EXTENDED DOCTORAL ABSTRACT

The importance of auditing in fraud detection and prevention: an international empirical assessment

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Fraud remains one of the most damaging forms of economic and financial crime worldwide, with far-reaching consequences for public trust, institutional legitimacy and market stability (Free & Murphy, 2013). Within the European Union (EU), and particularly across Mediterranean countries, the incidence and impact of fraud are shaped by persistent structural asymmetries associated with governance quality, corruption, economic vulnerability and sociocultural factors (Ata & Arvas, 2011; Cieslewicz, 2012; Cheliatsidou et al., 2021). In this context, auditing occupies a pivotal position: it safeguards the credibility of financial information, supports judicial systems in evidence-based decision-making (IAASB, 2021), and mitigates the broader economic and social effects of misconduct.

This doctoral thesis, developed within the *Doctorado en Ciencias Económicas, Empresariales y Sociales* at the University of Seville (García Ramos, 2024), examines the contribution of auditing to fraud detection and prevention in the EU. It adopts an explicitly interdisciplinary stance, integrating perspectives from forensic accounting, criminology, information systems, public administration and security studies. In parallel, the thesis evaluates the extent to which investment in police forces enhances crime-prevention capacity, strengthens institutional performance and reinforces democratic resilience (Zvekić, 2018), thereby connecting audit functions with wider architectures of internal security and rule of law in Europe.

The central aim of the thesis is to analyse, in a comprehensive and empirically grounded manner, the importance of auditing in the detection and prevention of fraud in the EU, with special emphasis on Mediterranean Member States and on the Portuguese judicial context. This aim unfolds along three major axes: assessing

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the economic, social and institutional impact of fraud in the EU, including cross-country differences between Mediterranean and non-Mediterranean Member States; evaluating the role of auditing and forensic accounting in detecting, documenting and preventing fraudulent behaviour, both in the private and public sectors; and examining how Information Technologies (IT) and Artificial Intelligence (AI) reshape fraud-detection models, audit practice and investigative capacity, particularly through the use of big data, automated analytics and text-mining.

To address these objectives, the thesis adopts a multi-method research design organised into nine complementary lines of research, which together form a coherent analytical framework combining qualitative, quantitative, doctrinal and empirical approaches. The qualitative component includes a comprehensive literature review on fraud models, fraud-risk factors and the evolution of fraud-detection methodologies; an examination of the role of auditors and forensic accountants in judicial processes (Singleton & Singleton, 2010; Silverstone et al., 2007); and a systematic review and bibliometric analysis of the literature on IT and AI in auditing and fraud detection (Antipova, 2018; Bonsón & Bednárová, 2019; Lamboglia et al., 2021; Hasan, 2022; Zemankova, 2019).

The empirical component comprises a text-mining analysis of fraud-related judicial decisions from Portuguese courts, applying advanced content-analysis techniques to identify the conceptual links between auditing, accounting and fraud; comparative assessments of policing investment and internal security expenditure across EU Member States, distinguishing between Mediterranean and non-Mediterranean countries; and a set of quantitative models, including ANOVA and structural relationships, exploring the association between fraud impact and several institutional and macroeconomic factors, such as the Corruption Perceptions Index (CPI), Real GDP, Investment Freedom and public expenditure on policing (Remeikienė et al., 2018; Boussalham, 2018).

In methodological terms, the thesis is incremental: it moves from a systematic mapping of existing knowledge to empirical analyses of policing and judicial data, and finally to integrated models that articulate fraud, auditing and institutional capacity at the EU level.

The findings clearly indicate that technological innovation substantially enhances the ability of auditors, forensic accountants and judicial authorities to detect irregularities and fraudulent schemes (Andreassen, 2020; Lamboglia et al., 2021). AI-driven systems, automated analytical tools and text-mining techniques support more efficient identification of anomalous patterns and outliers in financial and operational data; faster extraction and structuring of relevant evidentiary information from unstructured sources, such as judicial decisions and narrative

disclosures (Gupta & Gill, 2012); and timely detection of misconduct in financial statements and organisational processes, thereby strengthening the preventive function of auditing (Bao et al., 2022).

These developments generate substantial benefits for auditing practice (Cristea, 2020; Hasan, 2022; Goh et al., 2019), including enhanced analytical procedures, supported by large-scale data processing and predictive modelling; improved precision and reliability of audit evidence; reinforced data-driven decision-making and risk assessment; and more robust channels for inter-institutional cooperation between auditors, regulators, police forces and judicial authorities.

At the same time, the thesis discusses a well-recognised paradox: the same technological progress that strengthens fraud-prevention mechanisms also enables new, highly sophisticated forms of criminal activity. Cyber-enabled fraud, identity theft, extortion, ransomware attacks, corporate espionage and illicit activities in digital and metaverse environments illustrate how technological infrastructures can be exploited by organised crime and opportunistic actors (Maher, 2017; Smaili & Rancourt-Raymond, 2022; Team Cymru, 2006; Crowther & Rayman-Bacchus, 2004). This dual effect of technology underscores the need for continuous investment in technological resources and cybersecurity; digital skills and interdisciplinary training for auditors and investigators; ethical oversight, professional scepticism and robust standards for AI use in auditing; and integrated governance frameworks capable of aligning innovation with accountability and public interest.

The comparative analysis of policing investment across EU Member States reveals marked disparities between Mediterranean and non-Mediterranean countries. While investment in police forces has generally increased at the EU level, its magnitude, stability and strategic orientation differ significantly. Non-Mediterranean countries are characterised by higher levels of political and institutional trust; more stable and predictable patterns of public investment in internal security; and stronger organisational capacity and better-resourced police forces, often associated with evidence-based policing and problem-oriented strategies (Weisburd & Eck, 2004). These features correlate with lower fraud impact and greater effectiveness in mitigating criminal behaviour, suggesting that robust institutions and sustained investment in police capacity contribute to an environment less conducive to fraud (Morales et al., 2014).

Conversely, Mediterranean countries tend to display weaker institutional resilience and more volatile public investment; higher levels of perceived corruption and governance deficits; and greater socio-economic fragility and cultural heterogeneity, which together can amplify the risks and consequences of fraudulent behaviour (Vargas, 2017). The ANOVA results confirm asymmetries in the determinants of fraud

impact (Remeikienė et al., 2018; Boussalham, 2018). In non-Mediterranean Member States, CPI, Real GDP and expenditure on policing are positively associated with fraud mitigation, indicating that higher governance quality, economic development and investment in security contribute to reducing fraud; in Mediterranean countries, fraud impact is more strongly influenced by corruption perception and investment freedom, suggesting weaker institutional capacity and less effective control of fraudulent practices, even when formal investment levels are comparable. Taken together, these findings point to the existence of a problematic Mediterranean triangle linking poverty, corruption and limited institutional capacity, with significant repercussions for economic development, social cohesion and the credibility of public institutions.

The in-depth analysis of Portuguese judicial decisions demonstrates the practical centrality of auditing in fraud-related litigation. Using text-mining and content-analysis tools, the thesis identifies strong thematic links between "auditing", "accounting" and "fraud" (Vitali & Giuliani, 2024); shows that judges frequently rely on audit reports, accounting records and forensic-accounting evidence when assessing fraudulent schemes; and highlights the recurrent reference to international auditing and accounting standards in judicial reasoning (IAASB, 2021). These results emphasise the importance of the consistent application of International Standards on Auditing; reinforcement of professional scepticism and fraud-oriented risk assessment in audit engagements (Carpenter & Reimers, 2013); and robust ethical frameworks capable of sustaining judicial decision-making and protecting the public interest (Hayes, 2016).

The incorporation of IT and AI tools into auditing procedures further raises the evidentiary value of financial information used by courts. Automated anomaly detection and advanced analytical techniques (Bao et al., 2022) help to identify suspicious transactions and patterns that may not be visible through traditional audit techniques; improve audit efficiency and coverage in large datasets; and produce more structured and traceable audit trails, which can be directly mobilised in forensic investigations and litigation. These developments are consistent with established principles in forensic accounting (Silverstone et al., 2007; Stone & Miller, 2012) and reinforce the ongoing evolution of fraud-detection methodologies at the interface of auditing, data science and judicial practice.

This doctoral thesis offers several interrelated theoretical and practical contributions.

First, it provides conceptual integration as it brings together criminological insights, forensic-accounting frameworks and auditing research to construct a multidimensional view of fraud that goes beyond firm-level financial statements and incorporates institutional, legal and security dimensions (Stone & Miller, 2012).

Second, it advances technology-enhanced fraud detection, by demonstrating how technology-enabled approaches—particularly those based on AI, big data and text-mining—can reinforce fraud detection across both public and private sectors (Papaioannou & Dimelis, 2007; Cristea, 2020; Goh et al., 2019), while also documenting the new risks brought about by digitalisation and cybercrime (Team Cymru, 2006; Maher, 2017; Smaili & Rancourt-Raymond, 2022).

Third, it offers institutional and policy relevance. By linking fraud impact to policing investment, corruption, economic development and governance quality, the thesis generates policy-relevant evidence for EU institutions, national governments and law-enforcement agencies. It underlines the strategic importance of sustained investment in technology and human capital to reinforce institutional capacities for prevention, detection and enforcement (Terra, 2005; PSP, 2017; Zvekić, 2018).

Fourth, it highlights implications for professional practice. The findings highlight the need for continuous professional training and technological adaptation; strict adherence to professional and ethical standards in auditing and forensic work; integration of AI-based tools into risk assessment, sampling, anomaly detection and evidence gathering (Hasan, 2022; Cristea, 2020).

Fifth, it has implications for academia and professional education. The thesis supports the inclusion of forensic accounting, fraud examination and AI-supported audit techniques in accounting curricula and lifelong-learning programmes (Meyer et al., 2010; Albrecht & Hoopes, 2014), which is crucial to prepare future professionals for complex environments in which fraud, technology and regulation are tightly intertwined.

The main limitations of the thesis relate to three factors: i) cross-country comparability, due to the differences in legal systems, judicial practices, data collection and reporting standards across EU Member States, constraining direct comparison of fraud indicators and policing outcomes; ii) data availability and quality, due to restrictions on access to detailed crime and fraud databases, as well as gaps in harmonised EU-wide statistics, limiting the granularity of empirical models; and iii) complexity of fraud as a socio-economic phenomenon, because cultural, political and institutional factors interact in ways that are difficult to fully capture using conventional quantitative indicators.

Future research should broaden the bibliometric and empirical datasets, including multiple databases and longer time horizons to capture structural trends and post-crisis dynamics; apply advanced econometric and machine-learning models to integrate audit-based evidence with national fraud and corruption indicators, enabling more precise estimates of fraud impact and institutional effectiveness;

deepen the examination of AI's implications for audit quality, institutional governance and fraud-mitigation performance, including questions of algorithmic transparency, bias and accountability; extend the comparative framework beyond the EU to examine how different governance regimes and development levels shape the relationships among auditing, policing, fraud and digital transformation.

This doctoral thesis provides an interdisciplinary contribution to the understanding of fraud as a complex economic, social and institutional phenomenon, and to the recognition of auditing—supported by IT and AI—as a central mechanism for fraud detection and prevention in the European Union. By articulating micro-level audit procedures with macro-level institutional and policing dynamics, it advances both academic knowledge and practical guidance for auditors, policymakers, judicial actors, IT professionals and educational institutions.

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