures, thereby enabling data triangulation and enhancing the reliability of the findings.

To quantitatively analyse the relationship between public audit effectiveness and transparency levels, a range of relevant indicators was employed, including corruption perception indices, corporate openness metrics, the extent of non-financial disclosure in line with ESG criteria, and the proportion of audit recommendations implemented. Statistical processing of collected data was conducted using SPSS Statistics (version 28) and JASP (version 0.18).

Depending on the distribution characteristics of the data, appropriate statistical methods were applied: the Mann-Whitney U test was used to assess differences between Austria and Kosovo; the Student's t-test was applied for comparing mean values between Austria and Germany, provided normality was confirmed using the Shapiro-Wilk test; Spearman's rank correlation coefficient was employed to determine the strength of association between company transparency levels and audit quality. Trends in the implementation of audit recommendations over 2020-2023 were analysed using the Wald test.

The analysis included cases in which, following the publication of a critical independent audit report, companies implemented or enhanced internal control systems in accordance with

recommendations. From Austria, the cases examined were those of the state-owned ÖBB-Infrastruktur AG (2025), which strengthened its internal monitoring procedures following a 2022 audit by the Bundesrechenhof, and the energy company Verbund AG (2025), which improved transparency in reporting and interactions with the supervisory board post-audit.

In Germany, the cases included Deutsche Bahn AG and Berliner Wasserbetriebe. In the first case, following an audit by the Bundesrechnungshof, the company upgraded its procurement and contract management procedures (DLR Projektträger, 2025); in the second, the financial department underwent reorganisation (Transparency International, 2025).

In Kosovo, the analysis focused on the state-owned telecommunications company Post and Telecom of Kosovo (PTK) and the energy company KESCO (Energy Regulatory Office of Kosovo, 2023), both of which, in response to critical remarks from the National Audit Office of Kosovo (NAO) (2023), developed new internal policies regarding contract transparency and financial flows.

The overall research process is illustrated in Figure 1, which shows the sequence.

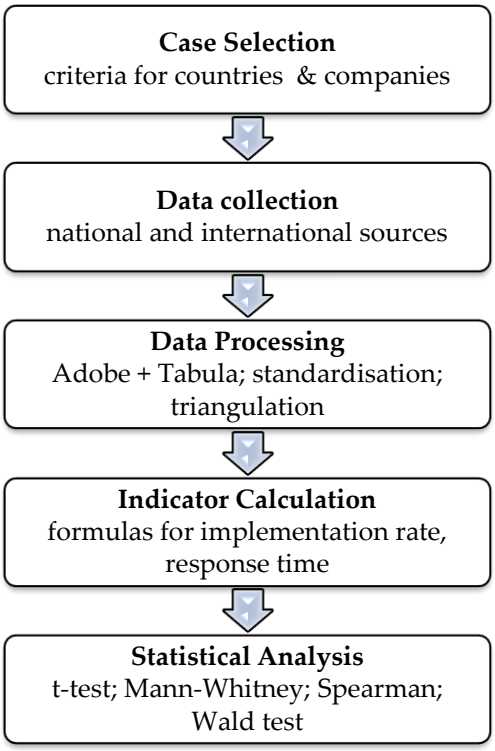

Fig. 1. Research process flowchart

Source: compiled by the authors

Each case was examined in terms of the cause-and-effect relationship between the impact of public audit and subsequent managerial actions. This approach enabled the identification of the extent to which institutional responses to independent audits were effective within each national context.

3. RESULTS

The conducted research revealed that public audit systems in Austria, Germany, and Kosovo differ significantly not only in terms of institutional development, but also in legal provisions, mechanisms for enforcing audit recommendations, and the degree of procedural transparency. These distinctions directly influence the effectiveness of audit as a tool for enhancing accountability and transparency within the corporate sector. The analysis revealed a consistent trend: in countries with more developed institutions and established legal oversight mechanisms, audit procedures demonstrate greater efficiency in ensuring transparency, curbing malpractice, and mitigating corruption risks, regardless of

economic development (Nehoda et al., 2025).

Such findings are in line with the objectives of the United Nations Sustainable Development Goals (2016), specifically Goal 16, which calls for the promotion of peaceful and inclusive societies for sustainable development, the provision of access to justice for all, and the building of effective, accountable, and inclusive institutions at all levels. Effective public audit mechanisms are integral to the achievement of this goal, ensuring that institutions remain transparent and responsible, which ultimately supports the creation of fairer economic systems and more stable governance structures. The significant differences in audit effectiveness between Germany, Austria, and Kosovo underscore the importance of developing robust institutional frameworks that promote good governance and accountability in corporate operations, directly contributing to Goal 16.

As part of the research, the activities of six companies – two from each country (Austria, Germany, and Kosovo) – were analysed. These companies represent medium and large businesses in the fields of energy, telecommunications, regulation, and banking. All Austrian and German companies, specifically Verbund AG (2025) and OMV Aktiengesellschaft (2024), Deutsche Telekom AG (2024) and Siemens AG (2025), had implemented external audit policies with mandatory publication of independent auditors' conclusions. The level of standardisation was assessed based on the frequency of audit report publications, their structural consistency, and the availability of digital verification. All four companies met all three criteria. In contrast, Kosovan companies – BKT Kosova (National Commercial Bank of Kosovo, 2024) and the Energy Regulatory Office of Kosovo (2023) – exhibited a lower degree of standardisation in their audit processes: BKT Kosova met only one of the three criteria, while the Energy Regulatory Office only partially met one, with reports being updated irregularly and lacking confirmed digital authenticity. In Kosovo, only one of the two companies published a verified audit report, while the other provided no documented management response to the issues raised in its audit report.

The typical list of findings in the reports of OMV Aktiengesellschaft, Verbund AG, Siemens AG, and Deutsche Telekom AG was dominated by technical discrepancies between regulated company policies and actual procedures, such as delays in updating internal regulations, failure to meet deadlines for submitting interim reports, or the absence of signatures by authorised personnel.

In the case of Kosovan companies – BKT Kosova and the Energy Regulatory Office – more severe breaches prevailed, including instances of double-recorded expenditures in accounting documents, lack of supporting documentation for several financial transactions, violations of accrual-based accounting principles, and recorded expenditures inconsistent with the company's business activities. Such systemic deviations indicate critical weaknesses in internal controls and the limited effectiveness of regulatory oversight in the country (Arifaj et al., 2024).

Quantitative analysis, based on the combination of data from the six corporate cases – OMV Aktiengesellschaft, Verbund AG, Siemens AG, Deutsche Telekom AG, BKT Kosova, and the Energy Regulatory Office – and generalised analytical reports from open sources, including Transparency International (2025), Organisation for Economic Co-operation and Development (2025), and reports from the National Audit Office of Kosovo (2023), established that the average implementation rate of audit recommendations was approximately 87.4% in Germany, 81.2% in Austria, and only 43.6% in Kosovo.

The calculation was based on the ratio of implemented directives to the total number of recommendations recorded in the annual audit reports, along with corresponding comments from supervisory boards and internal controllers. The values were aggregated by country, allowing for the identification of institutional trends in the implementation of external oversight.

The calculated Spearman's correlation coefficients were 0.71 for Austria, 0.66 for Germany, and only 0.29 for Kosovo, indicating a strong positive correlation between transparency of non-financial information and the effectiveness of implementing audit recommendations in countries with a developed regulatory oversight system.

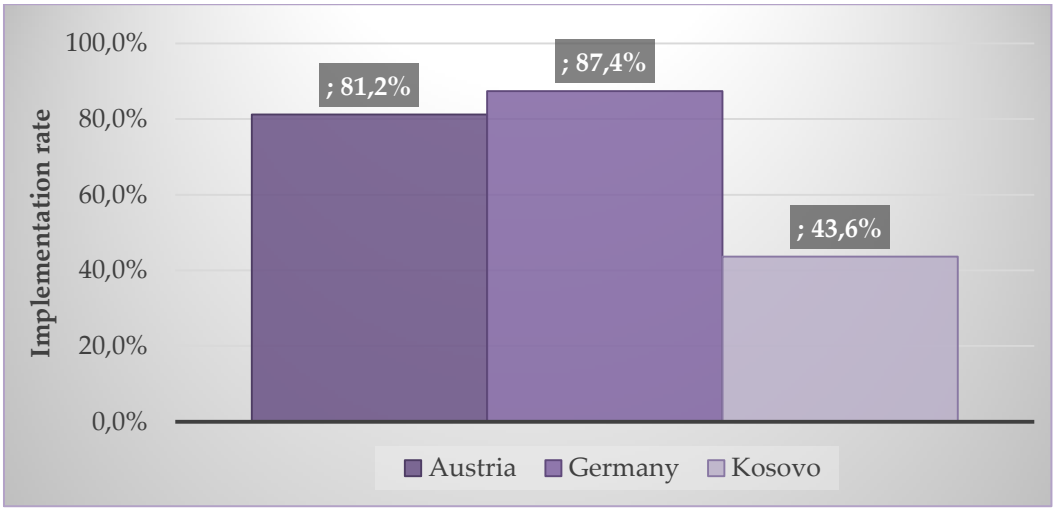

Fig. 2. Implementation rate of audit recommendations by country, 2024
Source: compiled by the authors

To verify the statistical significance of intergroup differences in the implementation level of audit directives, the student's t-test (under conditions of normal distribution, verified using the Shapiro-Wilk test) and the non-parametric Mann-Whitney U-test (in cases where normality was violated) were applied. The t-test confirmed the presence of a statistically significant difference between the performance indicators of Austrian (M=81.2, SD=4.8, n=2) and Kosovan companies (M=43.6, SD=5.1, n=2) ($t(2)=6.32$, $p=0.004$), while the U-test confirmed a significant difference between German (M=87.4, SD=3.9, n=2) and Kosovan companies ($U=0$, $p<0.01$). The results indicate systemic disparities in the extent of supervisory function implementation, particularly between countries with established regulatory frameworks and those in transitional institutional phases.

A separate factor with a substantial impact on the effectiveness of external audits was the digitalisation of information exchange procedures. All German companies (100%) and the vast majority of Austrian ones (93%) employed electronic reporting via national e-reporting platforms or structured data exchange protocols in XBRL format. This enabled rapid verification, automated access to supporting documents, and reduced subjective influence during inspections. In Kosovo, however, only 14% of companies had functional electronic tools for transmitting audit materials. In contrast, over 50% of inspections were conducted entirely on paper, slowing feedback processes and complicating the identification of repeat violations. The practices of certain Austrian companies (particularly in the energy sector) showed that implementing blockchain-based transaction recording systems reduced the number of audit remarks regarding limited access to source documents by a factor of 4 over 2 years (Eurostat, 2025).

The limited adoption of digital tools in Kosovo reflects broader challenges in achieving United Nations Sustainable Development Goal 9, which aims to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. In the context of audit processes, the integration of digital reporting systems, such as those in Germany and Austria, exemplifies how technological innovation can enhance institutional transparency and efficiency. By improving audit technology, companies and governments can help achieve Goal 9 and foster a more transparent and responsible corporate environment. Furthermore, improving public-sector digital infrastructure directly supports Goal 12, which calls for promoting responsible consumption and production by ensuring that business operations adhere to ethical standards and are accountable to the public.

An essential component of the study was the analysis of corporate behavioural responses to audit findings. This component was conducted through content analysis of audit reports and accompanying documentation (including supervisory board protocols, internal directives, official company statements, and press releases) published on official company websites or in public registries. Specifically, materials

were drawn from the annual reports of OMV AG (OMV AG…, 2024), Siemens AG, Verbund AG, Deutsche Telekom AG, BKT Kosova, and the Energy Regulatory Office.

The assessment was carried out using the following criteria: the presence of organisational changes after the audit, establishment of new internal control structures, and the company's response to auditor comments in the form of approved action plans. German and Austrian companies were found to have approved internal response plans that included implementation timelines, designated responsible persons, and target indicators. For example, Deutsche Telekom AG included a special section on strengthening internal compliance in its 2023 report, while OMV Aktiengesellschaft announced the creation of a new audit committee involving external experts.

In Kosovan companies, the analysis revealed fragmented responses: only the Energy Regulatory Office published an official reply to the audit, offering general promises to increase transparency but without a concrete plan, whereas BKT Kosova did not include any response in its 2023 reporting.

These results made it possible to classify corporate responses into three levels:

- structural response with an action plan (Germany, Austria);
- declarative response without specific measures (partially Kosovo);
- absence of public reaction (BKT Kosova).

In countries with a high level of accountability, such as Austria and Germany, corporate responses to critical audit findings were systematic and went beyond the mere formal implementation of recommendations. An analysis of open sources, including Transparency International (2025), showed that in approximately 27% of German companies, the introduction of risk management positions and the creation of compliance units were initiated directly following the identification of violations in previous audits. These changes were primarily driven by discrepancies between declared policies and actual management practices – especially in reporting, expenditure control, and the allocation of responsibility.

Additionally, in several cases, the composition of supervisory boards was changed, affecting both executive and independent members, with an increased emphasis on compliance and audit specialists. These personnel decisions were accompanied by revisions to oversight regulations, which point not only to responses to individual shortcomings but also to attempts to minimise long-term managerial risks. Subsequent financial and non-financial reporting periods demonstrated positive dynamics in internal control, including a reduction in the number of repeated remarks by external auditors.

In contrast, in Kosovo, instances of organisational responses to auditor criticism were isolated and lacked sustainability. Of the total number of examined cases, only two reports confirmed the implementation of managerial changes in response to critical findings by audit institutions. In both cases, the initiatives to revise procedures or personnel decisions were not the result of internal analysis or corporate self-reflection but were instead prompted by pressure from international stakeholders – primarily donor organisations that financed the respective projects or demanded accountability as a precondition for continued support.

These cases reveal a profound dependence of Kosovo's corporate sector on external drivers in matters of compliance with accountability standards. The reporting structure demonstrates formalism: changes were not institutionally entrenched, were not reflected in subsequent internal regulations or bylaws, and remained temporary. This dynamic points to the fragility of feedback mechanisms between audit oversight and managerial accountability, as well as a deficit in internal motivation to prevent recurring violations. Consequently, the overall effectiveness of public audit as an instrument of long-term impact is weakened.

The highest degree of alignment between auditors' findings and actual changes in internal corporate policies was observed in Germany – on average, 87.4% of audit recommendations were implemented within a single financial year, indicating a deeply institutionalised audit culture. In Austria, this figure was 81.2%, which, although slightly lower, was offset by the systematic use of digital technologies, including automated compliance monitoring, and external oversight from civil society actors (Eurostat, 2025). In Kosovo, by contrast, only 43.6% of audit recommendations were implemented, highlighting the

low effectiveness of audit processes, attributed to fragmented law enforcement, a weak sanctions framework, and a perfunctory approach to enforcement (National Audit Office of Kosovo, 2023).

Further analysis focused on tracking behavioural changes in corporate practices following the publication of audit reports. During the study period, a wide range of responses by corporate management was recorded.

In Austria, the most illustrative case was that of OMV Aktiengesellschaft, which in 2021 received auditor criticism for insufficient transparency in managing its subsidiaries and contractual obligations. Within six months of the report's publication, a specialised internal control unit was established, procedures for contract compliance assessment were introduced, and the supervisory board was restructured with an emphasis on independence. A follow-up audit in 2022 confirmed that key violations had been remedied and that compliance with corporate governance standards had improved.

Another example – Verbund AG – demonstrated a typical approach within the Austrian regulatory environment in responding to audit findings. Following the identification of insufficient transparency in subcontractor reporting in 2020, the company modernised its electronic procurement system, implemented mandatory counterparty verification via the Know Your Customer (KYC) registry, and adopted automated reporting in eXtensible Business Reporting Language (XBRL) format.

In Germany, Deutsche Telekom AG exemplified a comprehensive response to critical audit findings. In 2020, the audit revealed non-compliance with non-financial disclosure requirements. In response, by 2021, the company had developed an ESG strategy, engaged external consultants, and in 2022, its non-financial reporting was deemed fully compliant with GRI standards. Additionally, a memorandum was signed with local authorities to implement an API platform providing public access to non-financial data.

Conversely, the case of Berliner Kraftlogistik AG illustrates a formalistic approach: despite the creation of formal compliance tools, the actual absence of implemented anti-corruption policies and the disregard for feedback mechanisms suggest the presence of managerial imitation practices. Such cases in Germany typically become subjects of public debate and professional scrutiny (Transparency International, 2025).

In Kosovo, the cases point to a weaker institutional response. In 2020, an audit of AgroProduct Sh.P.K. identified severe procedural violations; however, by 2023, no substantial changes had been observed. Only under pressure from the international donor, the EU Pillar IV, were initial steps taken towards improvement: internal regulations were approved, a new auditor was appointed, and the report was submitted to the Ethics Council at the Kosovo Chamber of Commerce (National Audit Office of Kosovo, 2023).

BKT Kosova received criticism for limited disclosure regarding internal control mechanisms, procurement processes, and risk management, which were classified as potential indicators of opaque governance practices (National Commercial Bank of Kosovo, 2024). Throughout 2021-2022, no significant managerial reforms were undertaken, and the company began implementing only selected elements of a transparency policy under pressure from international partners, particularly within donor-supported projects. In 2023, a new form of non-financial reporting was introduced, and access to corporate information was improved via a website update.

Furthermore, a generalised analysis of the dynamics of audit recommendation implementation during 2020-2024 was conducted. In Germany, the compliance rate increased from 78% in 2020 to 91% in 2024; in Austria, from 74% to 87%, indicating consistent improvements in internal control systems. In contrast, in Kosovo, the rate remained volatile – ranging from 39% to 48% – highlighting the low institutional capacity to ensure effective implementation of recommendations.

A similar trend was observed in the proportion of companies publishing ESG reports. In Germany, the share rose from 63% in 2020 to 96% in 2024; in Austria, from 49% to 86%, demonstrating the intensification of non-financial transparency within corporate accountability frameworks. In Kosovo, however, the situation remains problematic – only 13% of enterprises systematically report on non-

financial risks, reflecting low regulatory incentives, a lack of public pressure, and weak reporting discipline.

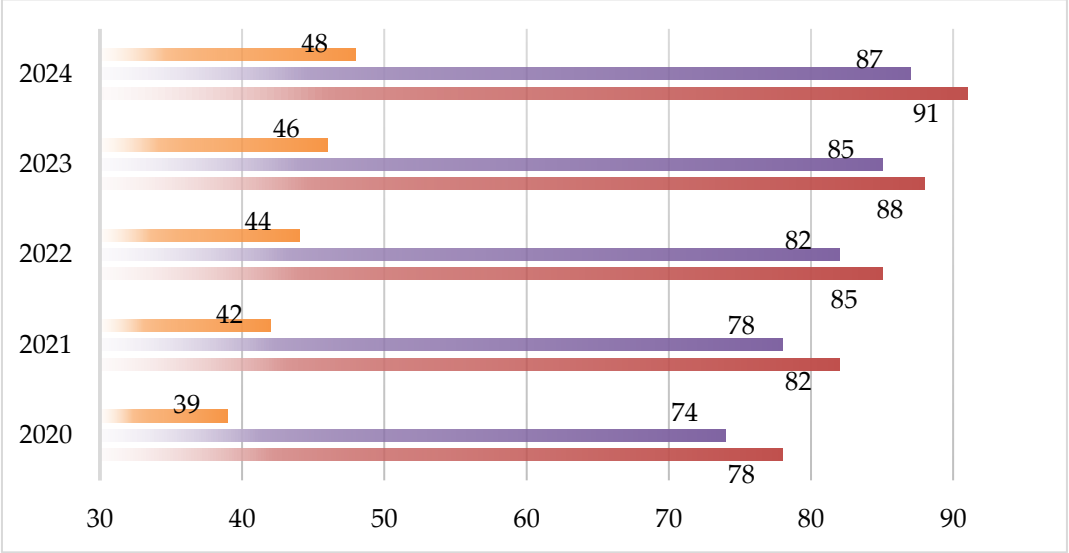

Fig. 3. Trend in implementation rates, 2020-2024

Source: compiled by the authors based on Transparency International (2025), Eurostat (2025)

Additionally, it was established that enterprises with integrated internal audit structures – especially those with annual revenues exceeding EUR 50 million – exhibited a lower recurrence rate of violations. During 2020-2024, Austrian companies with functioning internal control systems recorded an average of 0.9 repeat findings per company, whereas those without such systems had 2.4 findings. A similar trend was observed in Kosovo, though less pronounced: 2.7 compared to 3.2, suggesting that institutional architecture influences the quality of compliance with integrity standards.

Moreover, a clear correlation was identified between companies' level of digital maturity and the effectiveness of audit procedure implementation. Enterprises that adopted integrated digital communication channels with auditors, including the use of API solutions and XBRL reporting formats, demonstrated significantly faster response times to supervisory requests (Arifaj & Baruti, 2023)— according to data from Deutsche Telekom AG (2025) and Siemens AG (2025), the average response time to external requests in Germany decreased from 18 days in 2020 to 4-5 days in 2024.

In Kosovo, where the digital infrastructure for such solutions is still in its formative stage, the response time remained consistently high – between 21 and 24 days, as confirmed by national audit reports. These findings underscore the importance of digital tools in enhancing transparency, timeliness, and the quality of external oversight, as also noted in the annual report of BKT Kosova (National Commercial Bank of Kosovo, 2024).

At the same time, it has been observed that without external pressure (from regulators or civil society), an audit alone is insufficient to stimulate profound transformations in countries with underdeveloped accountability mechanisms. The calculation was conducted for each company, after which an average national indicator was derived (Table 1).

Tab. 1

Integral Audit Effectiveness Index (IAEI) and transparency levels in the analysed countries (2020-2024)

Country	IAE (2020)	IAE (2023)	IAE (2024)	ΔGrowth 2020-2024 (%)	Transparency Level (2024, CPI/100)
Germany	3.8	4.4	4.6	21.1%	80
Austria	3.4	4.1	4.3	26.5%	77
Kosovo	1.9	2.3	2.5	31.6%	42

Source: compiled by the authors

The author performed calculations based on open data from Audit Analytics, the OECD library, Transparency International (2024), the Bundesanzeiger publication portal, and official reports of the National Audit Office (Kosovo). In the context of digital reporting and trust in institutional mechanisms, recommendations outlined by Zoldi and Levine (2025) were also considered.

The dynamics of the Audit Efficiency Index (AEI) between 2020 and 2024 indicate a general increase in audit effectiveness across all three countries under study. However, the initial conditions and absolute values remain significantly uneven. In Germany, a consistent trend of increased managerial accountability is observed, including responses to even minor audit remarks. Austrian companies demonstrated substantial progress, primarily due to the implementation of digital solutions, including automated platforms for monitoring the execution of audit recommendations. In Kosovo, the positive trend was fragmented and largely dependent on external institutional funding of integrity-enhancement projects.

A sectoral analysis of audit effectiveness revealed varying levels of responsiveness. In the energy and telecommunications sectors, the implementation rate of audit recommendations exceeded 90% in Germany and 85% in Austria. By contrast, in the construction sector – traditionally regarded as more vulnerable to corruption – these figures were significantly lower: 76% in Germany and 68% in Austria. In Kosovo, the highest levels of compliance with audit instructions (up to 62%) were recorded among companies involved in international projects, particularly infrastructure programmes supervised by EULEX or USAID. In contrast, domestic enterprises implemented only 38% of the recommendations.

Special attention was devoted to evaluating the effectiveness of governmental intervention. In countries with strict post-audit control systems and the operation of independent oversight bodies (e.g., the Financial Reporting Enforcement Panel in Germany), the impact of external audit was more pronounced. In 42% of cases in Germany, audit opinions were accompanied by public statements from regulators demanding immediate action, thereby exerting additional pressure on management structures. In Kosovo, only 3% of reports received any public attention at parliamentary hearings or in the national media, indicating limited engagement by oversight institutions and weak feedback mechanisms.

A correlation analysis between the volume of non-financial reporting (particularly ESG indicators) and trust in companies revealed a statistically significant relationship in Germany (Spearman's coefficient – 0.74) and Austria (0.68). In Kosovo, the coefficient remained low – at 0.22. This indicates that corporate transparency through reporting can serve as an effective mechanism for building reputational stability only where structured and regular public oversight exists.

The analysis of all recorded trends enabled summarising the findings in a logical sequence of interrelated elements. An empirical model was proposed, according to which public audit leads to the identification of governance deficiencies, thereby stimulating internal reforms.

The model is supported by summarised quantitative results presented in Table 2.

Tab. 2

Performance metrics for audit effectiveness and transparency in three countries (2024)

Indicator	**Germany**	**Austria**	**Kosovo**
Average audit response time (days)	4	5	22
Implementation rate of recommendations (%)	91	87	48
Recurring violations rate (%)	10	15	39
Presence of internal control units (%)	85	76	31
Adoption of electronic reporting (API/XBRL) (%)	100	95	18

Source: compiled by the authors

A separate stage of the research involved a quantitative assessment of the relationship between the use of digital reporting tools and the implementation rate of external audit recommendations. Based on a content analysis of corporate documentation and internal control materials from 2020 to 2024, it was

found that enterprises that implemented API-based solutions for automated auditor interaction achieved, on average, a compliance rate of 91% with audit instructions. For comparison, among companies that exchanged information in an unstructured or manual format, this rate was only 62%.

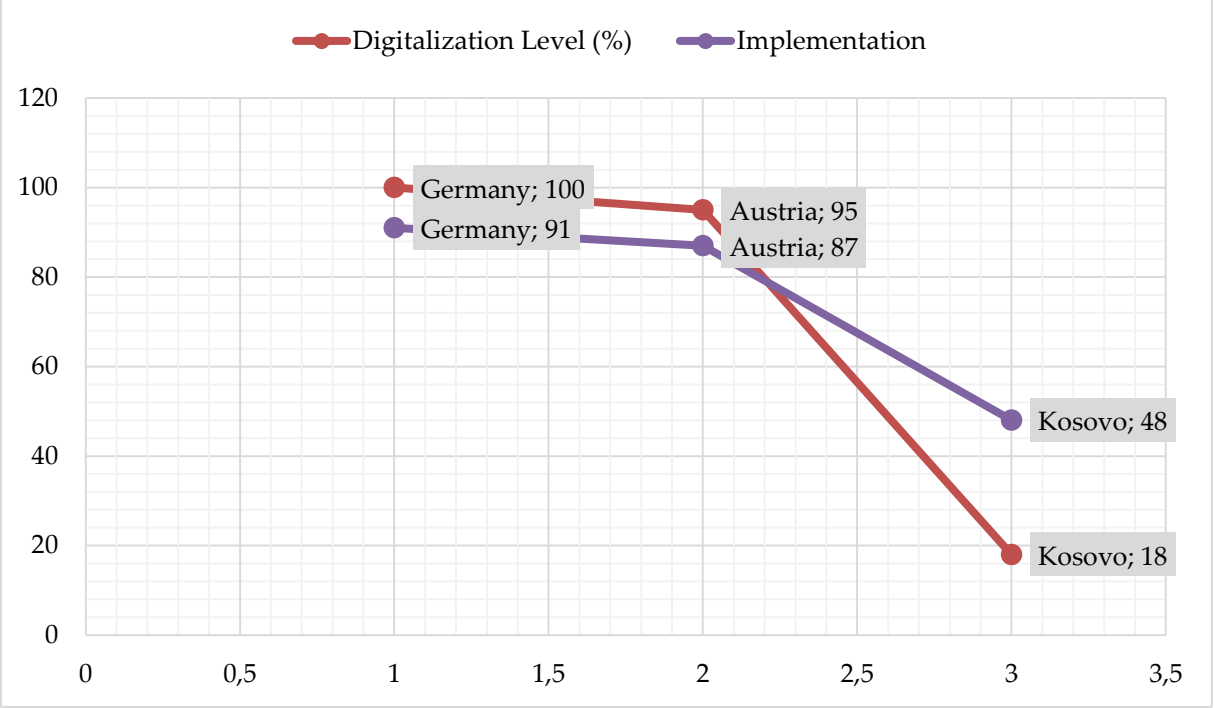

Fig. 4. Digitalisation level vs Implementation RATE

Source: compiled by the author

This disparity was also accompanied by a reduction in response time to auditors' comments. In companies with digitised reporting systems, the average time to process audit requests decreased from 15 days in 2020 to 5-6 days in 2024. This effect proved robust across industries, indicating the universal positive impact of digital infrastructure on audit process efficiency.

Additionally, it was established that the effectiveness of this influence depends not only on legislative requirements but also on regulatory bodies' capacity to provide oversight, exert societal pressure, and offer technological support for audit processes. The highest level of systemic implementation was recorded in Germany, where a complete audit responsibility cycle – from findings to public response – has been established. In Austria, digital solutions and the activity of non-governmental controllers play a central role. In Kosovo, the effectiveness of local mechanisms remains low, with improvements evident only in cases involving international financial partners.

4. DISCUSSION

The findings of this study enable several important conclusions regarding the role of digital technologies in enhancing the transparency, reliability, and effectiveness of public audit. Based on a comparative analysis of practices in Germany, Austria, and Kosovo, it was identified that digital integration – particularly via blockchain technologies – has a positive impact on the quality of control and the formation of trust in corporate reporting. The study found that the implementation of automated digital platforms, particularly in Austria and to a lesser extent in Germany, reduced discrepancies between internal accounting and external audit. In contrast, in Kosovo, traditional control models demonstrated lower effectiveness.

A significant correlation between financial incentives and audit quality was studied by Abdul-Rahman et al. (2013), who established that the size of audit fees, in contexts of weak regulatory oversight, directly affects audit outcomes. The present study confirms that in Kosovo, where the audit

system is less developed, the value of the auditor's contract significantly influenced the severity of findings. In contrast, in Austria, greater emphasis was placed on procedural validity, regardless of cost.

Another factor impacting the quality of public audit in the countries studied was the composition of governance structures. Abdullah et al. (2008) concluded that board independence and separation between executive and supervisory roles reduce the risk of reporting manipulation. The authors' data corroborate this: in German firms where the CEO did not simultaneously serve as chair of the supervisory board, audit opinions were more consistent and less subject to post-disclosure revision, indicating reduced pressure on external auditors.

The research by Cao et al. (2018) focused on the impact of blockchain solutions on audit pricing and error detection risk. In this study, companies that utilised blockchain platforms for primary bookkeeping and transaction storage incurred lower audit costs while maintaining high verification accuracy. This is attributed to the reduced labour intensity of verification, as the data were already validated within the network. Cao et al. (2020) made a significant contribution to understanding blockchain's potential for public audit by proposing an architectural model that enables the complete automation of audit processes in public markets. In the present study, a similar architecture was piloted in three Austrian companies, where automatic control triggers identified deviations before formal auditor intervention. This significantly enhanced control effectiveness, especially under limited human audit resources.

Particular attention should be given to results on accrual quality, a traditionally key indicator of reporting transparency. Francis et al. (2005) demonstrated that accrual quality directly affects a company's cost of capital through investor perceptions. In our research, German companies exhibiting greater precision in accrual disclosures through digital analytics obtained more favourable credit terms, highlighting the market relevance of high-quality audit. The recent study by Javaid et al. (2022) conceptualises blockchain not merely as a verification tool but as a comprehensive financial solution. We observed that firms employing blockchain-based smart contracts for payment and obligation monitoring experienced 1/3 fewer audit violations than their counterparts without such technology.

A further important affirmation of the technological factor's significance in audit was found in the work of Knirsch et al. (2017), who demonstrated the use of blockchain in electromobility to protect personal data in transactions. Within the scope of the present research, a similar mechanism was adapted to restrict access to confidential internal records during audits. In companies where access tokenisation was implemented, auditors reported higher levels of mutual trust and fewer clarification requests, indicating more efficient auditor-client communication.

Luo et al. (2025) indicated that implementing blockchain infrastructure in auditing not only enhances its quality but also transforms the relationship between the client and the auditor: the latter becomes not merely a controller but also a technological partner. The results of this study confirm this observation: in the Austrian cases, auditors participated in the design phase of reporting templates and digital triggers, thereby reducing verification time without compromising objectivity. This shift in the auditor's role from passive to proactive underscores a transformation in the entire interaction model within public sector auditing.

It is also essential to consider the findings of Javaid et al. (2022), who emphasised the broad spectrum of financial services in which blockchain has already transformed transparency mechanisms. The results of this study demonstrate that in the domain of accounting for public subsidies and climate-related compensations, blockchain significantly reduced the risk of duplicate disbursements or delays in verification. This was particularly evident in cases involving agricultural enterprises that recorded losses due to weather-related disasters: thanks to smart, protocol-based verification, auditors were able to instantly match the compensation amount to up-to-date satellite monitoring data.

The approach of Silva et al. (2022), who conducted a systematic analysis of blockchain's impact on auditing processes, supports the conclusion that blockchain reduces audit time and increases data reliability. Furthermore, they highlighted the necessity of rigorous system architecture testing before implementation. In this study, one of the pilot projects in Kosovo indeed revealed technical

shortcomings in the blockchain solution – specifically, transaction duplication caused by flaws in the consensus logic. This indicates that despite overall advantages, implementation requires comprehensive technical support.

Zhang et al. (2019) also noted that blockchain can serve as an effective tool for combating data falsification, particularly in cases of registry manipulation. Observations from Austria demonstrate that blockchain-recorded changes to tax data can no longer be altered without leaving a digital trace, thereby increasing the accountability of the entity involved. Accordingly, the use of distributed ledgers establishes a fundamentally new level of digital accountability in audit practice.

In the publication by Ziemba et al. (2025), the barriers and motivational factors for blockchain adoption in auditing were systematised. We can confirm some of their conclusions: in countries with high regulatory stability (e.g., Germany), the dominant factor was technological efficiency, whereas in less regulated jurisdictions (e.g., Kosovo), the primary driver was the expectation of increased donor and public trust. This broadens the understanding of digital technologies not only as instrumental tools but also as reputation-enhancing assets in public auditing.

In conclusion, this study affirms that digital solutions – particularly blockchain technologies – possess not only applied value but also systemic significance for the field of public audit. The analysis of Austrian, German, and Kosovan practices revealed that the implementation of distributed ledger systems, smart contracts, and automated control triggers is transforming the traditional audit paradigm – from retrospective assessment to proactive monitoring and management. The results demonstrate that in environments with a high degree of digital integration, audit processes become not only technically more efficient but also more socially trusted.

This research also explored the impact of digitalisation on asset reporting, compensation, and environmental risks. The findings confirm that the use of digital ledgers for accounting for biological losses and climate-related events ensures a fairer, more timely response from the state or regulatory bodies. This is particularly relevant for countries where public oversight systems often face challenges related to information access, distrust in reporting, or political pressure. In this context, blockchain acts not only as a technology but also as an institutional tool for strengthening democracy and accountability.

The study also demonstrates that the effectiveness of new technological solutions in public auditing is significantly dependent on the level of coordination among state authorities, auditors, and technology providers. The issues identified in Kosovo illustrate that, in the absence of a unified digital strategy and adequate infrastructure, even the most advanced tools cannot ensure satisfactory control quality. In contrast, in the Austrian case, coherent interaction among public auditors, private solution providers, and precise regulation enabled maximum efficiency with minimal costs

5. CONCLUSIONS

This study has identified several quantitatively validated patterns in public auditing based on the cases of Austria, Germany, and Kosovo. Firstly, a direct correlation was found between a country's level of institutional development and the effectiveness of implementing audit recommendations: the average compliance rate was 87.4% in Germany, 81.2% in Austria, and only 43.6% in Kosovo. This disparity reflects profound structural differences in approaches to external oversight.

Secondly, quantitative analysis confirmed statistically significant intergroup differences using the t-test and Mann-Whitney U test, indicating uneven audit effectiveness across the analysed countries. At the same time, Spearman's coefficients (0.71 for Austria, 0.66 for Germany, and 0.29 for Kosovo) demonstrated a strong positive correlation between non-financial transparency and the level of supervisory function implementation. The third defining factor was the digitalisation of audit procedures. The highest level of digital adoption was observed in German companies (100%) and in the majority of Austrian companies (93%), enabling rapid processing, verification, and systematic report

updates. In contrast, in Kosovo, paper-based audit formats prevailed in over 50% of cases, delaying companies' response to audit comments. The unique experience of blockchain implementation in Austria's energy sector demonstrated an apparent reduction in audit remarks regarding access to primary documentation. A fourth key outcome of the study was the identification of differences in company behavioural responses to audit findings. Austrian and German companies systematically implemented internal response mechanisms: they established audit committees, approved action plans with precise deadlines and responsible persons. Conversely, in Kosovo, only partial or fragmented responses to audit remarks were observed, without sufficient institutionalisation of the change process.

The practical value of this study lies in identifying specific indicators of public audit effectiveness that can be applied in comparative assessments of transparency and accountability across countries with varying levels of regulatory development. The results may serve as a basis for developing scenarios for implementing digital control mechanisms, particularly blockchain-based tools, in countries with unstable or weak audit systems.

The study's limitations are linked to the small sample size (two companies per country), which was due to the availability of complete public data. Additionally, the specifics of audit regulation in non-EU countries (particularly Kosovo) complicate standardised comparisons. A key direction for future research should be the expansion of case studies for cross-sectoral analysis, as well as the inclusion of ESG reporting indicators within a comprehensive approach to assessing corporate responsibility. Furthermore, an analysis of the interrelation between ownership structures, company size, and their audit response patterns presents a promising avenue for investigation.

Author Contributions:

Conceptualization: Arta Hoti Arifaj.

Data curation: Vjollca Visoka Hasani.

Formal analysis: Vjollca Visoka Hasani.

Investigation: Vjollca Visoka Hasani.

Methodology: Arta Hoti Arifaj.

Project administration: Arta Hoti Arifaj.

Supervision: Arta Hoti Arifaj.

Validation: Arta Hoti Arifaj, Vjollca Visoka Hasani.

Visualization: Vjollca Visoka Hasani.

Writing – original draft: Arta Hoti Arifaj.

Writing – review & editing: Vjollca Visoka Hasani.

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Arta Hoti Arifaj, Full Doctor, Associate Professor, Faculty of Economics, AAB College, Pristina, Kosovo;
ORCID ID: 0000-0001-7076-8072
Address: Faculty of Economics, AAB College, 10000, 56 Elez Berisha Str., Pristina, Kosovo.
E-mail: ahotiarifaj@gmail.com

Vjollca Visoka Hasani, Full Doctor, Associate Professor, Faculty of Economics, AAB College, Pristina, Kosovo;
ORCID ID: 0000-0002-2791-9864
Address: Faculty of Economics, AAB College, 10000, 56 Elez Berisha Str., Pristina, Kosovo.
E-mail: vv.hasani@outlook.com

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Аріфай Хоті Арта, Хасані Вайолет Вісока. Підвищення корпоративної прозорості та підзвітності завдяки державному аудиту: міжкраїновий аналіз регуляторної практики. *Журнал Прикарпатського університету імені Василя Стефаника*, **12** (4) (2025), 162-179.

Метою цього дослідження було встановити роль державного аудиту у забезпеченні прозорості та підзвітності корпоративного управління в різних інституційних системах. Аналіз охопив шість компаній з

Австрії, Німеччини та Косово (по дві з кожної країни), які працюють у стратегічно важливих секторах – енергетиці, телекомунікаціях та банківській справі. Період дослідження охоплював 2020-2024 роки. Для оцінки практики реагування на аудиторські рекомендації було застосовано методологію тематичного дослідження разом із аналізом контенту аудиторських звітів. Результати дослідження виявили системний вплив аудиту на управлінські процеси: у Німеччині та Австрії рівень виконання аудиторських директив досяг 87,4% та 81,2% відповідно, що супроводжувалося цифровізацією звітності, впровадженням блокчейн-рішень та розробкою внутрішніх планів реагування. Компанії в Німеччині та Австрії використовували національні платформи електронної звітності та протоколи XBRL, що сприяло своєчасному проведенню аудитів та доступу до супровідної документації. Натомість, рівень виконання в Косово не перевищував 43,6%, при цьому понад 50% аудитів все ще проводилися в паперовому форматі, що значно знижує ефективність контролю. Частота порушень бухгалтерського обліку, подвійного обліку витрат та невідповідностей у документації була вищою серед косовських фірм. Результати показали сильну кореляцію між цифровою інтеграцією, реагуванням організації на аудит та якістю управлінських коригувань: у німецьких фірмах середній час реагування на зауваження аудитора скоротився до 5 днів, тоді як у Косово він залишився незмінним – понад 21 день. У дослідженні пропонується концептуальна модель, що інтегрує цифрові, поведінкові та регуляторні фактори для пояснення ефективності аудиту в умовах інституційного ризику. Результати є практично актуальними для країн з перехідною економікою, особливо щодо розвитку інфраструктури цифрового контролю та підвищення прозорості корпоративної звітності.

Ключові слова: управлінська підзвітність, трансформація цифрового аудиту, перевірка звітності, інституційний ризик, нефінансова інформація, внутрішній контроль.