

## Developments in Cryptocurrency Transactions and Implications for Audit and Accounting Activities

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### Abstract

*The study analyses 1,757 peer-reviewed publications indexed in WOS between 2015 and May 2023, with a common theme of analyzing cryptocurrencies from a financial point of view. The study was conducted using bibliometric and exploratory analytical methods, with particular attention to the dynamics of the research directions over time. The results have resulted in the creation of comprehensive maps of hot research topics and new research trends for crypto assets. Furthermore, the mapping of international cooperation between the researchers included in the analysis revealed remarkable results. The study highlights some valuable insights into the profiles of individuals and companies who own and use cryptocurrencies. The analysis indicates the recent focus of research guidelines on topics such as inefficiency, risk or uncertainty in cryptocurrency transactions. With the help of the principle of prudence for accounting and audit, empirical studies in this direction require the development and active international cooperation between researchers and researchers and the business community.*

**Key words:** cryptocurrency, audit, accounting, business finance, economics.

**J.E.L. classification:** D80, G10

### 1. Introduction

Research directions in the field of cryptocurrency have shown significant developments in recent years, revolutionizing the traditional financial landscape. As these digital assets become more popular, concerns about their potential use in illicit activities, non-compliance with financial reporting, or the need to improve regulation have grown (Demertzis et al., 2018; Edwards et al., 2019).

Interest in the use of these assets in a non-centralized and unregulated market is raising increasing concerns about the profile of individuals who own and use crypto assets. Public interest also influences business interest in diversifying financial settlement methods by including crypto assets in the operations. The rapid development of technology, the public's desire for technology and unregulated investment opportunities (Ante, 2022) puts pressure on government policy makers who often cannot cope with the insurmountable changes in the cryptocurrency market.

The present study analyses the publications indexed in WOS between 2015 and May 2023, identifying a total of 1757 publications on cryptocurrencies from a financial perspective. Data collection was carried out by accessing various relevant and reliable sources, such as WOS and Statista, and a large amount of information was collected, which increased the relevance of the study.

The research methodology used bibliometric investigation and exploratory analysis to capture the dynamics over time of the hot topics for research and the collaborative relations between the researcher-authors involved in the study of cryptocurrencies. The analysis was aimed at exploring the profiles of cryptocurrency owners and users, both individuals and companies. The findings of the study have led to important conclusions both from the academic and an empirical perspective.

## **2. Theoretical background**

Investors have begun to see crypto assets as attractive investments and the motivational aspects of such context have stimulated research. The advancement of technology is often linked to economic progress and growth (Micu et al., 2021; Tofan et al., 2022). Other researchers have concluded that crypto assets are "safe haven" assets (Wang et al., 2019). The appetite for innovation and technology is a common feature of the young generation (Osagwu et al., 2022), for which the field of cryptocurrency seems to be rapidly being embraced and explored. Age, gender, and education of the people who are interested in the learning of cryptocurrency are topics that have attracted increasing interest among researchers in recent years.

In the case of cryptography, most studies have examined the relationships between Bitcoin and other investment assets in regulated financial markets. Aspects such as volatility, future development predictability, efficiency of investment portfolio returns, etc. have attracted attention from both theoretical and practical analysis perspectives. Investment behavior analysis is another area of interest for financial research (Abramova et al., 2021). The pressure exerted by stakeholders to achieve performance and ensure environmental sustainability inspires further research to explore the various perspectives on which green innovation hinders (Batrancea et al., 2021; Chin et al., 2022).

Although cryptocurrencies are not listed directly on traditional exchanges, many studies have explored the connection between cryptocurrencies and other investment assets. Investor interests are aimed at diversifying investments (Pop-Radu et al., 2018) and optimizing investment portfolios. The growing volatility of cryptocurrency may provide an opportunity if the possibility of accurately forecast profits arises, or leads to losses in other cases. Security issues and government regulations (Yeoh, 2017) are also factors that can influence investor confidence and generate volatility in financial markets.

## **3. Research methodology**

This paper presents an exploratory analysis of WOS-indexed literature from 2014 to May 2023, which uses cryptography as a common theme. The literature review focused on the study of financial issues, with selected publications from the fields of business finance, business, economics, management, and multidisciplinary sciences. 1757 publications were included in the sample analysis along with complete records and the data on cited articles.

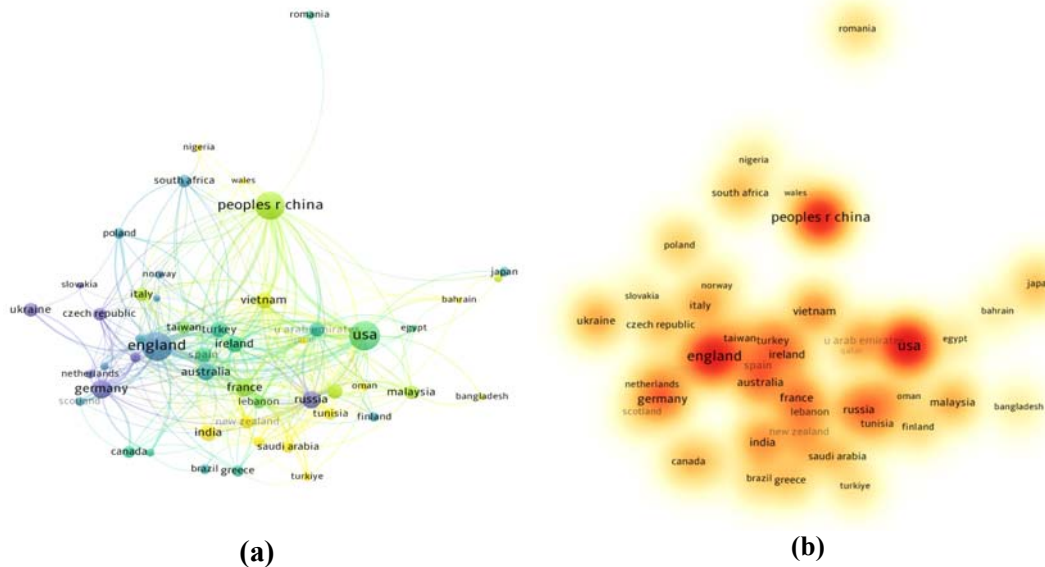
Research trends in the field of cryptography were explored and deepened in the geographical areas where most research concerns in this field were identified. The analysis of the implications of cryptocurrency transactions on accounting and audit related to crypto began with the exploratory examination of the profiles of crypto-owners and companies that own and operate with crypto. To achieve the research objectives, Statista data obtained by market research providers through surveys of individuals living in several countries were analyzed in addition to the WOS data. Comprehensive visual representations were created with relevant information on the description of those who own and use crypto assets, as well as the description of the 100 most representative companies using crypto in the world.

## **4. Findings**

In the first stage of the study, the analysis of research directions in the field of cryptocurrencies focused on exploring the keywords most used in research. The frequency of use of keywords in the 1757 studies indexed in WOS revealed a repetitive number of 2761 keywords. Of these, data filtering continued with the merging of terms with the same meaning but different spelling forms, such as "safe-haven" and "safe haven" or plural and singular forms of the same terms. This process resulted



Figure no. 2. Representation of co-authorship analysis concerning the origin countries of researchers

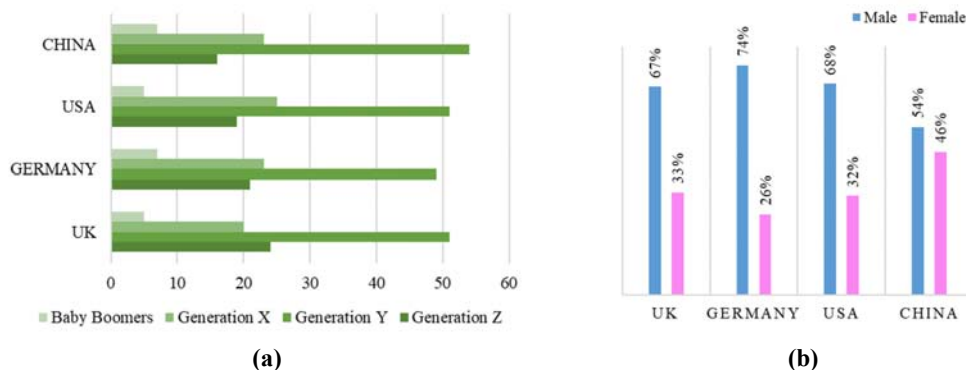


Source: own research based on WOS data

The co-authorship analysis of the country of origin of the researchers in collaborative relationships was carried out, according to Figure 2, through a double reanalysis. Figure 2(a) presents the overlay visualization of the researchers’ collaborative network, emphasizing countries with multiple connections to other countries and also remote countries, like the case of Romania, that present a single link to another country. Countries which are at the borders or remote from the network map indicate a need to strengthen international cooperation with foreign research peers. It is remarkable to also note that countries like China, Italy, Saudi Arabia, India and New Zealand have actively contributes in the collaborative research network during recent years, yielding significant contribution to crypto research.

Figure 2(b) presents the density visualization of co-authorship countries. The representation vividly indicates the United States of America, the United Kingdom, China and Germany as hot spots for collaborative research networks. Such findings motivate our research to further investigate the development of cryptocurrency transactions and the profiles of crypto owners in those countries in order to better understand the implications of such trends on accounting and audit activities.

Figure no. 3. Representation of (a) age and (b) gender of cryptocurrency owners, per country



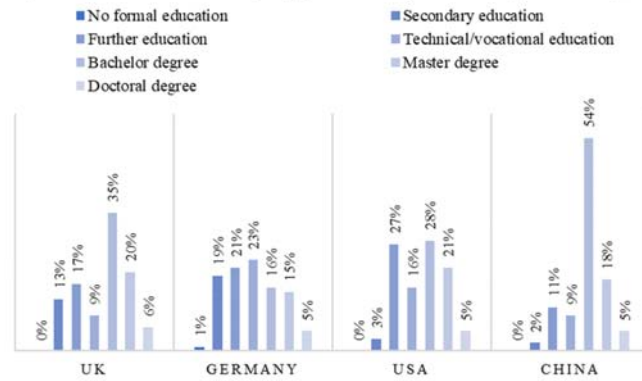
Source: own research based on Statista data

The ages of cryptocurrency holders residing in the four countries included in the analysis are depicted in Figure 3(a). In each country included in the analysis sample, most cryptocurrency holders are Generation Y (born between 1980-1996), and the fewest crypto investors are Baby Boomers (born between 1946-1964). As for the second category of cryptocurrency holders, it is interesting to note

that in the UK it is represented by Generation Z (born between 1997-2012), while in the other countries they are representatives of Generation X (born between 1965-1979).

Figure 3(b) visually reflects the gender of crypto owners and indicates that these are predominantly male. The lowest gender diversity was observed in China and the highest gender gap between male and female owners of crypto assets was observed in Germany, where the difference between gender was 48%.

Figure no. 4 Education of cryptocurrency owners, per country



Source: own research based on Statista data

Figure 4 shows that most investors in each country included in the analysis have a bachelor's degree or similar and that those less likely to invest in cryptocurrencies have no formal education. Germany and the US show a slightly homogeneous educational status of cryptocurrency owners, while the situation in China and the UK suggests larger educational gaps between investors. Another notable observation is that the percentage of cryptocurrency owners holding a PhD degree is stable among the sample countries at around 5%. Although the apparent percentage is small compared to people holding a bachelor's degree, it is still insignificant, as in general the number of people pursuing a doctoral degree is significantly lower than the number of those who obtain a bachelor's degree. Therefore, it can be concluded that people with a PhD degree show a significant predilection to invest in crypto assets, according to the data identified for the 4 countries included in the analysis.

Figure no. 5 Number of companies in top 100 worldwide using crypto (a) and mean CAGR (b)



Source: own research based on Statista data

Figure 5(a) shows the number of companies using cryptocurrencies that are ranked in the top 100 cryptocurrency companies worldwide. Companies are ranked by initial public offering (IPO) options: public IPO refers to companies offering the public the opportunity to invest in their shares, and private IPO refers to offering stock options to accredited investors. Most of the top 100 companies using crypto are located in the US (30 companies), of which 22 are classified as private IPOs. In China, only one public IPO company using crypto assets was identified in the top 100.

The compound annual growth rate (CAGR) represented in Figure 5(b) is calculated as mean CAGR of the top 100 companies centralized in Figure 5(a), according to available data obtained from Statista. CAGR is an important financial indicator that measures investment returns over a period of time. The indicator is calculated in correspondence with the classification of companies in Figure 5(a), as a mean indicator for private IPO companies and, respectively, as a mean indicator for public IPO companies. The mean CAGR calculated for the public and private IPO companies reveals that the public IPO companies were profitable for public investors, whereas the private IPO companies have performed negatively in the sampled countries, according to available data.

## 5. Conclusions

As the cryptocurrency market develops, the role of auditors and accountants becomes essential in ensuring transparency and accurate reporting of financial transactions. Fair financial reporting of crypto assets, tax issues related to tax obligations, crypto trading, and concerns about the inconsistency of laws are some of the problems that pose multiple challenges for accounting professionals or auditors when evaluating transactions with crypto assets. The rapid expansion of the cryptocurrency market and the regulatory dynamics that are more or less anchored in the dynamics of the time require accountants and auditors to develop a deep understanding of these digital assets and the potential risks associated with their use for individuals and businesses.

Regulators need to work with financial institutions to establish robust compliance and compliance monitoring measures. Auditors should assess the compliant application of these measures to cryptocurrency transactions.

According to the results of this study, the development of trends in cryptocurrency research is evolving both from the academic perspective and from the enthusiastic interest of the public and businesses. The impact of this context is profound for audit and accounting activities, particularly in terms of potential links with risks related to these transactions or with legislation that is still in the early stages of formulation. The rich research provided shows the dynamic nature of economic implications, the prevalence of investment studies, and the need for effective risk assessment mechanisms of cryptocurrencies.

The results of this research have provided valuable insight into the profile of individuals and companies who own and use cryptocurrencies. With regard to individuals, recent data show that cryptocurrency investors are predominantly Gen Y men with medium or higher economic education. As far as companies are concerned, the largest number of active companies using large volumes of cryptocurrencies is located in the United States. As regards the investment return of enterprises that trade crypto assets, according to available data included in the analyzed sample, the highest efficiency is recorded among public IPO enterprises, with the highest investment return in China.

The limitations of this study are mainly represented by the early stage of data centralization on cryptocurrency owners, which prevents extensive comparison analyses from evolving. Since the cryptocurrency market is a decentralized and unregulated market, the accuracy of the data often depends on the voluntary spirit of individuals reporting their ownership and transactions of the cryptocurrency. As a result, the challenges of the audit and accounting professions are becoming increasingly complex. More and more recent studies have explored inefficiency, risks, and uncertainty in the field of cryptocurrency. Based on the principle of prudence for accounting and auditing professionals, empirical studies in this area require the development and active participation of researchers at international level, as well as the participation of active market practitioners in research.

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