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# Forensic accounting research around the world

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## Abstract

This paper reviews the relevant forensic accounting research (FAR) around the world and suggests avenues for future research in forensic accounting. The study used the thematic and systematic literature review methodology to analyse the existing literature in forensic accounting research. It was found that the major thematic areas in the literature are fraud motivation, fraud consequences, fraud detection using forensic accounting techniques, forensic accounting theory, forensic accounting skills, forensic accounting education and forensic accounting jobs. The quantity of forensic accounting research is relatively small compared to the quantity of research in other accounting specializations. forensic accounting research is well developed in the U.S. and Canada, and is less developed in Europe, Oceania and Asia. There is high interest in forensic accounting research in African countries. There is a relatively low global interest in Internet information about 'forensic accounting research' compared to global interest in other forensic accounting topics. Areas for future research includes the role of the environment, digitalization, religiosity, and sustainable development in forensic accounting. The implication of the findings is that forensic accounting research around the world is lopsided as some regions have more advanced FAR compared to other regions. There is a need for even development of forensic accounting research across all regions and a need to publicize the outputs of forensic accounting research to a larger audience to increase people's interest in forensic accounting.

**Keywords:** forensic accounting, forensic accounting research, skills, fraud detection, forensic accounting theory, fraud motivation.

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## 1. Introduction

The purpose of this study is to review the relevant forensic accounting research around the world and suggest avenues for future research in forensic accounting. Forensic accounting involves the use of accounting, auditing, and investigative skills to investigate and uncover fraud or financial manipulation in individual or corporate financial statements (Huber and DiGabriele, 2014; Ozili, 2015). This is the operational definition adopted in this study.

The demand for forensic accounting skills is growing due to the rising number of financial and non-financial fraud and the complex nature of fraud in corporations and even among individuals (e.g., Pearson and Singleton, 2008; Ibrahim and Abdullah, 2007; Wang *et al.*, 2016).

Research into forensic accounting is also growing and the literature is still developing. Several country-specific and regional forensic accounting studies have emerged in the literature such as Glodstein *et al.* (2010), Efiog (2012), Dada *et al.* (2013), Bhasin (2015), Dubinina *et al.* (2018), Alshurafat *et al.* (2019), Chepngeno and Fred (2020), Akinbowale *et al.* (2020), Honigsberg, C. (2020), and Ayadi and Ennar (2022). For instance, Glodstein *et al.* (2010) examined the consequences of fraud, focusing on one of the largest financial fraud cases in history which is the Bernard Madoff fraud. They showed that the fraud had emotional and psychological effect on the victims. They argued that forensic accounting can mitigate such fraud and prevent a repeat of this type of fraud. Their study focused on the U.S. and does not have implications in regions outside the U.S. The relevance of forensic accounting may be affected by low level of awareness about forensic accounting. Efiog (2012) assessed the awareness of forensic accounting among accounting undergraduates in a developing country and found a very low level of awareness about forensic accounting among undergraduate students. They suggest that forensic accounting should be introduced into university accounting curriculum to increase awareness about forensic accounting. Efiog (2012) focused on the awareness of accounting students, but the level of awareness could be higher outside universities and among accounting practitioners. Furthermore, accounting practitioners agree that forensic accounting can assist in detecting fraud. Honigsberg (2020) showed that forensic accounting can assist in predicting whether firms are committing fraud, and forensic accounting aims to mitigate fraud through early detection

and using contemporary methods of fraud detection. But the development of forensic accounting may be hindered by lack of a suitable forensic accounting framework (Akinbowale *et al.*, 2020). Much of these studies are concentrated in few countries or regions which implies that some regions have substantial published research in forensic accounting compared to other regions. This trend in the literature makes it important to analyse the developments in forensic accounting research around the world and to take stock of emerging research developments in several regions of the world.

Few review articles related to forensic accounting and fraud have been conducted over the years (e.g., Ozili, 2015; DiGabriele and Huber, 2015; Smith, 2015; Kaur *et al.*, 2022; Al Shbeil *et al.*, 2022). Existing reviews focused on important topics such as fraud motivations (Ozili, 2015), forensic accounting skills (DiGabriele and Huber, 2015; Ozili, 2015), forensic accounting education (Kramer *et al.*, 2017), and some developments in the forensic accounting profession (Smith, 2015; Kaur *et al.*, 2022). But these reviews have not analysed these issues across many regions, and this makes it difficult to present a global picture of the state of forensic accounting research, globally. There is a need to analyse the developments in forensic accounting research across several regions to gain useful insights about the progress made so far, and to determine the regions that lag behind in forensic accounting research with a view to suggest avenues for future research in the forensic accounting literature. There is a need to review and synthesize the findings of existing studies to determine the regional spread of existing forensic accounting research as well as the direction of forensic accounting research in the literature.

A review of global forensic accounting research is needed at this time to identify new insights from country-specific (and regional) forensic accounting research and to enable comparison with the experience of other countries and regions. There is also a need to identify the major themes in the forensic accounting literature and to provide answers to important questions that can help to advance the literature such as – what is the state of forensic accounting research around the world? What are the benefits of forensic accounting to society? Are people more interested in forensic accounting research than other accounting specializations? Is the global interest in forensic accounting strongly linked to global interest in forensic accounting jobs, forensic accounting research, forensic accounting courses or forensic accounting certification? This

review paper answers some of these questions. Although previous studies, such as Huber and DiGabriele (2014), Ozili (2015) and Ozili (2020a), have presented an overview of emerging topics in the forensic accounting literature, these studies did not review the existing forensic accounting research conducted in several regions of the world. Therefore, this review paper extends the literature by analysing the existing research in different regions, identifying the major thematic areas in the literature, highlighting the benefits of forensic accounting to society and the geographical reach of existing forensic accounting research. Thereafter, some important directions for future research are suggested.

This review article contributes to the literature in the following ways. One, the paper contributes to the forensic accounting literature by providing a recent review of existing forensic accounting research to enable the reader to understand the state of research in the literature. Two, the review paper contributes to the literature that explore the benefits of forensic accounting. This study identifies some important benefits of forensic accounting to society which includes enforcing tax justice, increasing societal trust, providing incentives for entities and individuals to be law abiding, and increasing investors' confidence. Three, this study contributes to the literature by identifying the under-researched themes or areas in the forensic accounting literature that require further research such as the effect of religiosity on forensic accounting, the contribution of forensic accounting to the sustainable development goals and the role of digitalization in forensic accounting. These areas have received little or no attention in the literature.

The rest of the paper is organized as follows. Section 2 describes the methodology used to conduct the literature review. Section 3 discusses the relevant thematic areas in the forensic accounting literature. Section 4 presents the observations from forensic accounting research around the world. Section 5 presents the benefits of forensic accounting to society. Section 6 presents some areas for future research. Section 7 presents the conclusion of the review.

## 2. Methodology

### 2.1. Specific method used.

This study used a combination of the thematic and systematic literature review methodology to conduct the review. The thematic review method is used to capture the major themes, arguments, or issues in the forensic accounting literature, while the systematic review method is used to evaluate the impact of forensic accounting studies. The systematic review method requires a reproducible search strategy, inclusion criteria, screening method, and an appraisal of the included studies in a way that is reproducible (Xiao and Watson, 2019). The systematic review method also provides a framework to extract and analyse information using a reliable and reproducible process based on five criteria which include the (i) wording, (ii) type of study, (iii) period, (iv) selected language and (v) search platforms (Vicente-Saez and Martinez-Fuentes, 2018; Xiao and Watson, 2019).

### 2.2. The selection criteria

First, the inclusion and exclusion criteria of the selected studies were established based on the wording of the article title (Kraus *et al.*, 2020). Studies that display the precise expression 'forensic accounting' were included. This is important because it captures the specific group of studies that conceptualize forensic accounting in the accounting literature. The next criteria are based on the type of study. The studies included in this stage were publicly available studies that are either peer-review journal publications, a book, an institutional working paper, or an institutional report. Peer-reviewed articles and non-peer reviewed articles were included to obtain a wider sample of studies. Institutional reports and working papers were included in the article selection because accounting professional bodies often issue forensic accounting reports and working papers, and they are strong supporters and promoters of forensic accounting. Third, the sample period coverage was from 2004 to 2022. This sample period was chosen because significant published research on forensic accounting began to emerge from 2004. Also, Google Trends data also began from 2004 as well. Focusing on the 2004 to 2022 sample period would capture all relevant concepts, debates, and issues in the literature up to date. Fourth, regarding language, only the articles written and published in English language were selected. This means

that articles published in non-English language were not included in the article selection process. Fifth, regarding the search platform, Google Scholar was the main search platform used. Google scholar was used because it is less restrictive compared to Scopus and it permits the inclusion of articles that are not indexed in the Web of Science and Scopus (Falagas *et al.*, 2008). Google scholar also makes it easier to find and include important studies that are not indexed by the other search platforms (Falagas *et al.*, 2008). Google Scholar was also used because it is the main source or database of scholarly research on the topic, and it is the world's largest search engine that indexes the full text or metadata of scholarly research across many disciplines (Gusenbauer and Haddaway, 2020).

### **2.3. The selection process.**

The article search was conducted on Google Scholar over the 2004 to 2022 period. The keyword "forensic accounting" was inserted into Google Scholar search engine and the resulting articles were used to conduct the literature review. In the first step, 150 articles were found in the search results on Google Scholar. This includes peer-reviewed journal articles and working papers that exist in published and non-published formats. The second step involved screening the identified studies. The screening process reduced the number of articles to 95 from 150. This was done in two stages. First, 25 studies were removed because they were duplicates or outdated. Second, 15 studies were removed because they were dissertation studies, and 15 non-peer reviewed articles were also removed which were mostly magazine articles and media reports that were captured by Google Scholar during the article search but do not meet high academic research quality standards.

### **2.4. Plan of the review.**

The thematic literature review method was used to identify the major themes in the literature. The themes are shown and explained in section 3. Thereafter, the systematic review method was used to summarize the findings of forensic accounting research from around the world in section 4.1. Next, an assessment of the popularity, or interest, in forensic accounting topics was conducted using global data obtained from Google Trends database (see sections 4.2 and 4.3). Also, the systematic review method was used to assess the impact of forensic accounting

research in sections 4.4 and 4.5. In section 5, the benefits of forensic accounting to society and some areas for future research were identified.

### **3. Thematic research areas**

#### **3.1. Fraud: definition, motivation and consequences**

Existing studies define fraud as any deliberate attempt to deceive or mislead a person or corporation to gain some financial or non-financial advantage (Kassem and Higson, 2012; Ozili, 2020a). Regarding fraud motivation, existing studies such as Albrecht *et al.* (1995), Ozili (2015) and Free (2015) identify some motivations to commit fraud. They show that a person is motivated to commit fraud when there is a motivation, an opportunity and rationalization (Albrecht *et al.*, 1995). These three elements form the 'fraud triangle'. In specific terms, the fraud triangle states that individuals are motivated to commit fraud when three conditions exist: (1) when there is some kind of perceived pressure, (2) when there is some perceived opportunity, and (3) when there is some way to rationalize the fraud as not being inconsistent with one's values (Albrecht *et al.*, 1995). The fraud triangle is a popular framework used in the literature to identify the motivation to commit fraud.

The consequences of fraud are serious irrespective of the type of fraud or the perpetrator. Fraud ultimately affects people, industries, firms, the government, and the environment. The human impact of fraud is that fraud leads to a traumatic experience for victims (Tade and Adeniyi, 2017). It can cause lasting mental and physical trauma for victims and can also result in lost opportunities for individuals and businesses (Glodstein *et al.*, 2010). Fraud also affects governments (Gbegi and Adebisi, 2014; Zhang, 2018). Fraud leads to failure of government programs when public money and services are diverted away from those who need it or when the public services delivered are substandard or unsafe (Gbegi and Adebisi, 2014). This means that fraud undermines the government's ability to deliver services and achieve intended outcomes (Zhang, 2018). Fraud also has consequences for industries and businesses. Fraud distorts markets when fraudsters obtain a competitive advantage and drive out legitimate



businesses. Fraud can also lead to loss of trust among businesses especially among buyers and sellers which can lead to market failure and loss of business reputation for firms (Ozili, 2015; Mangala and Kumari, 2015). Fraud can also undermine a country's international reputation and national security by damaging a country's international standing which would affect the country's ability to receive international support or assistance (Mukoro *et al.*, 2013; Sahoo, 2022).

To sum up, there is a consensus that fraud occurs when individuals want to obtain gain by misleading a person or a corporation. The motivations to commit fraud are mostly economic motives and occurs when there is a motivation, an opportunity and rationalization. The consequences of fraud are severe for individuals, firms, and government. Fraud detection can help to uncover fraud and minimize its effects on individuals, firms, and government. The next section discusses how forensic accounting can be used for fraud detection.

### **3.2. Forensic accounting as an approach to fraud detection**

Several studies in the literature consider forensic accounting to be an effective tool for fraud detection (e.g., Afriyie *et al.*, 2022; Ozili, 2015; Kaur *et al.*, 2022). This is because forensic accounting techniques and methods can be used to obtain sufficient facts or information that can be used as evidence for prosecution in a law court (Afriyie *et al.*, 2022). Mojsoska and Dujovski (2015) show that forensic accounting techniques are used to detect the whole chain of fraud and give answer to the question of: who – what – where – why – when – how. They further point out that forensic accountants and auditors will investigate and analyze proofs of conducted fraud, use computerized applications in the analysis and presentation of financial proofs, present their report from investigation, assist in court procedures, including testimony in courts as expert-witnesses, and prepare visual aids which will be used as proofs in fraud trial.

Empirical studies, such as Kaur *et al.* (2022), show evidence of a positive correlation between forensic accounting and fraud detection. Their findings suggest that greater adoption, growth and development of forensic accounting will lead to greater fraud detection in society which is beneficial for society. Afriyie *et al.* (2022) also point out that forensic accounting is useful in detecting and exposing a weak internal control system so that existing loopholes can be closed to prevent fraud in the future. Although forensic accounting can help to detect fraud, it has been

widely acknowledged that the potency of forensic accounting may be limited by the complex nature of fraud. Ozili (2020a) and Kaur *et al.* (2022) argue that fraud can become very complex and forensic accountants must be aware of its complexity when carrying out fraud investigation.

### **3.3. Forensic accounting theory**

Ozili (2020b) developed a forensic accounting theory. The forensic accounting theory explains how the accounting and non-accounting decisions made at the start, during or at the end of the forensic investigation process affects the choice of forensic accounting detection methods and techniques used and the interpretation of the findings of forensic investigation. The forensic accounting theory states that the techniques and methods used to detect fraud reflect the accounting and non-accounting decisions that were taken into consideration by the forensic accountant or investigator (Azman, 2021). The accounting decisions include decisions relating to materiality of the perceived financial loss and the forensic accounting skills of the forensic investigator, while the non-accounting decisions are the bonus contract, anonymity of the investigator and collapse avoidance decisions (Ozili, 2020b; Azman, 2021). The implication of the forensic accounting theory is that forensic accountants and investigators need to consider the implication of the choice of forensic accounting detection methods used in the forensic investigation activity they are involved in. Forensic accountants and investigators also need to be aware of their working tools and the investigative environment they thread on, and they should consider other relevant accounting and non-accounting considerations (Ozili, 2020b). Some studies also identify other factors that explain observed forensic accounting practices. Mansor (2015) proposed the fraud diamond theory which emphasize four elements that are essential to mitigate fraud. They include perceived pressure, perceived opportunity, rationalization, and individual's capability. Herbert *et al.* (2017b) contend that fraud examination and forensic accounting education can support efforts to improve the governance of firms, while Sadaf *et al.* (2018) emphasize that strong institutions and good governance can support the efforts of forensic accountants in combating fraud in organizations. Meanwhile, Gbegi and Adebisi (2014) emphasized that forensic accounting skills and techniques can play a significant role in uncovering and reducing fraud in public organizations.

### **3.4. Contemporary forensic accounting methods, skills, education and jobs**

The literature has also identified some traditional and contemporary forensic accounting techniques. They include interviews and questionnaires (Porter and Crumbley, 2012; Ozili, 2020a), financial statement data mining and computerized data analysis (Kovalerchuk, Vityaev and Holtfreter, 2007), qualitative and quantitative methods (DiGabriele and Huber, 2015), physical evidence, word-of-mouth interrogation, testimonial evidence, and documentary evidence (Gray, 2008). Other contemporary techniques that could be beneficial for forensic accounting purposes include data analytics, machine learning algorithms, artificial intelligence, blockchain, internal control systems, whistleblower hotlines, regulatory compliance checks, and the combination of big data analysis with psychological intuition (Mamahit and Urumsah, 2018; Papadakis *et al.*, 2020; Honigsberg, 2020; Mehta *et al.*, 2022). These contemporary techniques or methods can offer several advantages such as enabling the analysis of financial data trends and spotting financial malpractices early before it becomes full-blown fraud. They can also complement traditional forensic accounting methods, provide a more holistic view of fraud detection, and reinforce the significance and advantages of forensic accounting within a wider array of strategies. However, these contemporary techniques require the use of good data which may be difficult to obtain. Also, they may be too expensive to acquire and use, and there could be high probability of error in the interpretation of results. Therefore, these techniques should be used with caution, balancing the benefits with the risks.

The literature also identified the general skills and core (or specific) skills of the forensic accountant. The general skills include interpersonal skills, self-control, patience, language proficiency, deductive analysis, critical thinking, investigative flexibility, analytical proficiency, oral communication, and written communication (Salleh and Ab Aziz, 2014; Ozili, 2015). The core or specific skills of the forensic accountant are legal knowledge, psychoanalytic knowledge, gaining a Certified Public Accounting (CPA) certification or a forensic accounting certification and knowledge in criminology (Ozili, 2015; Davis *et al.*, 2010).

Regarding forensic accounting education, the literature shows that there is no specific educational requirement to become a forensic accountant (Huber, 2012). This is because the forensic accountant must gain proficient knowledge in a wide range of disciplines particularly human resource management, communication, criminology, psychology, accounting, forensic science, and law (Ozili, 2015; Huber, 2012), and such forensic accounting education can be gained by training in a university or in a professional accounting institute (Huber, 2012). A person that has gained forensic accounting skills and education can find a career in the courts, law enforcement agencies, university accounting department and finance department in private and public corporations, private law firms, nonprofit organizations and in risk consulting.

### **3.5. Role of government, educational institutions and professional bodies**

There is some debate about the role of government, educational institutions, and professional bodies in promoting and supporting forensic accounting research. Scholars have opined that (i) the federal, state and local governments should financially support universities and accounting professional institutes and improve their capability to do forensic accounting research and offer forensic accounting courses, (ii) governments should support work-related training for employees involved in internal control and auditing in public sector organizations, (iii) government should impose sanctions on firms when fraud is uncovered and hold forensic investigators to a high moral standard, and (iv) government should enact forensic accounting legislations that severely penalize fraud and increase the demand for litigation support (Akinbowale, 2018; Al Abbadi *et al.*, 2021). However, the downside of government support for forensic accounting in universities and professional institutes is that government support and funding could make it difficult for universities and professional institutes to speak out and criticize the government if the government is involved in financial corruption.

Educational institutions also play a role in supporting forensic accounting research by funding forensic accounting research in their educational institutions, developing research-intensive forensic accounting programs, encouraging the dissemination of knowledge among scholars through conferences and seminars, equipping academics and students with profound knowledge of both accounting and law, teaching them how to collect evidence, provide litigation support and testify in court, and also teaching them how to provide forensic-related community service

(Efiong, 2012; Seda and Kramer, 2015). However, the downside is that educational institutions may design forensic accounting programs and research activities that benefit a few elites rather than the wider community and society, and the programs and research activities may be too expensive to afford.

Professional bodies also play a role in supporting forensic accounting research. They act as agents of change, they contribute to implementing the output of forensic accounting research, they help organizations and governments in understanding the outputs of forensic accounting research, and they keep their members informed about the latest knowledge from recent forensic accounting research (Wang *et al.*, 2016; Van Akkeren *et al.*, 2016). But their members often pay fees to benefit from such resources and professional bodies have rules or standards that are restrictive thereby preventing innovative approaches to forensic accounting practice that deviate from the consensus approach put forward by professional bodies.

### **3.6. Societal, technological, and legal trends stimulating growth in forensic accounting.**

There are societal, technological, and legal trends that are stimulating growth in forensic accounting research. On the technological front, increasing digital transactions and the advent of complex cybercrimes are increasing the demand for forensic accountants (Pearson and Singleton, 2008; Awodiran *et al.*, 2023), and is spurring growth in forensic accounting in the literature. On the legal front, scholars have advocated for the enactment of legislation to support the development of forensic accounting (Curtis, 2008; Renzhou, 2011). New legislations are emerging and there is a need to explore how legislative changes can create new requirements for fraud detection and prevention. On the societal front, the forensic accounting profession is creating jobs and is leading to the development of specialized forensic accounting programs that lead to positive career prospects in society (Huber, 2012; Gosselin, 2014; Alshurafat *et al.*, 2021). Further trends to expect in the future are jobs related to fraud analysis, corporate finance, assurance services, cyber investigations, forensics, litigation support and dispute resolutions. Regarding academic program availability, many forensic accounting programs are available at the undergraduate level than at the postgraduate level. Most of the programs are delivered as a joint

degree or a single degree and with a forensic accounting concentration (Seda and Kramer, 2008; Kramer *et al.* 2017).

### 3.7. Other thematic areas

Table 1 below presents other thematic areas in the forensic accounting literature. These include themes such as forensic accounting investigation, the relevance of forensic accounting in corporations, the role of the forensic accountant in forensic accounting, forensic accounting education, the role of forensic accounting in the public sector and forensic accounting certifications.

Table 1. Other thematic areas		
Theme	Existing studies	General findings
Forensic accounting investigation	Houck <i>et al.</i> (2006), Okoye (2009), Oyedokun and Emmanuel (2016)	These studies found that forensic accounting is useful in tracking and identifying illegal financial activity and can be used in litigation
Relevance of forensic accounting in corporations	Imoniana <i>et al.</i> (2013), Bhasin <i>et al.</i> (2015), Rehman and Hashim (2021)	These studies conclude that forensic accounting can become a part of corporate governance mechanisms toward the elimination of fraud, and company auditors need to be trained to detect fraud
The role of the forensic accountant in forensic accounting	Davis <i>et al.</i> (2010), Howieson (2018), Dauenhauer <i>et al.</i> (2020)	These studies argued that forensic accountants should be analytical, detail-oriented, and ethical. They should understand virtue, ethics, and practical wisdom to help them maintain public confidence and quality in their services. The studies also showed that forensic accountants are useful in determining whether financial exploitation is taking place and in providing information needed to continue an investigation and pursue criminal charges.
Forensic accounting education	Rezaee <i>et al.</i> (2004), Efiang (2012), Kramer <i>et al.</i> (2017), Alshurafat <i>et al.</i> (2020)	These studies showed that the demand for forensic accounting education will increase, and more universities are planning to provide forensic accounting education. Forensic accounting educators should use experiential learning methods to stimulate interest in real forensic accounting among students. However, educators and practitioners may have different opinions on what topics should be taught in forensic accounting education and the preferred teaching techniques.
Forensic accounting in the public sector	Gbegi and Adebisi (2014), Abdulrahman (2019), Dada and Jimoh (2020)	These studies suggest that forensic accounting skills and techniques can be used to uncover and reduce fraud in the public sector.
Forensic accounting certifications	Huber (2013), Huber (2014), Domino <i>et al.</i> (2017)	These studies showed that the growing interest and need for forensic accountants have resulted in a proliferation of forensic accounting certifications

## 4. Observations from forensic accounting research around the world

### 4.1. Global forensic accounting research

Existing forensic accounting research from several regions show that there is growing interest in forensic accounting practice but research in forensic accounting is relatively small compared to other accounting specializations such as financial accounting and management accounting.

**4.1.1. Region of the Americas** – Existing research show that the forensic accounting profession in the U.S. and Canada has developed up to a point where certifications are issued to prove forensic accountants' expertise in forensic accounting and their ability to conduct private forensic investigation, offer pay-for-hire forensic examination services and assist courts and law enforcement agencies in unraveling financial fraud. This has led to increasing demand for forensic accountants in the U.S. and in Canada (Huber, 2012; Seda and Kramer, 2014). Meanwhile, in the education sector, many schools and universities have integrated forensic accounting into their accounting curriculum in an ad-hoc manner because there is no consensus on how to uniformly integrate forensic accounting into the accounting curriculum (Seda and Kramer, 2014). Recent research in the region has focused on the various methods of forensic accounting investigation especially quantitative methods, the integration of big data into forensic accounting methods and the role of forensic accounting in U.S. counterterrorism efforts (see. DiGabriele and Huber, 2015; Rezaee and Wang, 2022; Haun *et al.*, 2022).

**4.1.2. The European region** – In Europe, there are few forensic accounting research studies. Much of the knowledge and expertise used in forensic accounting practice in European countries were gained from the research contribution of forensic accounting studies in the U.S. and Canada (Huber, 2012). For instance, in the UK, forensic accounting has grown to become a multidisciplinary profession with less focus on accounting than suggested by its name. Forensic accounting has a good prospect of becoming a recognized profession in the UK in the foreseeable future and it will need people with complementary knowledge in law, criminology, financial accounting, and computer skills rather than individuals with a single specialist skill in accounting (Hegazy *et al.*, 2017). However, forensic accounting research in the UK is developing at a slow pace due to little interest in forensic accounting research among UK accounting researchers and

academics compared to their much interest in other accounting research areas. Another notable European country is Ukraine. In Ukraine, existing research show that asset theft, unreasonable and inappropriate spending are the most common types of fraud committed by Ukrainian corporations, while the most common methods used to detect fraud in Ukraine are internal audit and informal internal sources (Dubinina *et al.*, 2018). Only 10 percent of Ukrainian companies use the services of forensic accounting experts to conduct independent investigations because forensic accounting is new in Ukraine and there are very few companies that offer forensic accounting services (Dubinina *et al.*, 2018). Meanwhile, there is very little forensic accounting research in Ukraine (Dubinina *et al.*, 2018; Serhii *et al.*, 2019). In France, existing research show that there is some interest in forensic accounting practice in France but interest in forensic accounting as an accounting specialization may be forestalled by (i) the way income is calculated for accounting and taxation purposes, and (ii) the nature of the French judicial system which is quite different from that of 'common law' countries (Labelle and Saboly, 2008). For these reasons, forensic accounting as an accounting specialization is expected to develop more slowly in France compared to countries like Canada and the United States and this explains why the development of forensic accounting is very slow in France. Unsurprisingly, there is very little forensic accounting research in France (Labelle and Saboly, 2008).

In southeast Europe, existing research show that forensic accounting practice as an accounting specialization is still a relatively new concept and very little research has been conducted in forensic accounting in the region. There has been a gradual introduction of forensic accounting knowledge in some southeast European countries. For example, a new professional title 'Certified Forensic Accountants' was introduced in Croatia in 2009 while a course titled 'forensic accounting in financial investigations for prosecutors' organized by the Organization for Economic Co-operation and Development (OECD) was introduced in Serbia in 2011. Forensic accounting was introduced as a course module in the University of Split in Croatia (Mojsoska and Dujovski, 2015). In Slovenia, a department for forensic accountants was established in 2011 by the Association of Accountants, Treasurers and Auditors of Slovenia. In Bosnia and Herzegovina, there is no meaningful progress in forensic accounting practice or research either because the accounting profession in Bosnia and Herzegovina is very conservative or accounting specialization



is not considered to be important (Mojsoska and Dujovski, 2015). In Romania, forensic accounting is a technical expertise conducted by specialists (Mojsoska and Dujovski, 2015). Overall, some southeastern European region have recognized forensic accounting as an accounting specialization while other southeast European countries have not recognized forensic accounting as an accounting specialization. There is also very little forensic accounting research in the region. The implication is that there will hardly be any significant progress in forensic accounting research in Europe if knowledge about forensic accounting is not widespread and the forensic accounting profession is not developed.

**4.1.3. The African region** – Forensic accounting research is growing in popularity in some African countries. This is due to the high incidence of corruption and financial fraud in corporations and in the public sector in the region (Efiong 2012; McIntyre *et al.*, 2014; Fiergbor, 2020). It could also be due to cultural factors, uneven distribution of resources, low awareness levels, and poor access to education, which should be taken into account for a more comprehensive understanding of fraud in the region. Researchers in the region argue that forensic accounting can detect and curb corruption and financial crimes in corporations and in the public sector. In Nigeria, for example, existing forensic accounting research studies found that forensic accounting can reduce the prevalence of fraud in the private and public sectors (Dada *et al.* 2013; Abdulrahman, 2019), and forensic accounting education in Nigerian universities can create awareness of fraud among young Nigerians and teach them how to identify and detect fraud (see. Sorunke, 2016; Efiong 2012; Herbert *et al.*, 2017a). In South Africa, the focus of forensic accounting research is on the skills and expertise of the forensic accountant and the growing demand for forensic accountants (see. Van Romburgh, 2008; McIntyre *et al.*, 2014). In Ghana, existing research focused on how forensic accounting can be used to combat financial and economic crimes, the effective management of projects and how to detect corporate fraud (see. Ocansey, 2017; Fiergbor, 2020; Li *et al.*, 2018). Related studies have been done in Kenya, Mauritius, and Egypt (e.g., Chepngeno and Fred, 2020; Ayadi and Ennar, 2022; Lajmi *et al.*, 2021; Ushad and Ramen, 2017). Existing research have also shown that there are institutional frameworks that support the development of the forensic accounting profession in some African

countries (Faboyede *et al.*, 2013). Examples of these institutional frameworks are the Forensic Accounting Forum in South Africa and the Institute of Forensic Accountants in Nigeria.

**4.1.4. The Oceania region** – Existing research from Australia show that the forensic accounting services industry in Australia is growing. Van Akkeren *et al.* (2013) found that both work-based skills and personal attributes, with a strong emphasis on oral and written communication skills were important for practicing forensic professionals in Australia. Forensic services firms expect university graduates to acquire strong knowledge-based skills such as oral and written communication skills, technology, and analytical skills in addition to an accounting qualification as part of their undergraduate or postgraduate degrees (Van Akkeren *et al.*, 2013). It was also found that Australian-based forensic accounting certification would assist the profession particularly in relation to continuing education (Van Akkeren *et al.*, 2013). Existing research also showed that the nature of forensic accounting in the Australian context seems to be highly complicated and requires an interdisciplinary mindset to provide an integrated forensic service (Alshurafat *et al.*, 2019).

**4.1.5. The Asian region** – Existing research show that forensic accounting research in Asia is also growing. In Bangladesh, there is optimism that forensic accounting can detect incidents of embezzlement of funds and corruption in both public and private companies even though forensic accounting is still in its early stage in Bangladesh and there is no professional institute to support the development of forensic accounting in Bangladesh (Karim *et al.*, 2017). In mainland China and Hong Kong, the availability of forensic accounting education is increasing in universities and there is also increasing demand for forensic accounting services (Wang *et al.*, 2016). In Malaysia, forensic accounting is still in its infancy stage and its development is expected to be slow due to the high cost of forensic accounting services which only big companies can afford and because there is no mandatory requirement for companies to hire the services of forensic accountant when investigating fraud (Ibrahim and Abdullah, 2007).

**4.1.6. Middle East region** – Existing research show that forensic accounting research in the Middle East is also growing but at a slow pace. For instance, in Lebanon, Abou-Zeid *et al.* (2020) show that expert witness and litigation support are the two main domains of forensic accounting

that have contributed to reducing financial corruption in Lebanon. In Saudi Arabia, forensic accounting has been found to be used in handling money laundering cases. Hussein (2020) showed that forensic accounting is important in Saudi Arabia because it provides the judiciary with knowledgeable and highly qualified experts who are aware of the legal and judicial aspects of money laundering, and forensic accountants employ methods that assist in tracing the movements of funds and assets in and out, with the assistance of relevant authorities, in order to accurately obtain suitable substantial evidence for litigation purposes. In Iraq, Hadi *et al.* (2018) argue that forensic accounting should be incorporated in tax reforms to improve the efforts of the tax authorities in combating tax fraud. In Iran, Azadzadeh (2014) argued that training and employment of forensic accountants into the legal system can help to facilitate justice and curb economic crimes in Iran. Despite the importance of forensic accounting in the Middle East region, Zadeh and Ramazani (2012), show that accountants in the region have a low perception about the importance of forensic accounting methods in detecting fraud. Alabdullah *et al.* (2014) also find similar evidence of low perception of forensic accounting methods in the region, particularly, in Iraq.

#### **4.2. Global interest in forensic accounting topics**

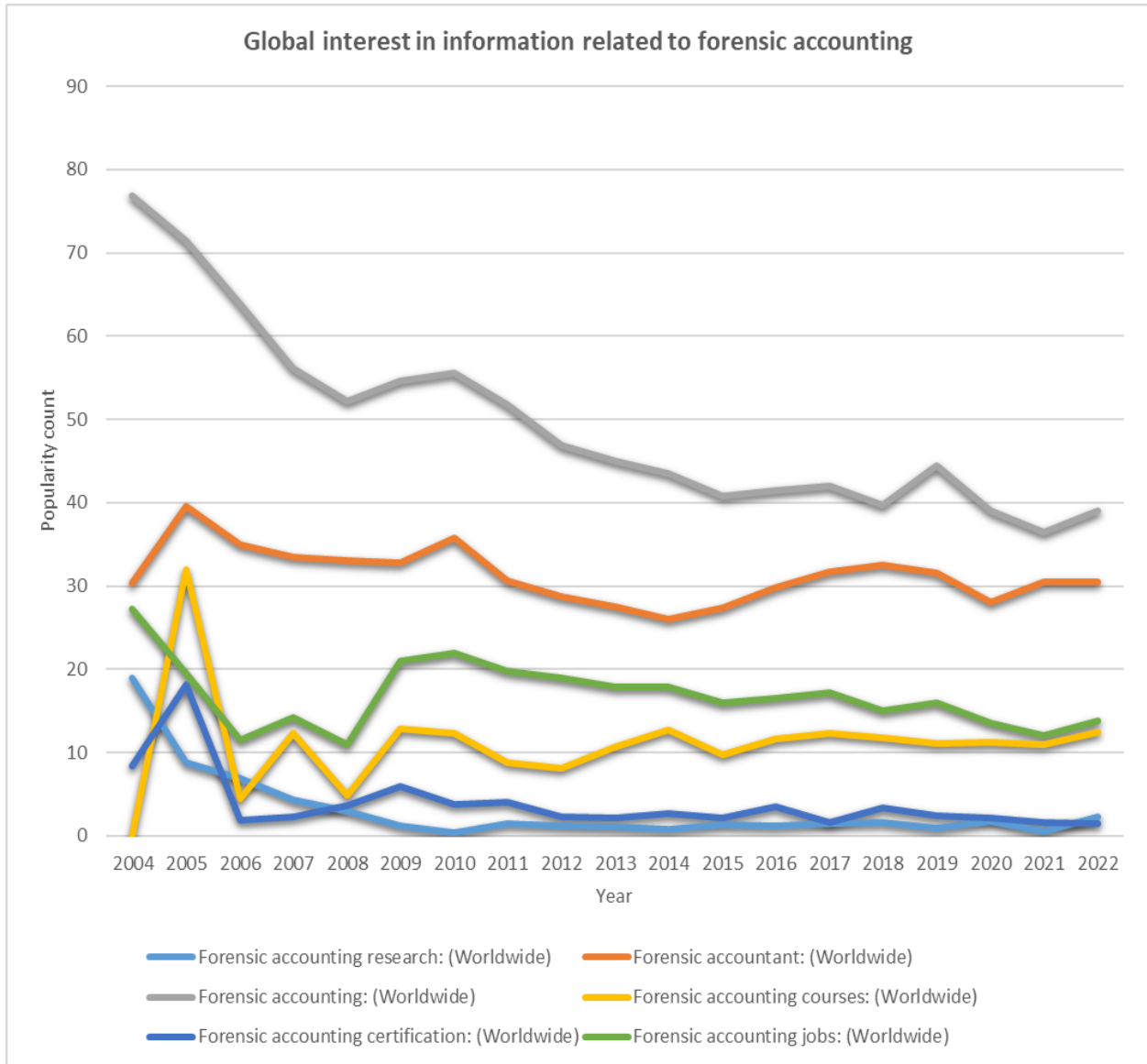
The section undertakes an assessment of the global interest in information about common forensic accounting topics. The search for Internet information about forensic accounting topics was used as a proxy for the global interest in information about specific forensic accounting topics. The topics are 'forensic accounting research (FAR)', 'forensic accountant (FAT)', 'forensic accounting (FA)', 'forensic accounting courses (FAC)', 'forensic accounting certification (FACT)' and 'forensic accounting jobs (FAJ)'. To do this, monthly 'interest over time' data were collected from Google Trends database for the six (6) search terms.

The six variables were selected because existing studies show that these six (6) terms are among the major themes in the forensic accounting literature (e.g., Ozili, 2015; Huber and DiGabriele, 2014; Ozili, 2020a). The sample period for the analysis is from January 2004 to September 2022, while the country coverage is global. The 'interest over time' data obtained from Google Trends database measures the popularity of specific terms or keywords on the Internet over a period of

time. The data reflect the number of times people searched for specific keywords in a location or a time period (Ozili, 2023). The data output from the database are numbers (or popularity count) ranging from 0 to 100. These numbers represent interest in a keyword relative to the highest point on the scale for the given location, region, and time. A count of less than 50 indicates that interest in the keyword was relatively low. A count of 50 means that interest in the keyword is half as popular. A count of 100 means that interest in the keyword was highly popular and reached the peak popularity for the term. A score of 0 means there was not enough data for the term (Ozili, 2023).

Figure 1 presents the data for global interest in specific forensic accounting topics. Figure 1 shows that there was greater global interest in information about 'forensic accounting' than in any other topic as its popularity exceeded 50 counts between 2004 to 2022. This was followed by global interest in information about the 'forensic accountant', followed by global interest in information about 'forensic accounting jobs'. Global interest in 'forensic accounting research' had the least popularity during the period. It was much lower than global interest in 'forensic accounting certifications'. This finding shows that there is relatively low global interest in information about 'forensic accounting research' during the period. This calls for action in the forensic accounting research community. There is a need to publicize information about forensic accounting research to make the discipline more attractive to accounting students and accounting scholars. There is a need to encourage accounting researchers to explore research topics in forensic accounting to grow the literature.

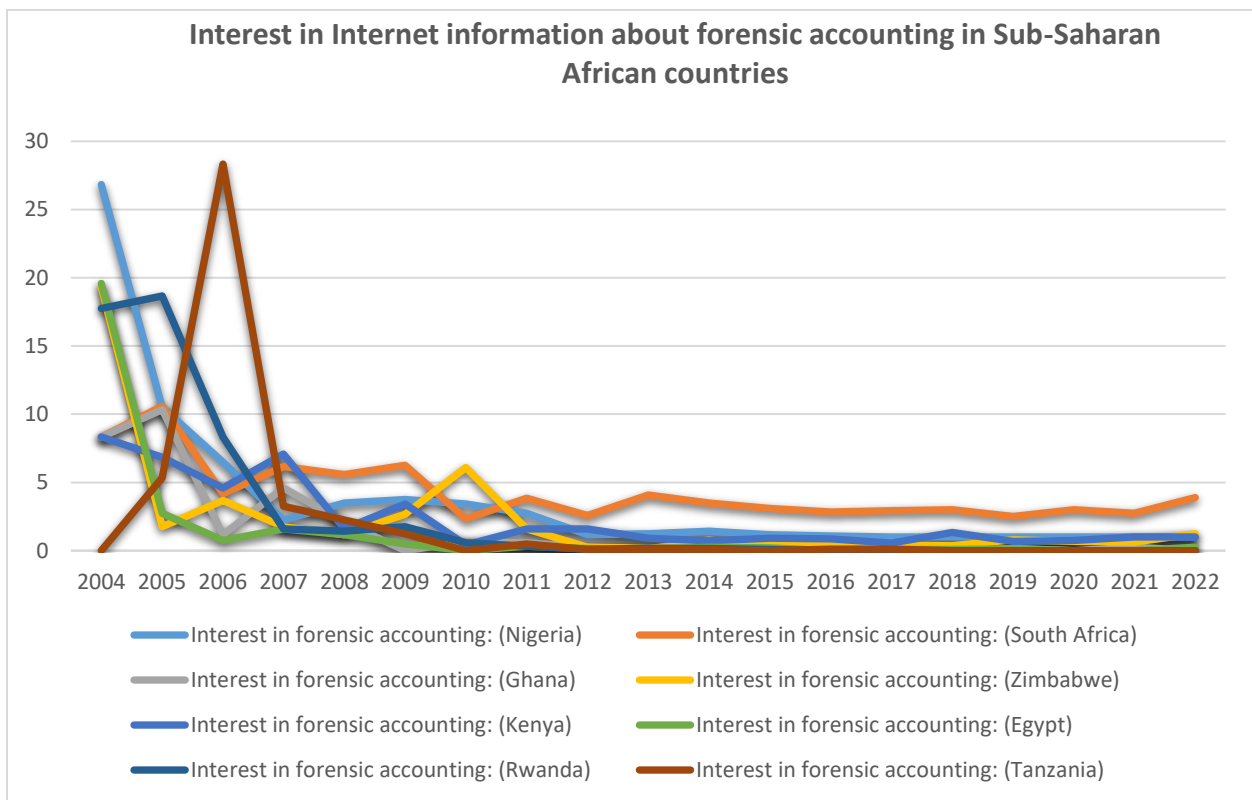
Figure 1: Global interest in Internet information about selected forensic accounting topics.  
(from January 2004 to September 2022)



(Source: Author’s analysis using Google Trends data)

A comparative analysis of the interest in forensic accounting across multiple countries in a corrupt region was undertaken. Google Trends annualized data were obtained for several African countries and presented in figure 2. Figure 2 shows a correlation among the countries especially in the early years. There is high correlation between Kenya and Nigeria from 2004 to 2006 and between Tanzania and South Africa from 2007 to 2010. However, all the countries have correlated interest in forensic accounting from 2011 to 2022. The interest in forensic accounting was very low from 2011 to 2022.

Figure 2: Interest in Internet information about forensic accounting in sub-Saharan Africa countries  
(from January 2004 to September 2022)



(Source: Author’s analysis using Google Trends data)

Next, a correlation analysis of global interest in information about the different forensic accounting topics was conducted using the Google Trends data. The correlation analysis was conducted using the Pearson correlation test method which assesses the linear correlation among variables. The correlation coefficients and their probability values, which indicates the statistical significance, are reported in table 2. Table 2 shows that there is a significant positive correlation between global interest in information about forensic accounting (FA) and forensic accounting research (FAR), between global interest in information about the forensic accountant (FAT) and forensic accounting research (FAR), between global interest in information about the forensic accountant (FAT) and forensic accounting (FA), between global interest in information about forensic accounting courses (FAC) and the forensic accountant (FAT), between global interest in information about forensic accounting (FA) and forensic accounting certification (FACT), and between global interest in information about forensic accounting courses (FAC) and forensic accounting certification (FACT). However, there is a significant negative correlation between global interest in information about forensic accounting research (FAR) and forensic accounting jobs (FAJ).

Table 2. Correlation among the forensic accounting topics – Pearson correlation

Variables	FAR	FAT	FA	FAC	FACT	FAJ
FAR	1.000 -----					
FAT	0.062 (0.35)	1.000 -----				
FA	0.478*** (0.00)	0.303*** (0.00)	1.000 -----			
FAC	0.020 (0.76)	0.128** (0.05)	0.099 (0.13)	1.000 -----		
FACT	0.067 (0.31)	-0.089 (0.18)	0.245*** (0.00)	0.374*** (0.00)	1.000 -----	
FAJ	-0.262*** (0.00)	-0.046 (0.48)	0.158** (0.02)	-0.086 (0.19)	0.204*** (0.00)	1.000 -----

\*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1% levels. FAR = global interest in information about forensic accounting research. FA = global interest in information about forensic accounting. FAC = global interest in information about forensic accounting courses. FACT = global interest in information about forensic accounting certification. FAJ = global interest in information about forensic accounting jobs. FAT = global interest in information about the forensic accountant.

(Source: Author's computation)

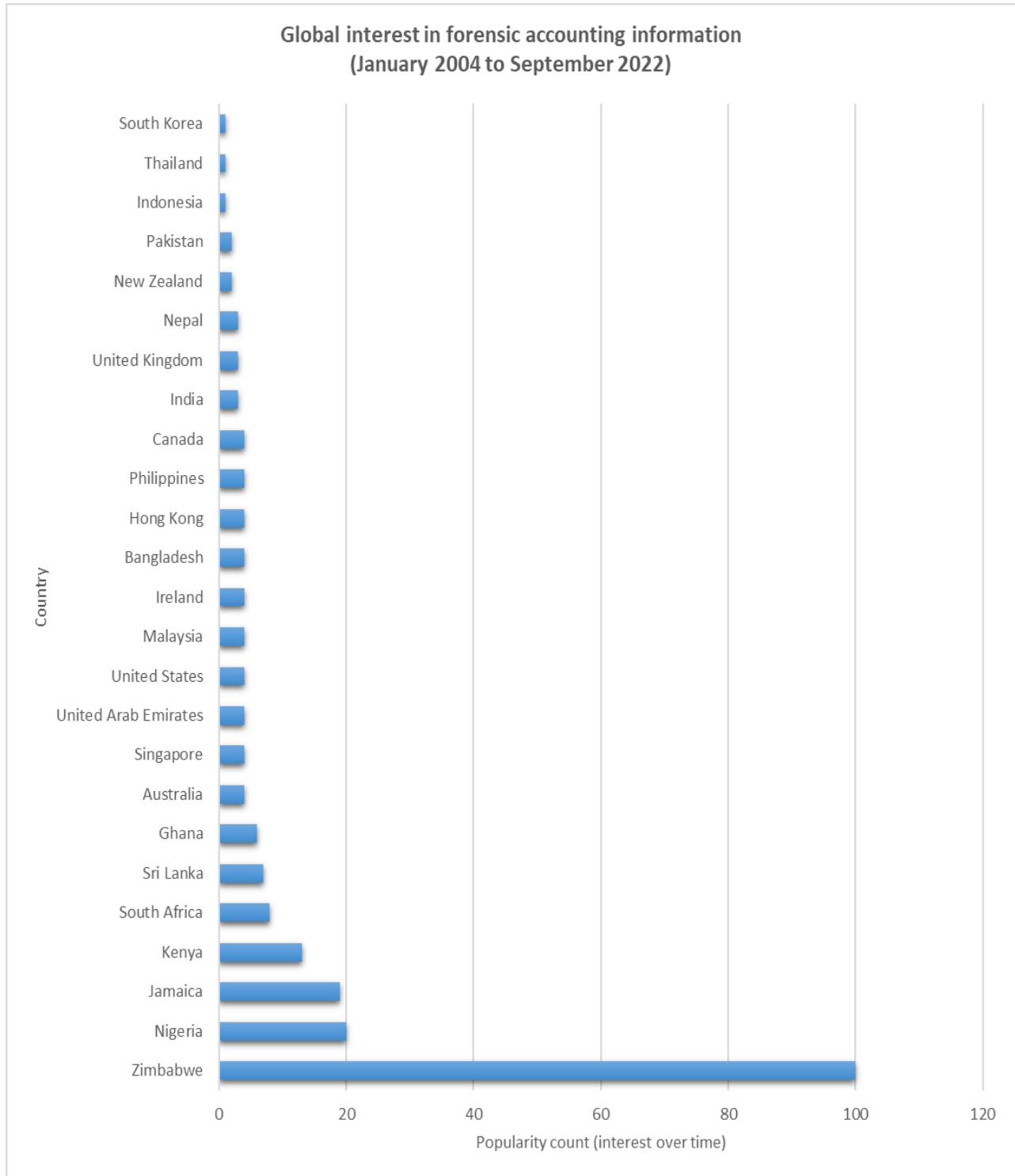
#### 4.3. Cross-country interest in information about forensic accounting

This section assesses the cross-country interest in Internet information about forensic accounting. The result is reported in figure 3. Only the countries with the highest popularity count are reported in Figure 3. Figure 3 shows that Zimbabwe had the highest interest in Internet information about forensic accounting during the 2004 to 2022 period. This was followed by Nigeria, Jamaica, Kenya, and South Africa. The lowest interest in Internet information about forensic accounting was recorded in Asian countries such as South Korea, Thailand, Indonesia, and Pakistan.



Figure 3: Global interest in Internet information about selected forensic accounting information.

(From January 2004 to September 2022)

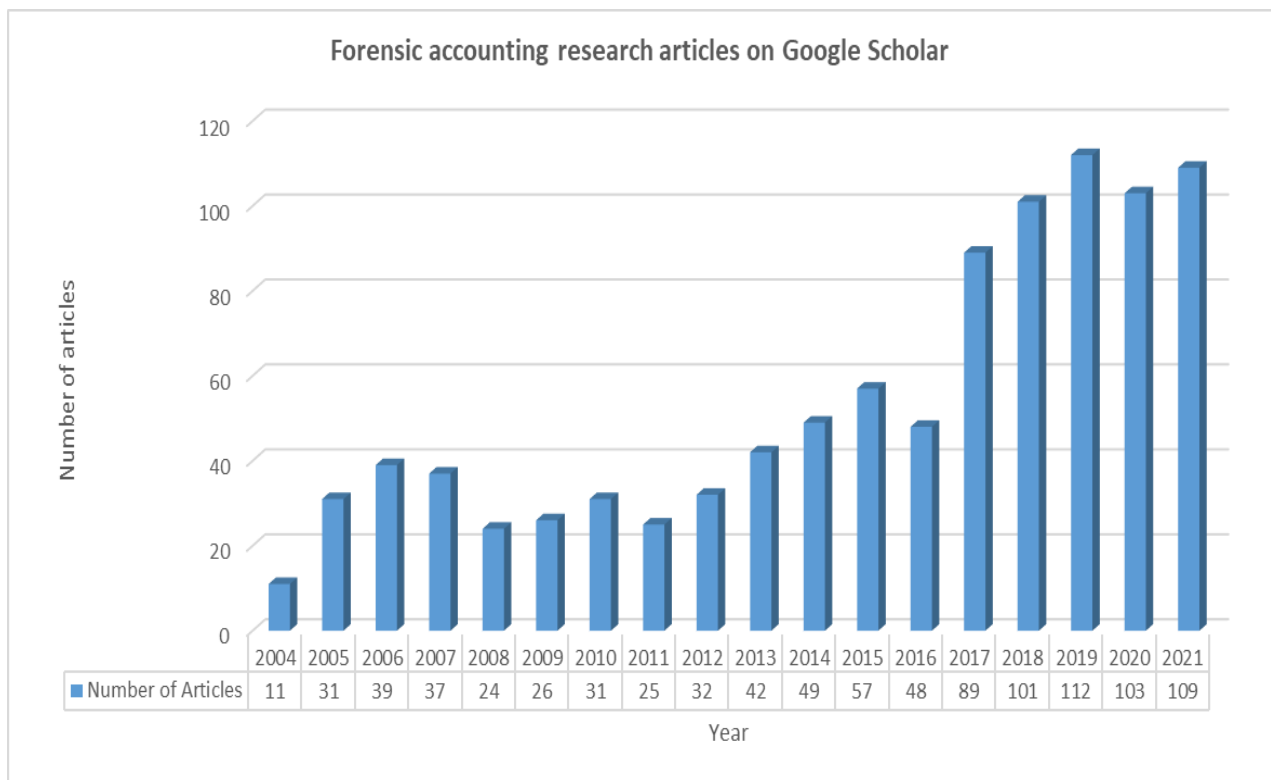


(Source: Author’s analysis using Google Trends data)

**4.4. Number of forensic accounting publications**

This section analyses the number of forensic accounting publications in the literature. Figure 4 shows that the number of forensic accounting research articles increased over the years. The number of articles were 11, 31 and 39 in 2004, 2005 and 2006, respectively. The number of studies significantly increased to 89, 101, 112, 103 and 109 from 2017, 2018, 2019, 2020 and 2021, respectively. This shows that the number of forensic accounting research studies is growing. The literature witnessed significant growth in the last five years from 2017 to 2022.

Figure 4. Forensic accounting studies on Google Scholar



(Source: Author’s analysis using Google Scholar data)

#### 4.5. Publications with the highest citations

This section analyses the publications with the highest citations in forensic accounting literature. The topmost cited journals (with over 100 citations), indicative of the journals with the most extensive research in forensic accounting, in the field are shown in table 3. “*The Issues in accounting education*” journal has the maximum citations, followed by “*Journal of Forensic Accounting*”, followed by “*Journal of Forensic and Investigative Accounting*”, and followed by “*Theoretical Accounting Research*” Journal. In the book category, the book ‘*Fraud auditing and forensic accounting*’ published by Wiley has the highest citations with over 500 citations over the period.

<b>Table 3. Publications with over 100 citations (2004-2022)</b>		
<b>Type of Publication</b>	<b>Publication title</b>	<b>Citation</b>
Journal	The Issues in accounting education	406
Journal	Journal of forensic accounting	393
Journal	Journal of Forensic and Investigative Accounting	334
Journal	Theoretical Accounting Research	234
Journal	European journal of scientific research	231
Journal	Journal of Forensic Accounting Research	227
Journal	Journal of education for business	223
Journal	Advances in Accounting Education	217
Journal	The CPA Journal	187
Journal	American Institute of Certified Public Accountants	184
Journal	American Journal of business education	162
Journal	Accounting Research Journal	121
Book	Fraud auditing and forensic accounting (Vol. 11). (Wiley).	568
Book	Benford's Law: Applications for forensic accounting, auditing, and fraud detection (Wiley).	490
Book	Forensic accounting and fraud examination (Wiley)	481
Book	A guide to forensic accounting investigation (Wiley)	388
Book	Forensic accounting and fraud investigation for non-experts (Wiley)	335
Book	Financial investigation and forensic accounting (Routledge).	240
Book	Fraud detection and forensic accounting. Emerging fraud: Fraud cases from emerging economies (Springer).	101

(Source: Author’s analysis using Google Scholar data)

## 5. The benefit of forensic accounting to society

An important question that often arise among critics of forensic accounting is: what is the benefit of forensic accounting to society? This is an important question because there is the perception that forensic accounting may lose its relevance if it fails to offer tangible benefits to society. In defense of the forensic accounting profession, it is fair to admit that forensic accounting presents some benefits to society. They include the following.

**(i). Forensic accounting helps to enforce tax justice** – Forensic accountants assist in bringing to justice those who break tax rules (Adekoya *et al.*, 2020). Forensic accounting helps to detect fraudulent maneuvers intended to understate profit to pay low taxes. The forensic accountant can help to uncover such maneuvers and ensure that individuals and corporations pay the right taxes that would be used to develop public infrastructure and invest in public education and healthcare in society.

**(ii). Forensic accounting increases societal trust** – Forensic accounting instils a culture of trust and integrity in society by creating a culture that encourage people and firms to raise alarm, blow the whistle, and notify the authorities when they receive unexpected money inflows or payments which they suspect to be fraudulent. This shows that forensic accounting helps to increase societal trust (Lam *et al.*, 2020).

**(iii). Forensic accounting provides incentives for entities and individuals to be law abiding** – Forensic accounting helps individuals and corporations to be law abiding by ensuring that fraud perpetrators are severely penalized and dealt with. Forensic accounting helps to ensure that people remain law abiding especially when they are aware of the consequence of committing financial crime that would be uncovered by forensic accountants (Özkul and Pamukçu, 2012).

**(iv). Forensic accounting increases investors' confidence** – Forensic accounting helps investors to trust the financial statement of corporations (Crawford, 2010). It makes accounting information value-relevant to investors especially when corporations know that investors can hire forensic accountants to audit the financial reports of corporations.

## **6. Areas for future research**

### **6.1. Forensic accounting in the digital technology environment**

There are few studies on forensic accounting in the digital technology environment such as Pearson and Singleton (2008) and Nasrallah *et al.* (2022). Digital technology developments are changing the methods for carrying out forensic accounting tasks. This change presents an opportunity for the forensic accounting profession to reinvent itself to remain relevant in the future. The forensic accounting profession needs to take advantage of the changing digital technology opportunity. Forensic accounting researchers can assist the profession by conducting research that identify how the changes in the digital technology environment may affect the forensic accounting profession and suggest some adaptation strategies for the forensic accounting profession.

### **6.2. Religiosity and forensic accounting**

The influence of religion on forensic accounting has not been explored to a great extent in the forensic accounting literature, except for Wahyuni-TD *et al.* (2021) and Alshurafat *et al.* (2023). There is a need for more research that examine the effect of religiosity on forensic accounting practices. There seem to be a link between religiosity and forensic accounting. This is because religion upholds moral ethics and eschews fraud while forensic accounting also upholds moral ethics by detecting fraud and preventing fraud. Therefore, it is easy to see how the two might be connected or correlated. But the literature has not examined forensic accounting practices in different religious contexts. Future research studies can extend the literature by investigating forensic accounting practices in different religious contexts.

### **6.3. Forensic accounting and the environment**

The influence of forensic accounting on the environment has not been explored in the forensic accounting literature. The literature has not established a meaningful link between forensic accounting and the environment other than the fact that forensic accounting technique can be used to detect and recover stolen funds that are meant for environmental protection. There is a need for research that investigate how forensic accounting can be involved in environmental

matters. Such studies should illuminate the role that forensic accounting can play in environmental matters including in green markets and the green economy.

#### **6.4. The use of mathematical models in forensic accounting research**

There is a need for additional research on the role of mathematical models in forensic accounting research (e.g., Yang and Lee, 2020). Presently, mathematical models have been used sparingly to address a wide variety of issues in forensic accounting research. There is a need for more studies that use robust mathematical models. Future studies should develop the methodological literature in forensic accounting research. Such studies should develop alternative empirical constructs that can be used in empirical forensic accounting research. Future studies can also examine whether existing empirical methodologies are being used correctly, and whether the existing mathematical models used in the literature address an interesting forensic accounting question.

#### **6.5. Forensic accounting for sustainable development**

Despite the progress made so far in the forensic accounting literature, the forensic accounting literature is not developing in a way that incorporates SDG-related issues into forensic investigations. Rehman and Hashim (2021) examine the link between forensic accounting and sustainable corporate governance but did not examine the link between forensic accounting and sustainable development. Existing forensic accounting studies have not examined how the forensic accounting profession can contribute to the realization of the United Nations (UN) Sustainable Development Goals (SDGs). Forensic accounting scholars do not seem to show interest to engage in SDGs-motivated forensic accounting research. There is a need for SDG-motivated forensic accounting research. Future studies should increase forensic accounting research in support of advancing the SDGs especially those that affect forensic investigation.

#### **6.6. Other trends influencing the growth of forensic accounting.**

There is a need to explore other trends influencing the growth in forensic accounting research. Future studies should explore other societal, technological, and legal trends that are currently influencing the field and make projections based on these trends. For example, future studies

could examine how increasing cryptocurrencies and bitcoin transactions are encouraging digital fraud and complex cybercrimes. These trends might drive the demand for forensic accountants, hence propelling the growth in forensic accounting. Future studies can also explore how other legislative changes can create new requirements for fraud detection and prevention. Future studies can also analyse other job market trends and the attitudes of practicing accountants towards specializing in forensic accounting.

## **7. Conclusion**

This study reviewed the relevant forensic accounting research around the world using a thematic and systematic literature review method. It was found that the major themes in the literature are fraud motivation, fraud consequences, fraud detection using forensic accounting techniques, forensic accounting theory, forensic accounting skills, forensic accounting education and forensic accounting jobs. Forensic accounting research is relatively small compared to research in other accounting specializations. Forensic accounting research is well developed in the U.S. and Canada while there are few forensic accounting research studies in Europe, Oceania and Asia. There is high interest in forensic accounting research in African countries. This is due to the high prevalence of corruption and the need to combat fraud using forensic accounting methods. There is relatively low global interest in information about 'forensic accounting research' compared to global interest in other forensic accounting topics. The study also suggested some directions for further research.

The implication of the findings of this review is that forensic accounting research is well-developed in some regions compared to other regions. This indicates that there is uneven development of forensic accounting research across several regions. Therefore, accounting scholars should be encouraged to undertake forensic accounting research to increase the quantity of forensic accounting research in all regions. In addition to increasing the quantity of forensic accounting research, there is also a need to publicize the outputs of forensic accounting research to a large global audience so that forensic accounting research outputs can reach a large number of people and increase their interest in forensic accounting. Furthermore, there is a need

to use policies to promote forensic accounting in African countries where there is high interest in forensic accounting due to the prevalence of corruption in the region. Finally, it is yet to be seen whether forensic accounting will grow to become a popular accounting specialization like 'financial accounting' and 'management accounting', or whether forensic accounting will become another small and isolated accounting specialization only for the pleasure of forensic investigators.

A limitation of this study is that it exempts crucial forensic accounting research that are published in non-English formats. Also, the review did not delve deeply into the methodological (i.e., modeling, empirical testing) issues in the forensic accounting literature. Another limitation of the study is that it did not diversify the search platform. The study used Google Scholar. Using other search platforms (not Google Scholar) to conduct the review could offer additional insights. A methodological limitation of the study is that the data from Google Trends are based on people's interest in a search term or keyword over the Internet which may be subjective. Also, the people searching for forensic accounting information on the Internet using Google may be doing so due to other reasons and not necessarily because they have genuine interest in forensic accounting. It is also possible that the Google Trends data could reflect irregular search activity, such as automated searches or queries that may be associated with attempts to spam the search results. Also, the Google Trends data may not capture the interest in forensic accounting in countries that do not have access to Google.



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