

ANALYSIS OF INTERNAL AUDIT EFFECTIVENESS: AN INTERDISCIPLINARY GLOBAL RESEARCH PERSPECTIVE. A BIBLIOMETRIC APPROACH

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Abstract

Internal audit has become globally recognized as a vital component of corporate governance, contributing to transparency, accountability, and organizational performance. The aim of the study is to provide an understanding of developments and trends related to internal audit at an interdisciplinary level, thus bibliometric analysis was used to examine 648 scientific articles, published between 1990 and 2022, which had the keyword "internal audit effectiveness". The study suggests that continued research and development in this area is essential, given the constant changes in the business environment and the need to continuously improve the quality, effectiveness and performance of internal audit.

Key words: audit, economic efficiency, bibliometric analysis

INTRODUCTION

Internal audit as a concept and practice has evolved over time in response to changes in the economic and social context [2]. Although there are references to audit activities and control of financial transactions in ancient societies, such as Egyptian civilization or the Roman Empire, the modern concept of internal audit began to take shape more clearly in the 20th century [3].

It was first defined in the United States, where the twentieth century brought a number of significant changes in corporate and governmental settings, including the increasing complexity of business operations, the growth of the service sector, and the emergence of new information technologies [4, 6]. These changes have increased the need for tighter and more effective control of internal operations, leading to the development and institutionalization of internal audit.

During the 1940s, the Institute of Internal Auditors (IIA) was established in the United States, marking a crucial moment in the formal recognition and establishment of

internal auditing as a profession [8]. This pivotal milestone was instrumental in shaping and legitimizing the field of internal auditing, providing a structured framework to define the responsibilities, roles, and ethical benchmarks for internal auditors [10].

Over the years, internal auditing has evolved in response to shifting business landscapes, embracing change and innovation. Yet, at its core, the fundamental role of providing unbiased and autonomous evaluations of internal control, risk management, and governance effectiveness has remained constant. [11, 12].

The 1970s and 1980s were a period of expansion and consolidation for internal audit, following a series of major financial scandals that highlighted the need for stronger internal control [14]. Against this backdrop, the Foreign Corrupt Practices Act was passed in the United States in 1977, requiring companies to implement effective internal control systems [15].

Internationally, the importance of internal audit has been emphasized by professional standards issued by the IIA. These have been updated over the years to respond to changes

in business practices and the increasing complexity of the corporate environment. Thus, in 1999, the IIA introduced a new model for defining internal audit, emphasizing its role in assessing and improving risk management, control, and governance processes [17].

Consequently, internal audit has garnered global recognition as an indispensable element of corporate governance, fostering transparency, accountability, and enhancing organizational performance [21]. Key milestones defining the inception of internal audit encompass the contributions of industry trailblazers, the imperative for control and accountability, and the evolution of the internal audit profession; the evolution of requirements and regulations [22, 24].

Auditing is the systematic process of examining, evaluating and verifying financial information and the various operations and even practices of an enterprise to ensure the reliability and compliance of an entity's operations [16,18].

Auditing in agriculture is the process that helps to effectively manage agricultural businesses, which have specific characteristics due to the nature and complexity of the sector [19, 26]. A significant feature of agricultural auditing is its dependence on natural factors that directly influence yields. Agriculture relies on various investments, which require control and evaluation of assets, which are set with government regulations of subsidies, food safety and even environmental protection [13, 20].

Thus arises the need for auditing in agriculture which must ensure compliance with industry standards, and financial performance management.

The defining characteristics of auditing in agriculture are weather factors such as natural resources, soil, water, which affect yields and make auditing to be essential for Agricultural business [9].

Audit also has a role in sustainable land planning, the most efficient use of resources and in maintaining the sustainability of agricultural activities.

Auditing in agriculture can also be a tool to promote transparency in good agricultural governance, thus through a detailed examination of an entity's operations and processes, it can prevent fraud, abuse and errors that may occur, so that the integrity of financial data and information is maintained.

Auditing in agriculture and economics are two interlinked areas that have a significant influence on the agricultural sector. Agriculture is vital to the global economy, and agricultural auditing has evolved over time to become an indispensable tool for agricultural business [5].

Today, the global economy faces various challenges, such as the environment, which requires resource management to protect it, as well as agricultural waste and overproduction. From an economic point of view, auditing needs to correctly assess expenses and assets in order to maintain financial stability of farms, and auditing helps to identify risks and promote financial management.

In this case, the audit has to assess the right farming practices in order to comply with environmental regulations and have a positive impact on the environment. From the point of view of technologies, an assessment of the systems and monitoring of the agricultural machinery is aimed at achieving a better risk management, as well as optimizing the technologies used [20, 28].

On the other hand, auditing also has a direct impact on society by ensuring food safety through the verification of conformity and quality of agricultural products.

Theoretical Background

In the ever-changing world of internal audit, emerging trends and technological innovations are leaving their mark on the way research is conducted. In a fascinating study by Appelbaum, Kogan, Vasarhelyi, and Yan (2017) [2], the authors investigated the impact of business analytics and enterprise systems on managerial accounting. They explored how technology can change internal audit processes, leading to developments in practices that can transform the way organizations manage risk and improve efficiency.

Conversely, there is a rising apprehension regarding the function of internal audit in the prevention and detection of fraud. In a compelling investigation conducted by Năstase and Ionescu in 2012 [17], this matter is thoroughly examined. The authors propose that internal audit assumes a pivotal function in averting and identifying fraud, underscoring the significance of this role in upholding the ethical standards and transparency within organizations. Each of these scholarly papers constitutes a significant addition to the collective wisdom in the realm of internal audit, imparting valuable insights into the hurdles and prospects confronted by professionals in this field under the current circumstances.

They help to provide a snapshot of the current state of internal audit research globally and in Europe, highlighting the continuing importance of the field in promoting efficiency, accountability and corporate governance in organizations.

Over time, the need for innovation and adaptability in internal audit has become clear, especially in the face of contemporary challenges such as digitalization and globalization. The strong focus on digitization and big data has fundamentally changed the way internal audit is approached and conducted. For example, KPMG (2020) has released a report titled "Internal Audit 2020: a vision of the future", which looks at how technology is set to transform internal audit and how internal auditors need to adapt to remain relevant.

In another landmark study by Alles (2015) [1], research focused on how information technology is transforming internal audit. His results reveal that the appropriate use of information technology can help improve the efficiency and effectiveness of internal audit processes. This research not only highlights the importance of technology in internal audit, but also highlights the need for continuous adaptation and learning in the field.

The European context is also no stranger to these trends and changes. For example, Cohen, Krishnamoorthy and Wright's (2017) [7] study explores the various challenges

facing internal audit in the European Union and the importance of internal audit in maintaining effective corporate governance and addressing emerging challenges such as changing regulations and digitalization.

In Romania, internal audit research work has followed global trends, with a specific focus on local applicability and in line with national regulations. For example, the paper [14] entitled "Fair Value Accounting and Its Implications for Corporate Governance: a Comparative Analysis" (2014) is a significant contribution to the study delves into the intersection of internal audit and corporate governance, specifically examining the impact of fair value accounting within the Romanian context. Moreover, the paper titled "Retailers' Audit Strategies for Green Agriculture Based on Dynamic Evolutionary Game" aims to explore retailers' audit approaches concerning sustainable agriculture. Additionally, it utilizes principles from evolutionary game theory to scrutinize the dynamics between retailers and agricultural suppliers. The authors explore the cooperative and conflicting dynamics between retailers and agricultural suppliers concerning the adoption and promotion of environmentally sustainable farming methods. Their approach involves utilizing evolutionary game theory to understand these dynamics and depict the evolving nature of these engagements, considering the shifts over time in the approaches adopted by both entities.

The results of the paper show that auditing plays a key role in promoting green agriculture by providing assurance and assessments of compliance with environmental and sustainability standards. The authors stress the importance of collaboration and cooperation between retailers and agricultural suppliers to promote these sustainable practices [27].

Saad et al.'s scientific publication in 2016 centers on conducting energy audits within an agricultural system that includes maize, wheat, and green bean crops situated in the northwestern area of the Indo-Gangetic Plains, which is characterized by irrigation. The main aim of the study is to assess energy

efficiency and compare the conventional farming system with conservation agriculture from the perspective of energy consumption. The authors carry out detailed analyses to quantify the energy required and consumed at various stages of the farming system, such as land preparation, sowing, irrigation, harvesting and crop processing. The findings from the research reveal a considerable disparity in energy consumption, with the conventional agricultural system exhibiting notably higher energy usage, particularly in the context of irrigation and mechanical operations. In contrast, the practice of conservation agriculture, characterized by its soil preservation and resource-efficient techniques, demonstrates a significant reduction in energy consumption. These outcomes underscore the significance of transitioning towards farming practices that are both more sustainable and energy-efficient. Conservation agriculture proves to be a more environmentally friendly and energy-efficient option compared to conventional agriculture.

The aim of the paper is to evaluate existing research in this field and the impact it has on the effectiveness of internal audit.

MATERIALS AND METHODS

The term "bibliometrics" was first used by Alan Pritchard as early as 1969 and is considered a statistical and mathematical method that focusses on books and publications. Utilizing the Web of Science database, a collection of scientific articles concerning internal audit effectiveness was obtained in text format. The data, retrieved through an advanced search mode spanning from 1990 to 2022, encompass diverse publication types within the Web of Science database. [23]. The second step consisted of processing the extracted data and maps were generated on the topics of interest for which conclusions were formulated in the third step. To produce the figures, the VOSviewer software was used for creating, visualizing and exploring network-based maps [20].

RESULTS AND DISCUSSIONS

According to the Web Of Science database, 648 scientific papers were identified by searching the keyword „internal audit effectiveness". The main topics in which papers were included are: business finance (191 papers), management (121 papers), business (71 papers), economics (68 papers), information system (37 papers), general internal medicine (30 papers), public administration (19 papers), health care services and science (30 papers), interdisciplinary social science (21 papers) and educational research (17 papers) (Figure 1). The main representative keywords interlinked with the topic of "internal audit effectiveness" are: corporate governance, internal audit, impact, quality, determination, cost, decision making, quality manager, fraud, trust, risk management. These words are divided into 5 clusters (Figure 2).

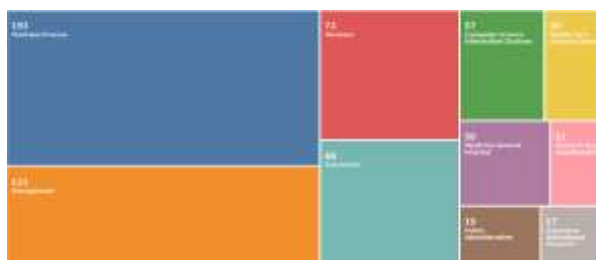


Fig. 1. Tree diagram of Web of Science publications on "internal audit effectiveness".

Source: in-house development.

The first blue cluster, called „corporate governance", includes: agency theory, firm, audit committee, board, directors, audit committee characteristics, agency, ownership, agency issues, regulation, internal audit function, efficiency, compensation, firm performance. The second green cluster, called „quality", includes: audit quality, services, association, audit committees, control deficiencies, material weakness, independence, association, consequences, engagement quality.

The third yellow cluster, called „internal audit", includes: management, risk management, internal auditor, trust, internal audit, corruption, fraud, organizations, incentives, avoidance, standards.

The fourth red cluster, called „impact“, includes: information, audit, design, guidance, women, health, care, quality improvement, sustainability, strategies, doctors, design, risk, banks.

The fifth purple cluster, called „decision-making“, comprises adoption, size, cost, organization, sustainability, audit fees, financial reporting, committee (Figure 3).

For keywords used by researchers over the years 2012-2014, the authors studied

expertise, rest, audit committees, experience, weakness, material weakness, knowledge, internal medicine, improvement, feedback, program, control, guidelines, audit, services.

From 2015-2019, researchers focused on quality, impatience, management, internal audit, audit engagement, corporate governance, directors, disclosure, public sector, risk management, ownership, association, firm, revenue management, external audit, health, system, methodology.

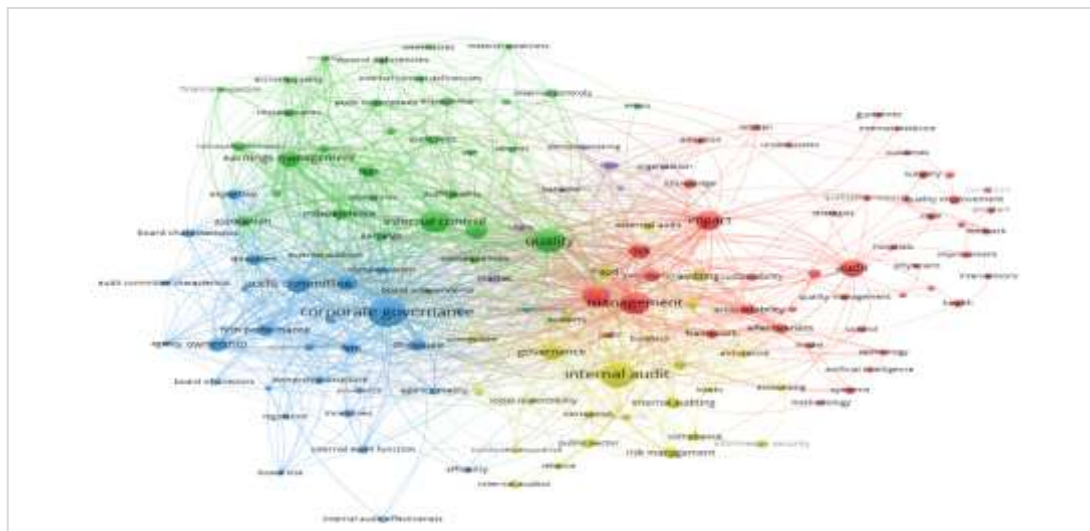


Fig. 2. Keyword connectivity (internal audit effectiveness).
 Source: in-house development.

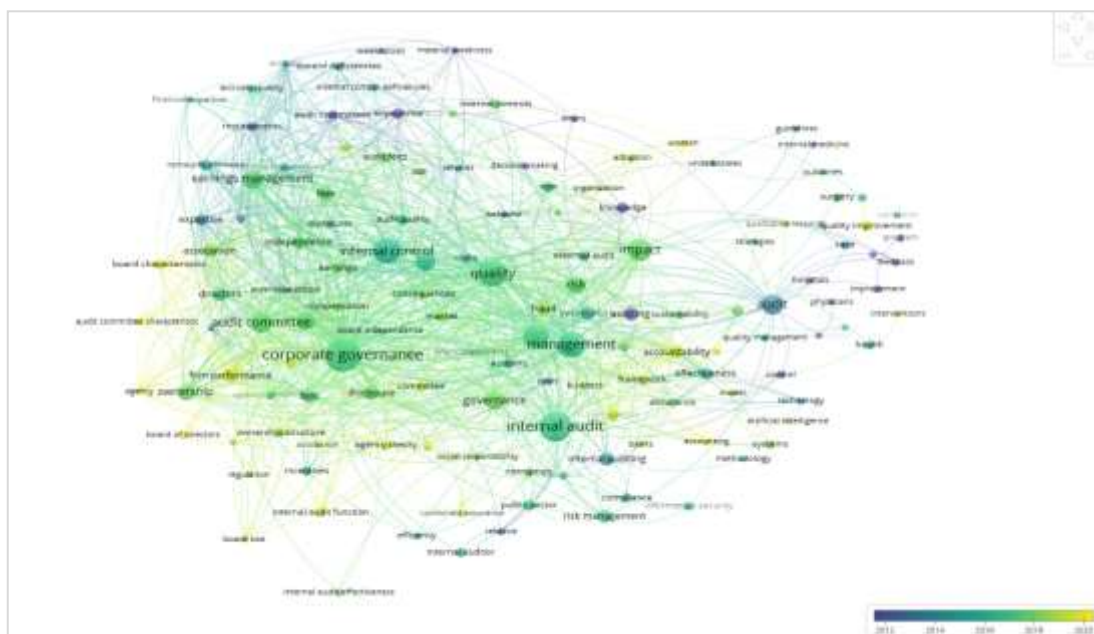


Fig. 3. Keyword connectivity (internal audit effectiveness) by year.
 Source: in-house development.

In 2019-2020, the most important topics were adoption, accountability, firm performance,

agency theory, board of directors, board characteristics, framework, business, banks, woman, internal audit function (Figure 3).

In terms of countries that have taken a particular interest in the chosen topic, we note that the United States of America, China, England, Austria and Malaysia are concerned by the size of the node on the map.

Also, the colours present on the map indicate the research directions, so that 8 research directions can be observed, and European Union countries such as Ukraine, Germany, Russia and France are also identified as having the same research direction. Moreover, these countries are closely related according to the degree of interlinkage (Figure 4).

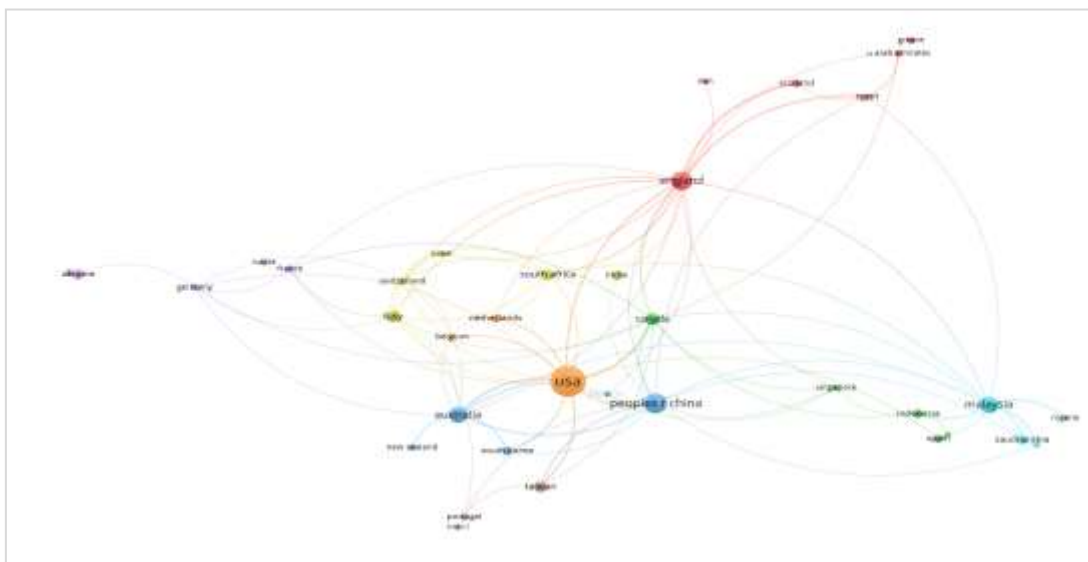


Fig. 4. Graphical representation of the co-authoring countries.
Source: in-house development.

CONCLUSIONS

The bibliometric analysis conducted using the Web of Science database identified 648 scientific papers dedicated to exploring the effectiveness of internal audit. A notable concentration of these papers is found within the fields of business finance and management, emphasizing the significance and extensive application of internal audit within these domains. The primary keywords interconnected with the effectiveness of internal audits include: corporate governance, quality, impact, internal audit, and risk management, highlight the central themes of research in this area. The results also reveal a clustered structure of topics, suggesting the existence of specific sub-areas of interest within internal audit research.

The temporal trends identified indicate a continued interest in topics such as quality, management and corporate governance, with a recent increase in interest in topics such as

adoption and firm performance. This suggests an evolution of research from technical and quality issues towards strategic and performance issues.

Geographical analysis reveals a global concern for internal audit effectiveness, with particular interest in the United States, China, England, Austria, and Malaysia.

There is also a tendency for researchers from the same country or region to collaborate, which may indicate the formation of regional research communities or collaborative networks.

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