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Financial frauds throughout the years – literature review

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Abstract

Financial frauds have been a growing problem across the global financial markets. Losses generated by such illegal activities affect both the global economy and individual entities, especially those operating in the financial market. Perpetrators of such frauds seem to always be one step ahead of the law enforcement, regulators as well as private sector entities such as banks and scientists. This review examines publishing actions taken throughout the years. It also shows whether there has been any correlation spotted between the number of papers published in a particular year and the events on the financial markets. Finally, the article summarises all types of financial frauds which have been identified in the literature and assesses whether the selection of those types is original or had already been identified in the past years. The study involved a systematic literature review to achieve the set goals. Following the final results of the article, it is clear that the issue of financial frauds has been a growing global concern. It is crucial to strengthen the collaboration between the regulators, law enforcement, academic environment and private sector. Cooperation across the sectors should include research on how to prevent and mitigate the consequences of this kind of frauds.

Keywords

- financial fraud
- bank fraud
- financial crimes
- negative impact

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Introduction

The phenomenon of financial crime has reached enormous proportions all around the world. Its scope includes many illegal activities. Numerous units, both private and public, deal with that issue on a daily basis. Every year, preventing and mitigating the effects caused by criminals, as well as prosecuting them, requires significant financial, material and human resources (Lou & Wang, 2009, pp. 61–62). And yet, this phenomenon seems to be vaguely underestimated from the perspective of scientific literature. This is evidenced by the lack of a uniform definition of the financial crime and the small number of publications in this field.

The problem of the missing definition can be explained to some extent by the fact that the concept of crime is derived directly from the criminal law, which can be different in each legal system. As such, the perception of financial crime will differ from country to country. However, this does not explain the fact that even in the Polish literature it has not been possible to develop a single, coherent definition of financial crime. The subject of this article, however, will not be the construction of the definition, but a review of the literature that directly or indirectly addresses the problem of financial crime. The lack of a standardised definition may lead to discrepancies in identifying the catalogue of activities that may fall into the category of financial crimes. A concept broader than financial crime is financial fraud. Due to the frequent use of these terms as synonyms, especially in the foreign literature, and lack of the consistent definition of financial crime, this publication will focus on financial frauds. Such an approach will prevent an excessive limitation of its subject, and at the same time will ensure that its scope is still relevant.

In order to further standardise the criteria serving as a starting point for further research, key words from the English language related to frauds have been adopted. That will enable the analysis of the widest possible spectrum of literature, not including unrelated publications in the review, and at the same time not excluding those that raise the problem of financial frauds at least to some extent. According to the most recent literature, the catalogue of such frauds includes credit fraud, corruption, money laundering, terrorist financing, securities and commodities fraud, sanctions evasion, cyber-crime, counterfeiting of means of payment, pyramid schemes, accounting frauds, as well as digital currency crimes (FATF, 2012, pp. 123–124; Matakovic, 2022, pp. 1–5; Price & Norris, 2009, pp. 539–540; Reurink, 2016, pp. 36–45; Segal, 2016, p. 48). The aforementioned list of activities contains the most common ones found in financial markets, but it is not exhaustive. In the further part of the paper, financial frauds which are described in the publications selected in the process of literature review will be collected and compared with

the above list. The results of that analysis will either extend or maintain the existing financial frauds catalogue.

The purpose of this paper is to analyse the scope of literature and the frequency of its publication over the past 18 years, and then to find the trend, if any, in which the publication curve moves. Data such as dates or periods of financial crises and turmoil in the financial markets with be superimposed on the trend curve. Such comparison will allow us to determine whether there is a connection between the need to publish and the events in global financial markets. Other possible conclusions may be whether the problem of financial crime increases in times of market volatility, whether criminals take advantage of the fact that the attention of authorities, law enforcement, market surveillance and the private sector is turned to other problems, or whether these issues are not related at all. However, if they appear to be related to some extent, the research results can be used to predict the movements of the trend, periods of increased criminal activity or problems with the stability in the economy in the future.

In Section One, the methodology used for the literature review is described, and publications on similar topics and methodology are cited. In the next step, databases, keywords as well as inclusion and exclusion criteria are defined. In Section Two, the author analyses the obtained results and presents tables and graphs showing the development of the number of publications over the years. Additionally, events from financial markets, and the banking sector in particular, which could have determined the changes under analysis, are assigned to each of the turning points in the chart. Section Three analyses and briefly describes selected publications in terms of identified types of financial frauds and their negative effects. Furthermore, the paper's limitations, which biased the results, are identified and briefly discussed. Finally, the author presents the conclusions of the research in last section and formulates the need for further research in the field of financial frauds. Future studies should especially focus on detection, prevention and identification of bad actors involved in the illicit activities.

1. Methodology

This literature review is based on the method of a systematic literature review. The analysis will pave the way for further research in this area, which, in turn, will allow us to observe the problem on an ongoing basis, draw conclusions in a reactive manner and prepare for future events. The process of determining the subject of the research is conducted in three steps, leading from the entire available collection of literature to a reliably selected database. Each step includes selections

according to a separate criterion: basic database, keywords, as well as inclusion and exclusion criteria (Czakon, 2011, p. 58).

There are a number of existing publications on this topic, the authors of which also conducted the literature review in a similar manner. One of such publications uses the PRISMA-ScR protocol (*Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews*). The authors performed an extensive review of both academic and grey literature in the field of cryptocurrency frauds. They identified 29 different types of frauds in the academic literature and 47 in the grey literature (14 of which were not identified by the academic sources). The conclusions that the authors came up with, besides a unique list of financial fraud types, were that illegal activity in the field of cryptocurrencies is growing rapidly and cross-sectoral cooperation is necessary to combat financial frauds (Trozze et al., 2022). Another publication which raises the issue of frauds was published by Mangala & Soni in 2023. The authors conducted a systematic literature review on frauds in the banking sector. The paper was based on 70 articles published in four databases between 2000 and 2021. It reveals that bank frauds have become a great problem, causing both financial and non-financial damage to banks, their stakeholders and the economy. The study states that banks should undertake strong measures in the area of risk management in order to prevent, detect and respond to frauds (Mangala & Soni, 2023, pp. 285–287). The current research aims to completement and extend the existing studies and their results to some extent.

1.1. Databases, keywords, inclusion and exclusion criteria

Several steps have been taken in this literature review to explore the issue as thoroughly as possible. The first step was the selection of searching tools. Scopus and Web of Science databases were used as search engines. Then, multiple inclusion criteria for the found items were adopted. The first criterion was the language of publication. Bearing in mind the few, or most often no publications in Polish, it was decided to include only those written in English. Due to the discrepancies in the definitions, markets and academic practices, as well as the multitude of synonyms in English, a wide range of key phrases had to be adopted in order to make the literature review as credible as possible. Many various configurations of key phrases were tested, plenty of which were general and gave an overly wide range of search results (e.g. “fraud” or “crime”). On the other hand, when those phrases were specified too precisely, the results were very limited or nil (e.g. “financial crimes in banking sector”). The final result of testing numerous key phrase configurations provided two phrases that, after an initial review, seemed to give satis-

factory search results. These phrases were as follows: "financial fraud" and "bank fraud". Both were subsequently adopted as the inclusion criterion.

Due to the very dynamic environment and the development of the phenomenon of financial frauds, it was decided that only the latest publications should be subjected to further analysis. At the same time, a large enough range of dates had to be selected to make the obtained sample reliable. Therefore, publications issued in the years 2005–2022 were analysed. The year 2023 was not taken into consideration because it did not end while writing this paper, and hence data would be incomplete and could distort the results and their interpretation. The review included academic publications, i.e. articles, conference materials and books. The study did not include the following types of grey literature (defined as materials not controlled by commercial publishers) (Mazur & Orłowska, 2018, p. 242): reports and publications provided by entities other than universities. In addition to the above, publications as blog posts, presentations, newsletters and marketing materials were also excluded from the research.

In the next steps, the publications identified in the review process, which described the problem of financial frauds and their impact on the economy were quoted and analysed. Due to the high volume of search results, not all publications could be included in this step. With that in mind, it was decided that only publications with the highest number of citations would be analysed. In addition to that, they should be available in the PDF format. Then, the full text would be searched using key words to confirm that it addressed the mentioned issue. For that purpose, the author used the following key words: "impact", "economy" and "fraud".

Despite strict inclusion criteria, numerous publications were found from fields and categories that were recognised as out of scope. To ensure the most accurate selection of publications, works in the following categories and fields were excluded: Medicine, Physics and Astronomy, Energy, Environmental Science, Biochemistry, Materials Science, Chemistry, Earth and Planetary Sciences, Ethics, Robotics, Optics, Infectious Diseases. On the other hand, the following categories and fields were included: Business Finance, Economics, Computer Science, Law, Criminology, Mathematics, Interdisciplinary Social Sciences, Psychology. Although the problem of frauds is certainly a significant in these sectors, this paper focuses on frauds in the financial sector. Table 1 summarizes the main fields and categories that have been excluded and included.

The initial search found 12894 results. With the above "filters", 1670 publications were rejected and ultimately 11224 items remained for further analysis. Table 2 shows the results for both phrases gathered into individual databases. At first glance, it can be said that the number of items found using the phrase "financial fraud" was over three times higher than the "bank fraud". Additionally, the number of publications found in Scopus is similar to the one in Web of Science. This may suggest that the majority of them are duplicates. Unfortunately, due to

Table 1. Excluded and included subject fields/categories

Fields/categories excluded	Medicine, Physics and Astronomy, Energy, Environmental Science, Biochemistry, Genetics and Molecular Biology, Agricultural and Biological Sciences, Nursing, Chemical Engineering, Materials Science, Pharmacology, Toxicology and Pharmaceutics, Health Professions, Chemistry, Earth and Planetary Sciences, Neuroscience, Immunology and Microbiology, Dentistry, Veterinary, Food Science Technology, Ethics, Gerontology, Green Sustainable Science Technology, Nutrition Dietetics, Environmental Sciences, Social Work, Sociology, Robotics, Optics, Energy Fuels, History of Philosophy of Science, Biochemical Research Methods, Physics Multidisciplinary, Anthropology, Clinical Neurology, Linguistics, Electrochemistry, Infectious Diseases, Behavioural Sciences, Arts and Humanities.
Fields/categories included	Business Finance, Economics, Computer Science, Business, Management, Engineering, Law, Criminology, Telecommunications, Operations Research Management Science, Decision Sciences, Multidisciplinary Sciences, Public Administration, Political Science, Information Science, Mathematics, International Relations, Education Scientific Disciplines, Social Sciences Interdisciplinary, Psychology.

Source: own study.

Table 2. Quantitative summary of the literature review

Phrase	Database	Number of identified items	Number of items found with inclusion and exclusion criteria applied
financial fraud	Scopus	5141	4689
bank fraud	Scopus	1537	1441
	Scopus Total	**6678**	**6130**
financial fraud	Web of Science	4783	3846
bank fraud	Web of Science	1433	1248
	WoS Total	**6216**	**5094**
Total		**12894**	**11224**

Source: own study.

the differences in the exported data from both databases and its overall population, it would take too many manual efforts to properly filter and remove the duplicates. Nevertheless, it is highly possible, that if the research was to be conducted using only one database, the results would also be reliable.

2. Results and discussion

As was noted in the previous section, the number of publications found using the phrase "bank fraud" was smaller than that associated with the phrase "financial fraud". Such a trend can also be observed in each of the analysed years (see Table 3). This seems to be a natural dependence, considering the fact that the financial sector covers the banking sector as well as many others. Another interesting dependency, yet also predictable, is the growing number of publications year over year. There were only few cases where the number of publications was lower than in the previous year. Such deviations were observed in 2012, 2013 and 2016. Interestingly, after both 2013 and 2016 the number of those publications increased even faster than in the preceding years.

Table 3. Number of publications in each year (including databases and phrases)

	Scopus		Web of Science		Sum		Overall sum
Year of publication	*financial fraud*	*bank fraud*	*financial fraud*	*bank fraud*	*financial fraud*	*bank fraud*	
2022	688	193	456	116	1144	309	1453
2021	565	174	442	151	1007	325	1332
2020	502	140	393	111	895	251	1146
2019	450	153	350	113	800	266	1066
2018	315	102	325	120	640	222	862
2017	268	91	301	94	569	185	754
2016	248	64	229	79	477	143	620
2015	229	76	245	86	474	162	636
2014	194	67	200	94	394	161	555
2013	180	41	142	48	322	89	411
2012	181	59	148	36	329	95	424
2011	194	56	150	46	344	102	446
2010	156	57	118	41	274	98	372
2009	143	53	103	37	246	90	336
2008	116	26	93	26	209	52	261
2007	102	29	55	24	157	53	210
2006	85	32	53	17	138	49	187
2005	73	28	43	9	116	37	153
Total	**4689**	**1441**	**3846**	**1248**	**8535**	**2689**	**11224**

Source: own study.

As has been already mentioned, there are more and more publications in the field of financial and bank frauds every year (Figure 1). Apart from the three deviations mentioned above, the graph is moving in one direction, confirming earlier observations. Figure 1 shows two points when the trend line reverses, indicating that the number of publications in the following years began to increase at a rapid pace after decreasing over one or more years. The first point was 2013 when after a two-year decline in the total number of publications, their number increased by over 32% year over year. At the same time, 2013 was considered rather a boom year on the financial markets. The question to be asked is what caused the trend to reverse? Among many events of those years, it may have been the delayed aftermath of the debt crisis in Europe in 2009–2010, and then the collapse of financial markets in August 2011 caused by the fear of the crisis spreading to Spain and Italy (Jayech, 2016, pp. 632–634), as well as the fear of downgrading the ratings of France and the United Kingdom, which at that time faced such a threat (Bremer, & Dmitracova, 2011). Another event that could have drawn the attention of researchers to the problem of financial frauds was the speculative bubble on Bitcoin in 2014. In the fourth quarter, the value of that cryptocurrency increased from $130 to $1.200 and then fell to $500 within only a few days (Li et al., 2019, pp. 92–93; Monamo et al., 2016, p. 129).

The next turning point on the trend line was the year 2016. Similarly to 2013, there are no clear reasons for such a change. The intensity of the publishing action, and thus reversal of the trend, could have resulted from growing inflation and the increase in market interest rates. It could also have been determined by the delayed reaction to the announcement of the quantitative easing policy adopted by the European Central Bank in March 2015 and its impact on the market, which was most felt just in 2016 (Hohberger et al., 2019, pp. 1–3). Perturbations in the European banking sector in 2016 could have been another trigger for the publishing action. These issues mainly concerned the Italian and German banking sectors (Hodson, 2017, pp. 118–122; Miglionico, 2019, pp. 469–471). Although these events were scheduled to be brought up in Figure 2, it seems appropriate to mention them here.

The growing number of publications addressing the issue of financial frauds indicates that the significance of this matter is becoming more and more serious. With that in mind, one can conclude that in the years 2012, 2013 and 2016 researchers' attention was turned away from this issue, and afterwards efforts put into researching this matter were even greater than in the preceding years where an upward trend could be observed. Interestingly, the global financial crisis of 2008 is practically invisible in Figure 1, as if it was insignificant. This is an unexpected conclusion, as the author's initial belief was that the events of that year would leave the biggest mark, which they may have done, but not in the immediate years.

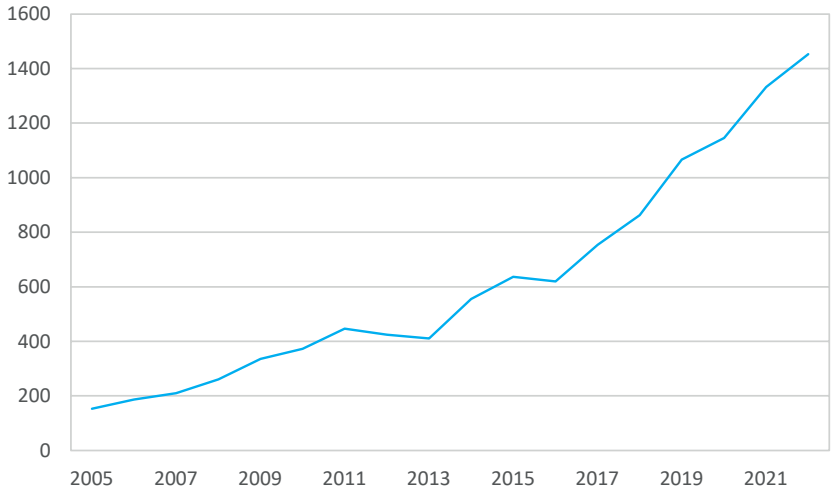

Figure 1. Total number of publications in particular years

Source: own study.

It is worth elaborating briefly on Figure 2, which relates to the search results using the phrase "bank fraud" only. While cumulative data shown in Figure 1 was not as clear-cut as it might initially seem, Figure 2 shows four distinct points in the history when the number of publications increased dramatically. As was done for Figure 1, similar analysis will be performed to identify events that could have influenced such a shape of the trend curve in Figure 2.

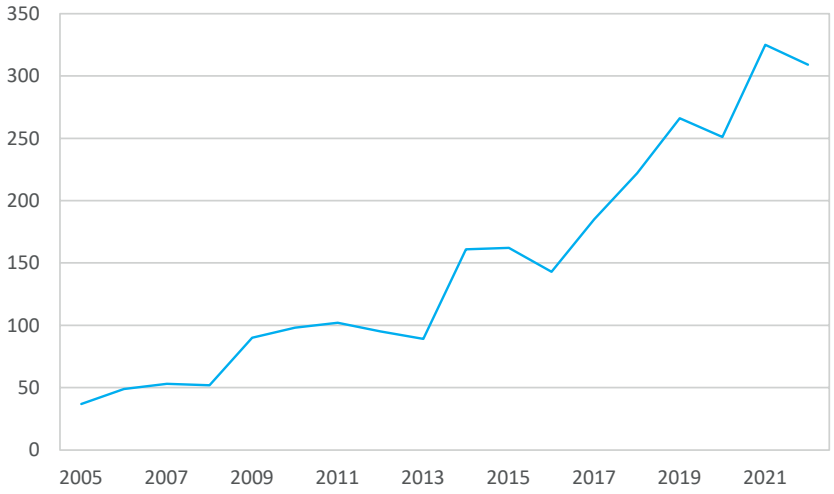

Figure 2. Number of publications found using the phrase "bank fraud" only

Source: own study.

The first moment defined on the chart is the year 2009, when within one year from 2008 the number of identified publications increased by 76% (from 52 to 90). This year is mainly associated with the global financial crisis, and the greater dynamics of publications dealing with the issue of bank frauds seems to be a natural result in the face of what had happened. Moreover, that crisis has had a significant impact on how the financial market is functioning (Tomasic, 2011, pp. 8–10). It is worth mentioning that one of the famous fraud types at that time was fraud in the mortgage securitisation industry (Fligstein & Roehrkasse, 2016, p. 620).

The year 2009 was followed by 4 years of relative stagnation, only for the annual number of publications to increase from 89 to 161 between 2013 and 2014, which stands for an increase of 81% y/y. It was the year when banks responsible for the LIBOR scandal suffered from financial penalties. The official estimates were that the value of contracts based on LIBOR was $300 trillion, while unofficially it was said to be up to $800 trillion (Ashton & Christophers, 2015, p. 189). In the same year, JPMorgan Chase entered into a settlement with the authorities, which consisted of a payment of $13 billion, in exchange for being released from the liability for its activities in offering mortgage-backed bonds in 2007-2009. The sum of all penalties that were imposed on JPMorgan Chase bank in 2013 for many of its actions, including the London Whale scandal, oscillates around $20 billion (Passas, 2016, pp. 76–77). Finally, the last event identified for this period was the financial crisis in Cyprus. The banking sector was particularly vulnerable to the perturbations of that time. To some extent, it was a consequence of the 2007–2008 events, but also many other factors (Stavárek, 2013, pp. 312–313). Although all the cited events are certainly not exhaustive, and there were several more significant ones, there is no doubt that the described few were crucial for the condition of financial markets. The year 2013 was undoubtedly dramatic for the banking sector in many countries. Hence, it should not be a surprise that the focus of researchers on frauds, especially the bank ones, has risen rapidly.

The next point in Figure 2 is the year 2016, which was followed by 3 years of an almost steady increase in the number of published items. During these three years, the annual number of publications increased from 143 to 266 in 2019. This means an average annual increase of 41 items. Some of the events that could have influenced such an increase were cited in the analysis of Figure 1. They seem to be the reason for the increase in the amount of research on both financial and bank frauds. Another event, different from the already mentioned ones, which could have affected the banking industry was the imposition of a fine of EUR585 million on Deutsche Bank (DB) in 2013. The fine was related to money laundering allegedly committed by DB and its related companies. Moreover, similar suspicions fell on many other European banks (Yeoh, 2020, pp. 127–128). Another significant case within the banking industry was The Wells Fargo cross-selling scandal. In September 2016, Wells Fargo announced that it would pay $185 million to settle

a lawsuit filed by the regulators and the county of Los Angeles. At the same time, the bank admitted that its employees had opened as many as 2 million accounts without customer authorisation over a five-year period (Tayan, 2019, p. 2). There is no doubt that in the described cases that the perpetrators of those frauds were the banks themselves. It should be obvious, however, that not only banks are to be blamed. Nonetheless, it seems reasonable to conclude that their illegal or unethical activity led to the biggest crises in the sector, and subsequently attracted more attention to the issue of frauds.

The last point on the chart with a significant increase was the year 2021. The number of published items increased from 251 to 325 during the year. Although it was an increase by "just" 29%, the difference is as many as 74 publications (the most among all the analysed periods). That was the time of the COVID-19 pandemic, and the global economy had gone into the lockdown. During that time, the economy worldwide experienced a massive slowdown and, in some places, recession. In the Polish banking sector, 2020 was the first year in the past 27 years in which banks recorded a loss. It was mainly caused by the forced increase of reserves for franc credits (Wilkowicz, 2021). Another factor affecting the banking sector was the reduction of interest rates by the Monetary Policy Council to record low levels. What is more, the US FED also drastically reduced the level of interest rates, and in the Euro area, they had been low for several years at that time (Ampudia & Van den Heuvel, 2022, pp. 49–51). Low interest rates forced market participants to look for profits in other places than those that could be profitable in the higher interest rates environment. This may have been a driver for some to undertake unethical or even illegal activities just to generate higher revenue. It was not until 2021 that interest rates began to increase around the world. In addition to the above, one of the events that could have sped up the publication process in the area of financial frauds was bankruptcy of the German FinTech Wirecard in 2020. The company provided electronic payment processing services globally. It filed for insolvency after discovering missing EUR1.9 billion in its assets. This was the result of more than 10 years of systematic book falsification and frauds (Chen, 2022, pp. 68–70).

It is worth noting that the average increase in the number of publications in the analysed period (2005–2022) is 16. Clearly, each period is distinguished by the several times higher average annual growth. However, in 2022 there was a noticeable decrease in the number of published items. Figure 2 shows that a year before each significant increase in the number of publications, a smaller number was recorded. Has the trend continued, and the same thing happened in 2023? Certainly, it is worth conducting further research in this area in order to answer the question in the coming year. The above examples of events in relation to Figures 1 and 2 are intended to show that the number of publications is not unrelated to events on financial markets, and at the same time does not constitute an exhaustive list of all events that could have affected the formation of charts and trends.

3. Review of selected literature

For this section of the paper, the author selected publications that had the highest number of citations and were available in the PDF format. The initial number of selected publications was 23, 6 of which were not available in the PDF format. Therefore, the full text of 17 publications was analysed. The number of citations of those items ranged from 223 to 838 (on average 419 per paper). Their content was subjected to a key word search using the following key words: "impact", "economy", "fraud". In this way, it was determined whether the publication covered the correct problem as well as contained types of financial frauds and their effects. Below are the brief considerations contained in the selected publications regarding the negative impact of the financial fraud on both the financial and banking sectors as well as the entire economy. The purpose of this section is to gather the types of financial frauds and their impact on the economy in one place. This was a secondary objective in this paper and should be treated as such, as it does not exhaust the subject but shed more light on it and opens the door to further study and discussion.

One of the negative effects of financial fraud on individual entities is the loss of reputation (Karpoff et al., 2008a, p. 601). Moreover, the director of such an entity may also lose their reputation (Fich & Shivdasani, 2007, p. 324; Hoffmann & Birnbrich, 2012, p. 391). One of the frauds described in the analysed literature was management fraud, which can be defined as the deliberate fraud committed by the company's management. It may cause damage to investors and creditors through materially misleading financial statements (Kirkos et al., 2007, p. 995). According to Abdallah et al. (2016, p. 91), frauds in general have a dramatic impact on the economy, law and human moral values. One of the frauds they mentioned was cyber-crime, the seriousness of which lies in the fact that almost all technological systems which involve money and services can be compromised by fraudulent acts, e.g. credit card, telecommunication, health care insurance and online auction systems. Another frauds impacting countries' economy are corruption, illicit transfer of dirty money and tax evasion. It is estimated that $500 billion are transferred from developing and transitional economies to Western accounts every year. That causes a significant damage to the economic condition of such countries, at the same time affecting mostly the poor. Such processes result from the use of tax havens around the globe, where stashed assets are estimated at $11.5 trillion (Dobers & Halme, 2009, p. 243).

Moro et al. (2015, p. 1315) stated that banks focus primarily on prevention and detection of the following types of frauds: credit fraud, communication channels frauds, cyber-crimes. Cohn et al. (2014, p. 86) identifies frauds such as market manipulations, market index manipulations and tax evasion as particularly harm-

ful to the banking sector, which along with the financial markets make up a fundamental pillar of every advanced economy. Additionally, the authors stated that banking services are the key requirement for economic growth. Therefore, the above-mentioned frauds committed by banks and their employees had a great impact on the whole economy, leading to dramatic loss of reputation and a crisis of trust in the financial sector.

The negative effects of financial frauds mentioned above have a very wide scope. Starting from the effects on individuals, to institutions, to the economy of the entire country, region or even the global economy. Table 4 summarises information about the analysed publications, including data such as the number of citations, types of financial frauds and whether their impact was described in the publication. Several types of names were inconsistent, so the names were standardised for the sake of more efficient analysis, i.e. *the management fraud/misleading financial statements* category was used for a number of similarly named types, e.g. *falsification of financial information*. Table 5 summarises the number of financial fraud types identified in the full text review process and a percentage share in the total number of reviewed publications. Due to a large number of items, the summary was prepared in the form of a table rather than a chart, which allowed us to provide a clearer presentation of data.

There were 21 financial frauds identified in total. The most often quoted fraud was management fraud/misleading financial statements, which appeared in 7 out of 17 publications (41.2%). Interestingly, this fraud was mainly present in the publications published between 2005–2010. The newer studies examined financial frauds which had not been known so well in the past. At this point, it can be stated that there might be a correlation between the types of the most frequently described frauds and the events taking place on the financial markets. This matter, however, should be researched further to confirm or deny this correlation.

The above financial frauds differ from the ones listed in the Introduction and will certainly complement the initial list of frauds. Without a doubt, there are more types of financial frauds and, given the perpetrators' imagination, it is rather impossible to gather a complete and final catalogue of such activities. That is also the reason for which detection, prevention and identification of bad actors is so difficult.

It is worth mentioning that the majority of the literature selected for the final step of the review was published over 10 years ago. Given the fact that this phenomenon has been changing dynamically, the approach to this problem has also evolved. Thanks to developing studies within this area, the contemporary literature describes and approaches this matter slightly differently. It is safe to say that the current approach has improved. With that in mind, it can be concluded that future studies should be based on the most recent literature, not limited to the one with the highest citation index. One of the ways of such an approach would

be to keep using the index itself, but at the same time narrow down the analysed period to a few years only, so that only the most recent publications will be researched. Such an approach has not been the aim of this paper, as the main purpose was to show how and why the number of publications changed throughout the years, which could not be achieved without a properly long period.

Limitations

Despite a thoroughly conducted literature review, a few limitations still occurred, which affected the final results. Their impact does not seem to be significant, yet future studies should certainly keep them in mind. Not all the limitations can be removed, but perhaps there are ways of working around them. Firstly, given the fact that the total population of found publications was large, duplicates were not removed. It was caused by the differences between the bulk data extracted from Scopus and Web of Science databases. Due the inconsistent file format it could not be done using, e.g. the vlookup feature in MS Excel. Given the volume of the records, it would require too much manual effort to filter the data and get rid of the duplicates properly. Secondly, this (and any) review was limited by the eligibility criteria. This study did not include the grey literature which was not indexed in both databases but created and published by private entities representing the business sector. Such literature contains numerous most recent solutions, data and ideas which would certainly be useful for the academic papers. What is more, only two databases were used for the review, which narrowed down the number of generally available publications indexed in the other databases.

The next criterion used for the study was the key phrase. Several combinations were tested and only two were selected as the ultimate ones. There could be dozens or more combinations and numbers of key phrases/words used. Therefore, the population of found publications would be completely different. Another criterion was the analysed period, which for the purpose of the research was 18 years, and which could be different depending on the needs and approach. Unfortunately, it seems that any set of limitations will always be present in the research work, and despite the fact that it is hardly avoidable, researchers should undertake all available tools to mitigate the impact of the limitations on the final result of their work. Hopefully, it was accomplished in this study.

Table 4. Summary of the selected literature review

Paper	Authors	Year	Citations	Financial fraud types	Impact described
Graph based anomaly detection and description: a survey.	Akoglu, L., Tong, H. & Koutra, D.	2015	838	credit card fraud, insurance fraud, accounting frauds, tax evasion, securities fraud, cyber-crimes, insider trading	no
The application of data mining techniques in financial fraud detection: A classification framework and an academic review of literature.	Ngai, E.W.T., Hu, Y., Wong, Y.H., Chen, Y., & Sun, X.	2011	670	credit card fraud, money laundering, insurance fraud, corporate fraud, securities and commodities fraud, management fraud/misleading financial statements	no
Restoring trust after fraud: does corporate governance matter?	Farber, D. B.	2005	613	management fraud/misleading financial statements	no
The cost to firms of cooking the books	Karpoff, J., Lee, D., & Martin, G.	2008	602	accounting frauds, IPO frauds, corporate fraud	yes
Corporate misreporting and bank loan contracting	Graham, J. R., & Jiaping Qiu, S.L.	2008	527	fraudulent restating, management fraud/misleading financial statements	no
Financial fraud, director reputation, and shareholder wealth	Fich, E. M., & Shivdasani, A.	2007	462	corruption, accounting fraud	yes
Data mining techniques for the detection of fraudulent financial statements	Kirkos, E., Spathis, C., & Manolopoulos, Y.	2007	413	management fraud/misleading financial statements	yes
The consequences to managers for financial misrepresentation	Karpoff, J., Lee, D., & Martin, G.	2008	396	management fraud/misleading financial statements	no
Business culture and dishonesty in the banking industry	Cohn, A., Fehr, E., & Marechal, M.A.	2014	351	market manipulation, interest rate manipulation, tax evasion	yes
Corporate social responsibility, investor protection, and earnings management: Some international evidence.	Chih, H.-L., Shen, C.-H., & Kang, F.-C.	2008	325	accounting frauds	no

Table 4—cont.

Paper	Authors	Year	Citations	Financial fraud types	Impact described
Fraud detection system: A survey	Abdallah, A., Maarof, M.A., & Zainal, A.	2016	311	credit card fraud, telecommunication fraud, insurance fraud, online auction fraud	yes
The antecedents and consequences of top management fraud	Zahra, S.A., Priem, R.L., & Rasheed, A.A.	2005	303	management fraud/misleading financial statements	yes
Detection of financial statement fraud and feature selection using data mining techniques	Ravisankar, P., Ravi, V., Raghava Rao, G., & Bose, I.	2011	300	management fraud/misleading financial statements	yes
Corporate social responsibility and developing countries.	Dobers, P., & Halme, M.	2009	271	tax evasion, other tax frauds, corruption, illicit transfer of dirty money	yes
Credit card fraud detection using machine learning techniques: A comparative analysis.	Awoyemi, J.O., Adetunmbi, A.O., & Oluwadare, S.A.	2017	264	credit card fraud	yes
A survey of anomaly detection techniques in financial domain	Ahmed, M., Mahmood, A.N., & Islam, M.R.	2016	253	credit card fraud, telecommunication fraud, insurance fraud, insider trading	yes
Business intelligence in banking: A literature analysis from 2002 to 2013 using text mining and latent Dirichlet allocation	Moro, S., Cortez, P., & Rita, P.	2015	223	credit fraud, communication channels frauds, cyber-crimes, money laundering, securities and commodities fraud, mortgage fraud	yes

Source: own study.

Table 5. Share of financial fraud types in the analysed population

No.	Financial fraud types	Amount	% share	No.	Financial fraud types	Amount	% share
1.	management fraud/misleading financial statements	7	41.2	12.	telecommunication fraud	2	11.8
2.	credit card fraud	5	29.4	13.	other tax frauds	1	5.9
3.	accounting fraud	4	23.5	14.	credit fraud	1	5.9
4.	insurance fraud	4	23.5	15.	fraudulent restating	1	5.9
5.	securities and commodities fraud	3	17.6	16.	illicit transfer of dirty money	1	5.9
6.	tax evasion	3	17.6	17.	interest rate manipulation	1	5.9
7.	corporate fraud	2	11.8	18.	IPO frauds	1	5.9
8.	corruption	2	11.8	19.	market manipulation	1	5.9
9.	cyber-crimes	2	11.8	20.	mortgage fraud	1	5.9
10.	insider trading	2	11.8	21.	online auction fraud	1	5.9
11.	money laundering	2	11.8				

Source: own study.

Conclusions

The number of publications increases every year, which may suggest that the scale of the problem is growing. This also proves that researchers put greater focus on this issue. Overall, within the period of 18 years, 11224 search results were identified in both databases, despite the strict inclusion criteria applied. As Figures 1 and 2 show, the number of published items is moving in an upward trend. There were, however, a few points on the charts where the trend was broken. Deviations from the trend can be observed and their causes seem to be obvious, especially when it comes to the "bank frauds" search results. It would seem that the relationship between the number of publications in a given year and the events on the markets will be clearly visible for the entire comprehensive search results, but it was more noticeable and definitive for bank frauds.

Though the upward trend in the number of publications is certain, a decrease is noticeable in 2022. It should not last long, however, as the charts show that a year before each significant increase in the number of published items, a smaller number was recorded. Has the trend continued, and the same thing happened in 2023? The current situation in the financial markets may indicate an affirmative answer. The year 2023 was not easy for the global economy. Conditions were particularly difficult in the banking sector. This sector has experienced major global turbulences, i.e. the Credit Suisse buy-out by UBS bank due to the former's liquidity problems, the collapse of Silicon Valley Bank and Signature Bank in the United States. The analysed historical examples showed that after such serious turmoil on the market, the number of publications in the field of financial frauds increased. With that in mind, it is safe to say that we will observe an increase in published items in the upcoming months/years.

Despite the identification of many consequences and types of financial frauds in Section 3, more research is required on this problem. Ways of preventing them and mitigating their effects should be researched specifically. More attention needs to be paid to detecting and punishing perpetrators, as they very often seem to be one step ahead of law enforcement, legislators, regulators, researchers and the private sector, e.g. banks. The above study also indicates the need for better cooperation between entities from the private and public sectors, and especially between the law enforcement authorities, business, supervisory authorities and the academic community.

According to Snyder (2019, p. 337–338), a quality literature review must have both depth and rigor, which means that it needs to demonstrate an appropriate strategy for selecting articles and capturing data and insights, and to offer something beyond a recitation of previous research. In addition, a quality literature review needs to be replicable, which means that the method must be described in

such a way that an external reader could replicate the study and obtain similar findings. Lastly, Snyder states that a literature review must be useful for scholars and practitioners. All these requirements seem to be met in this paper.

Having in mind the numerous limitations that were listed above, this paper manages to deliver an original insight into the subject. Perhaps further studies could prove that there were significant events on the financial market which did not determine the increase in the number of publications in the years that were not analysed in this paper. This could allow us to make a more holistic evaluation of the dependency between market events and the publications curve, and, in turn, help predicting the future to some extent. The author invites researchers of further studies to analyse this matter in more depth. Since developments in this field are fast paced, it is also recommended to perform regular updates to this scoping review to maintain an accurate view thereof.

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