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ANALYSIS OF PATENT DATA ON INNOVATIVE TECHNOLOGIES IN THE FIELD OF IDENTIFICATION, PREVENTION, AND COMBATING FINANCIAL FRAUD

ABSTRACT

The modern financial sector faces major challenges in the fight against fraud due to the growth of digital transactions, the complexity of criminal schemes and the development of cyber threats. In this regard, innovative technologies for detecting and combating financial fraud are becoming crucial for ensuring economic stability and trust in financial institutions. The purpose of the study is to analyze the patent landscape of innovative technologies aimed at identifying and combating financial fraud, money laundering, and money laundering.

The proposed analysis methodology is based on the integrated application of dynamic, thematic and subject analysis approaches. The results are based on the use of the online tool GetFocus, which is built on the basis of AI and provides access to the world's largest international patent databases. The results of the dynamic analysis demonstrated a relatively small number of patents in the context of the studied topics around the world (4,553), of which almost half (49.7%) were registered in 2023-2024.

This growth is explained by the intensification of cyber threats during the study period. The key thematic areas of patents were identified: machine learning, artificial intelligence, blockchain technologies, and predictive modelling. The geographical analysis showed that the leading countries in this area are the United States, China, and India, demonstrating the largest number of registered patents. The subject analysis has shown that the key patent holders are companies such as IBM Corp, Capital One Financial Corp, and Mastercard Inc., which are actively investing in innovative solutions in the field of prevention, identification, and counteraction to financial fraud. Promising areas of research include the study of patents on innovative technologies in the field of identification, prevention, and counteraction to fraudulent activities with cryptocurrency transactions; analysis of patent data by country and empirical assessment of the implementation of patented technologies in practice, and their alignment with existing regulatory requirements.

Keywords: patent analysis, innovative technologies, financial fraud, intellectual property, technological innovation, fraud prevention, patent, financial security, data analysis, cybersecurity

JEL Classification: G14, O31, O34, K42

INTRODUCTION

The development of information technology has led to the emergence of many new opportunities, including in the field of financial security. Digital technologies make it possible to simplify and automate the process of data analysis quickly and with a high degree of accuracy. However, the introduction and further use of such technologies require a certain procedure for taking into account regulatory and, most importantly, legal aspects. In this context, it is important to patent such innovative technologies, i.e., to protect intellectual property rights to inventions, developments, etc. In general, patents are a valuable source of information on innovative technological solutions, methods and tools for their implementation.

Patents on information technology in the field of financial security, identification and counteraction to financial fraud currently account for only a small part of the total number of patents. However, the issue of financial fraud, especially with the use of digital technologies, has become of critical importance for most countries. Financial fraud is one of the key threats to the stability of economies. Annual losses caused by financial fraud are estimated at billions of dollars. They negatively affect the economic and financial stability of the country, public confidence in financial institutions and the effectiveness of regulatory mechanisms.

Financial fraud involves a variety of schemes, including data fraud, cyber-attacks, and money laundering. Various illegal tools are used, which are being transformed, improved and taken on new forms with the advent of new digital technologies. The scale and complexity of financial fraud is growing exponentially.

Innovative technologies are usually used to identify and counteract financial fraud, especially those that use digital technologies, which are often subject to patents.

In this context, the analysis of patent data is one of the key sources of information for identifying technological innovations, their dissemination, and determining their potential for solving the problems of identifying and combating financial fraud.

Patent analysis as a research method allows to trace of development trends, identify key areas, new methods of monitoring financial transactions, possible ways to improve existing methods, algorithms for identifying anomalous data and fraudulent schemes, finding means of ensuring data security, and provide an opportunity to assess the application of existing patented technological solutions in given conditions.

Patent data not only allows for the assessment of technical aspects but also provides an opportunity to trace the geographical distribution and strategic priorities of individual companies and research institutions. However, it is worth mentioning that the analysis of patent data has a number of limitations, in particular related to the limited access to such solutions. Patent information is often limited to technical aspects without detailing "key" information.

In general, despite the critical importance of technology in identifying and combating financial fraud, research on patent activity in this area remains limited. Insufficient attention to the analysis of patent data leads to the loss of valuable information on innovative solutions that have already been developed or can be improved in the future.

LITERATURE REVIEW

The rapid development of modern technologies has led to a surge in research on various issues of security, identification, countering financial fraud, money laundering and money laundering, both at the country level and at the level of individual companies, citizens, etc.

The growing threats caused by the extremely rapid development of digital technologies are discussed in Djouadi et al. (2024). The study by Bartulovic et al. (2023) examines the impact of digital technologies on certain areas of human life and the state as a whole, noting that financial security should be considered both «from top to bottom» (from ensuring the financial security of the state to its individual citizen, company, organization») and «from bottom to top».

In general, most studies related to the use of innovative technologies in the context of combating financial fraud can be grouped into several thematic groups:

1. Studies that look at the development of innovative technological solutions for fraud detection (Louzada & Ara (2012), Danénas (2015)).
2. Studies on the identification of potential frauds (prediction methods and models) Zhang & Trubey (2018), Bartoletti et al. (2018), Tarjo & Herawati (2015), and Shaju & Valliammal (2019).
3. Studies that look at the development of authentication tools (Andersen, 2009).
4. Studies that analyze, develop methods of protection and prevention of cyber threats such as phishing, hacking of banking systems and data theft Gupta et al. (2023).
5. Studies that consider the legal, regulatory, ethical, regulatory and other aspects of the introduction of digital technologies to counter financial fraud Zámek & Zakharkina (2024), Acar & Kara (2023), Albrecht et al. (2015).
6. Mixed studies that consider certain aspects of the use of innovative technologies in the context of combating financial fraud (Tang et al., 2019), Bose et al. (2011), Glancy & Yadav (2011).

Note that most studies can be attributed to the last group (mixed).

Patenting is one of the key ways to obtain exclusive rights to the results of research, developed tools, methods, and technologies. Patents not only record new discoveries but also serve as an important tool for analyzing innovation trends. Existing patents and analysis of patent data make it possible to assess the level of technological development, identify new (innovative) approaches to preventing and counteracting complex risk situations, and assess the level of competitiveness of a particular country or organization in a particular area.

In general, with the active development of digital technologies since the 2000s, a relatively active process of patenting intellectual property objects related to combating financial fraud has begun. However, as correctly noted by Asare & Samusevych (2023), during this period, most of the research was devoted to technological solutions for identifying fraudulent activities (in particular, based on the analysis of reports, messages, etc.).

The period starting in 2010 was marked by active patenting of innovative solutions based on the use of AI. At the same time, AI was used not only to analyze financial transactions but also to work with big data and analyze textual information to identify risks and anomalous data in real time. In addition, a significant number of patents are based on the use of 1) neural networks for predicting financial fraud (e.g., Visa and Mastercard patents) and 2) technologies for detecting structural fraud (when large amounts are split into small ones to avoid regulatory control). Scientific works of this period, based on the analysis of patent data, confirmed the potential of AI in the fight against financial fraud, money laundering, and money laundering but drew attention to the need to integrate AI with other technological solutions (Barbu et al., 2024).

A key trend in patenting since the 2020s is the integration of AI with blockchain technologies, in particular, to detect anomalies in decentralized systems (for example, in cryptocurrency transaction data).

However, it should be noted that patents currently serve not only as legal documents certifying ownership but also as sources of information for analysis. In particular, Khachatryan and Muehlmann (2017) note that patent data are indicators of global innovation transformations. Key patented intellectual property objects serve as benchmarks on the basis of which strategic directions of innovation activity are determined (Geng & Yang, 2021). Patent databases provide access to a huge array of technical information that has significant potential for analytical research.

In addition, the analysis of patents by different characteristics allows you to analyze the differences. For example, according to the studies of Lee et al. (2020), **Wen et al. (2020)** and **Ervits & Zmuda (2018)**, the comparison of patent data by country, region, industry, and company allows you to identify and analyze gaps in innovative development.

As for the research analyzing patents for innovative technologies in the fight against financial fraud, a small number of such studies are worth mentioning. As a rule, researchers use only certain aspects of patent analysis as part of another study.

For example, Zhou et al. (2019) only note the possibility of using patent data to monitor the implementation of blockchain technologies in the financial sector; however, they do not describe the methodology for conducting such monitoring.

In a study by Lau et al. (2015), patent data is used to analyze the level of competitiveness of financial companies. The methodology developed by the authors for assessing the "innovation potential" serves as a unified approach to the analysis of other companies and other industries.

Poddar & Singh (2022) propose to use the indicator of the number of patents (as an indicator of the level of innovative development of a country) in the model for determining the level of economic development of a country. Note that the correlation-regression model still includes many indicators, which casts doubt on the expediency of including this indicator.

Bashir et al. (2022) emphasize conducting preliminary clustering of large patent data sets, which facilitates the process of analyzing them.

Thus, it can be argued that the analysis of patent data is an important source of information on existing innovative technologies aimed at identifying and countering financial fraud and ensuring financial security. However, the analysis of scientific literature demonstrated the lack of a comprehensive analysis (only fragmentary studies are available), inconsistency in some studies, and the presence of gaps.

The lack of a systematic approach to the analysis of patent data on innovative technologies aimed at identifying and countering financial fraud limits the effectiveness of the fight against financial fraud, money laundering and money laundering.

AIMS AND OBJECTIVES

The purpose of the article is to analyze the patent landscape of innovative technologies aimed at identifying and combating financial fraud, money laundering and money laundering, and to identify development trends, main patterns, gaps and promising areas for the implementation of patent solutions that may be useful for further scientific development and practical implementation.

To achieve this goal, the following tasks were defined:

- to select a tool for analyzing patent data on information technologies in the field of identification and counteraction to financial fraud;
- to conduct a dynamic analysis: to trace the key trends in patent data on information technologies in the field of identification and counteraction to financial fraud;
- to study the geographical distribution of patents on information technologies in the field of identification and counteraction to financial fraud;
- to analyze the patent activity of companies and key research organizations;
- to identify the most promising research areas;
- to identify research gaps and possible ways to address them.

METHODS

The research approach chosen in this article was based on the principles of dynamic, thematic (distribution of patents by thematic areas), spatial (distribution of patents by countries) and subjective analyses (distribution of patents by owners (corporations, research organizations, etc.)).

To analyze patent data on information technologies in the field of identification and counteraction to financial fraud, the online tool GetFocus was chosen, which is based on artificial intelligence and allows analyzing large amounts of patent data around the world (such as patent offices or international patent offices (e.g. USPTO, EPO, etc.)), identifying key patent holders in terms of spatial and temporal analysis, and generating the necessary information in the form of graphs, charts, etc.

The analysis covered patent applications filed between 1999 and 2024, which allowed us to study current trends in the development of innovations in the field of combating financial fraud and money laundering.

The selected data were aggregated by patent families, including patents registered in different jurisdictions but relating to the same invention. This approach helped to avoid duplication of data and provided a more accurate assessment of the scale of innovation.

The methodology of patent analysis involved a step-by-step implementation of the following actions:

1. Data collection, selection and processing - to ensure the purpose of the study, data selection was carried out in the areas of technologies related to the identification and counteraction to financial fraud. Data processing included removal of duplicate information and further data aggregation.
2. Performing dynamic analysis - assessing the chronological distribution of patents to determine the periods of highest activity.
3. Analyzing the distribution of patents by technological areas.
4. Conducting spatial analysis - creating a heat map of patent data by country and analyzing the data obtained.
5. Implementation of geographical analysis - data on patent activity were grouped by countries of registration, which allowed the creation of a heat map. The leading countries were identified.
6. Analysis of patent holders - identification of the ultimate owners of patents and identification of the organizations that registered the most patents. Analyzing 'patent families', i.e., groups of patents linked by a common innovative technological solution.
7. Identification of gaps and promising areas.

RESULTS

The analysis made it possible to identify a data set of 4553 patents of the latest technologies in the field of combating financial crimes, of which 49.7% (2266 patents) were published during 2023-2024. This dynamic reflects an increase in interest in the development and implementation of the latest technologies in the field of combating financial crimes.

The surge in patent registration activity is associated with the growth of cyber threats and the active transition of business to the digital environment, and the need for protection is associated with economic uncertainty.

As a result of the analysis of a random sample of 1000 patents, it was found that the main technologies used against financial fraud are machine learning and artificial intelligence, blockchain technologies, and predictive modelling (Figure 1).

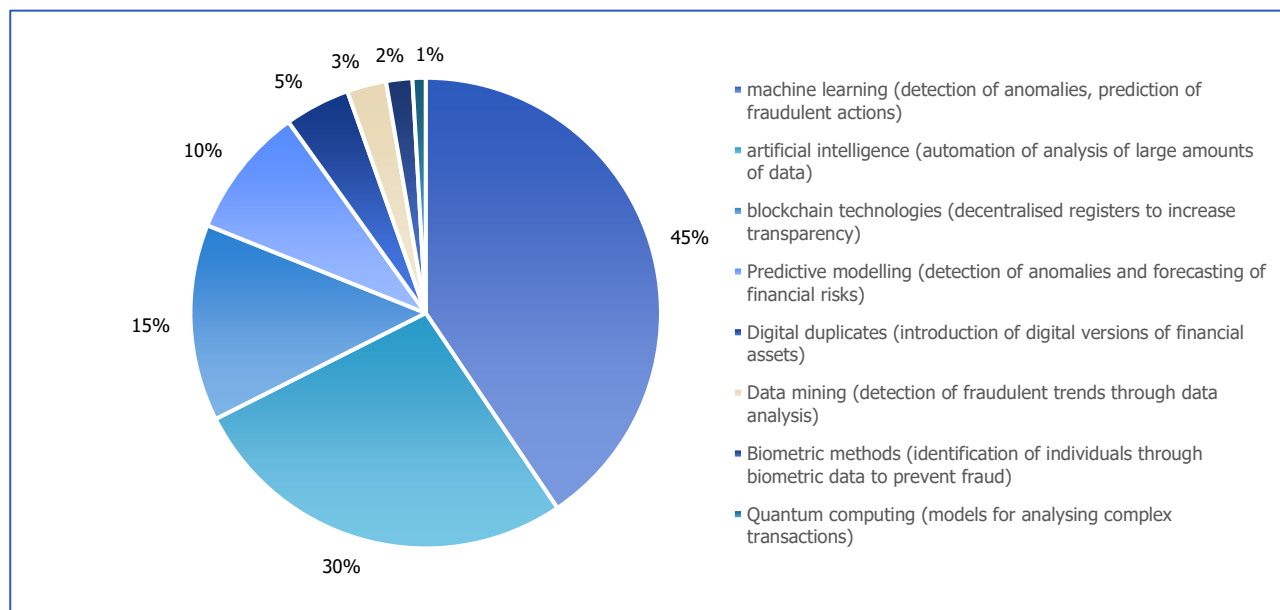


Figure 1. Distribution of patents by technological areas in the field of combating financial fraud.

Almost every thematic area shown in Figure 1 is related to the processing and analysis of large data sets. Thanks to innovative approaches developed in recent years, it has become possible to process and analyze significant amounts of data on transactions made and identify anomalies in them (which are evidence of fraudulent actions). And all of this is possible in real time. As for practical application, we note that, as a rule, such innovative technologies are used by banks and international corporations. However, a significant gap is that these technologies are inaccessible to most small and medium-sized banks, companies, etc., due to their low cost and lack of practical implementation tools.

Figure 2 shows a graph showing the distribution of published patents in the field of financial crime prevention technologies between different countries and their percentage contribution to the total amount.

Figure 2 demonstrates that the United States of America is the undisputed leader, with 2432 published patents, representing 53.3% of the total. A significant number of patents can be explained by the high level of economic development of the United States and its dominant position in the global financial sector. In addition, it is American companies that are the world leaders in the supply of financial services. In second place is China, which has 1076 patents (23.6%). Rapid economic growth and large-scale digitalization of the Chinese economy contribute to the active development of financial technologies. India, with 821 patent publications (18%), is also very active in this area. The presence of a significant number of patents registered through the World Intellectual Property Organization (WIPO) and the European Patent Office (EPO) indicates the global nature of the problem of financial crimes and the activity of European organizations in this area. Registration of patents at the international level allows companies to protect their developments in various jurisdictions, which is important in the context of the globalization of financial markets and cross-border financial transactions.

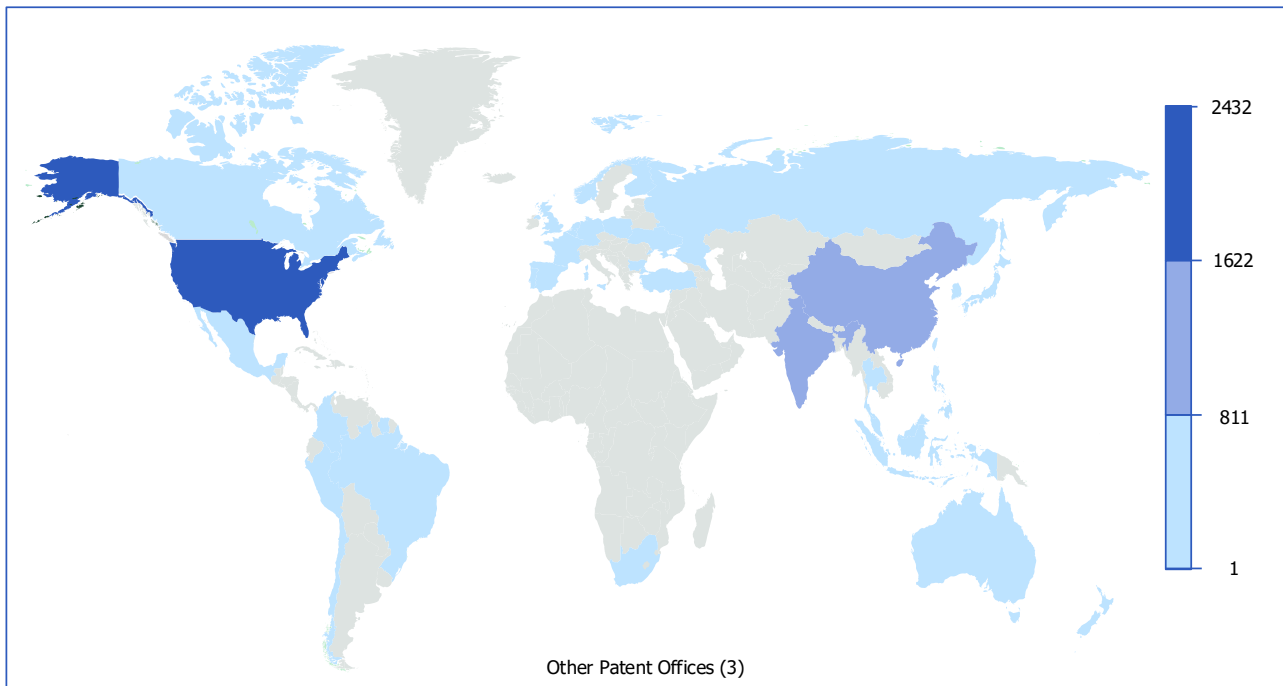


Figure 2. Number of published patents by country, 1999-2024.

Countries such as Canada, South Korea and Australia, each accounting for about 3% of the total number of patents, show a marked level of activity correlated with a high level of development of the digital economy. Known for its technological advancements and high internet penetration, South Korea is actively innovating in the financial sector. Canada and Australia, which have stable economies and developed financial infrastructures, are also implementing advanced technologies to ensure the security of financial systems.

In the context of geographical patent analysis, it should be noted that innovation activity and its patenting are closely related to the existing mechanisms of state regulation. As the practice shows, countries with a clear legal regulation of financial activities and a more prose policy of state patenting have a larger number of patented intellectual property objects. At the same time, countries with stricter legal restrictions, an unstable economic system or unstable legislation have fewer patents.

In addition, the analysis shows that for entities seeking to patent the developed innovative solutions, guarantees of protection of their developments are important, so quite often, they prefer either government organizations or international jurisdictions.

According to this data sample, Ukraine has three patents issued between 2021 and 2024, two of which belong to the International Scientific and Educational Center for Information Technologies and Systems of the National Academy of Sciences and the Ministry of Education and Science of Ukraine and Tentens Tech LLC patents one. The company registered the patent in 2023. Their patented intellectual property refers to an innovative cybersecurity system for financial institutions, which is built on the principles of artificial intelligence and consists in detecting, preventing and countering fraudulent activities in real-time. The system analyzes behavioural and transactional data, providing a high level of protection against cyberattacks.

Based on the analysis, it can be concluded that the indicator of the number of patents is directly proportional to the level of economic development of the country (i.e., the higher the level of economic development of the country and the more developed the digital information structure of the country, the greater the volume of registered patents for technologies for the prevention of financial crimes.

It is also worth mentioning that the development of innovative technologies for detecting, preventing and combating financial fraud is not limited to individual countries. The global nature of financial markets has led to an increase in the number of patents developed by different countries. International cooperation in the field of fintech is becoming critically important because fraudulent schemes are often not limited to the borders of one jurisdiction. For example, joint projects of the United States, EU countries, and Asia are aimed at creating innovative solutions to combat global financial threats.

As practice shows, "partnership patents" are the most effective and universal since they take into account various conditions and combine resources, knowledge, etc.

Subjective analysis (analysis by owners) of the activity of patent publications is presented in Figure 3.

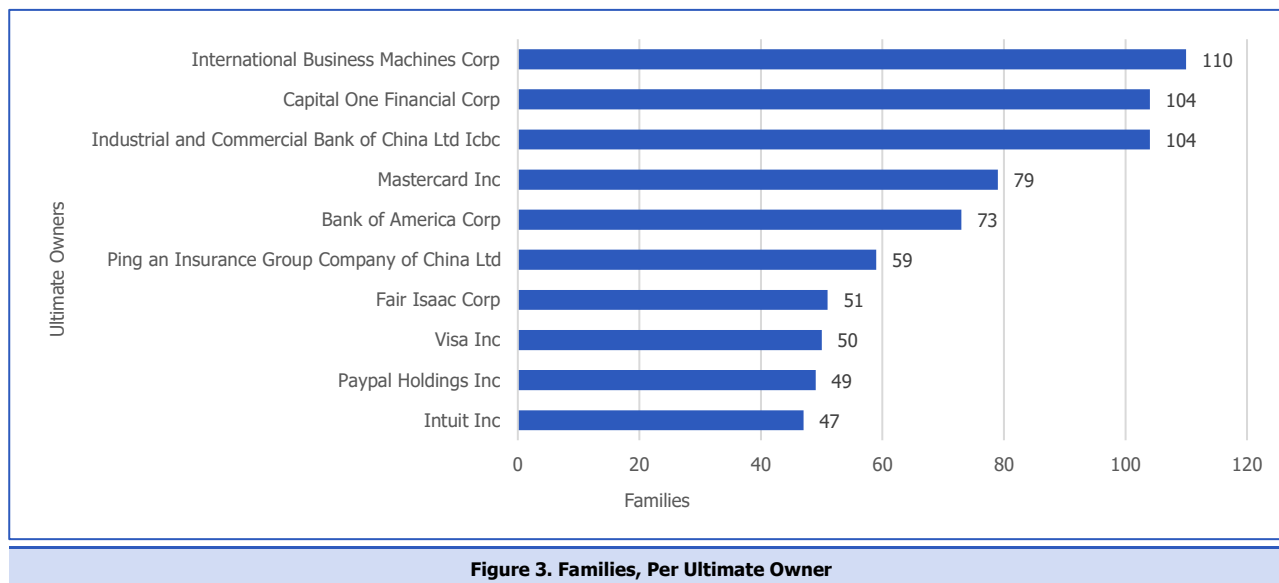


Figure 3 shows that the top 10 companies with the most published patents related to financial crime prevention technologies include IBM, Capital One, ICBC, Mastercard, Bank of America, Ping An, FICO, Visa, PayPal, and Intuit.

Two of the ten organizations are Chinese: ICBC (Industrial and Commercial Bank of China) and Ping An; the remaining eight organizations are American: IBM, Capital One, Mastercard, Bank of America, FICO, Visa, PayPal and Intuit.

Most of these companies are leading financial institutions or technology companies that are active in the financial sector. Traditional banks such as Capital One, Bank of America, ICBC (Industrial and Commercial Bank of China), and Ping An, along with companies specializing in payment systems and financial technologies such as Mastercard, Visa, and PayPal, are investing heavily in the development of technologies to combat financial crimes. This shows that financial institutions are aware of the critical importance of security in their operations and are committed to protecting themselves and their customers from fraud risks. The presence of IBM and FICO, which are known for their expertise in information technology and data analysis, points to the growing role of cutting-edge technologies such as artificial intelligence, machine learning, and big data in preventing financial crime. Known for its financial software solutions, Intuit also makes significant contributions to the development of tools to ensure financial security.

Also, it should be noted that startups and small businesses also play an important role in innovating, especially in the field of financial technology. Due to their flexibility and focus on the latest technologies, they often become pioneers in the implementation of solutions based on artificial intelligence, blockchain, and predictive modelling. For example, many startups are working on creating tools for analyzing big data in order to identify financial anomalies. Despite limited resources, they actively register patents to protect their developments and attract investment. However, unlike large corporations, startups often face difficulties due to the high cost of patenting and complex procedures. This limits their ability to reach more markets. At the same time, startups often cooperate with large companies or research centres to jointly develop solutions. Such cooperation allows them to optimize costs and speed up the process of entering the market, but at the same time, as a rule, their "name remains in the shadows".

One of the key patterns of modern patent activity is the growing interest in the development of technologies that integrate several innovative approaches. For example, the combination of artificial intelligence (AI) with authentication methods allows for the creation of more efficient systems for identifying individuals and controlling transactions. In the financial sector, this is especially relevant to prevent the use of stolen or forged documents in fraudulent transactions.

The last few years of patent activity have been marked by significant advances in financial fraud identification technologies, which focus mainly on the integration of artificial intelligence and machine learning. One of the key innovations is real-time fraud detection systems based on artificial intelligence. These systems use machine learning algorithms to monitor and prevent fraudulent activities, often including transaction monitoring modules and instant notification systems. Machine

learning techniques are also being developed to detect anomalies in transactions, such as money laundering or credit card fraud. These models analyze transaction behaviour and use deep learning model architectures, including recurrent neural networks (RNNs) and long-term, short-term memory (LSTM) networks.

Also, an important step in identifying and countering financial fraud was the development of innovative solutions that combine artificial intelligence algorithms and blockchain technology. In particular, such innovative solutions are only becoming relevant, which is associated with the growth in the number and intensity of cyber threats and the need to analyze decentralized systems (i.e., analyze cryptocurrency transactions).

In addition, neurosymbolic artificial intelligence systems have emerged. This type of innovative technology combines neural networks with symbolic inference to improve fraud detection efficiency, with a focus on interpretation and reliability in different sectors.

Despite the relatively active patenting of innovative technologies in the field of identification, counteraction and prevention of financial fraud, there are many gaps, in particular, there is no clear algorithm for implementing such innovative solutions in state practice. This is important because the fight against financial fraud should primarily be regulated at the state level. And most of these innovative solutions remain on paper. For the successful application of the developed innovative technologies, pilot projects are needed, which, again, require additional financial investments.

However, government agencies often do not have the resources or institutional support to conduct such tests. Also, quite often this situation occurs due to outdated IT technologies used by state bodies, for the adaptation and updating of which additional financial resources are needed, which, as a rule, the state does not have.

In addition, the effective implementation of many innovative solutions requires close cooperation between different government agencies (e.g., tax, customs and financial authorities). However, due to the weak integration of these structures, the introduction of patented technologies is much more complicated.

These challenges point to the need to develop specialized mechanisms for technology transfer from the patent base to the public sector, create regulatory and legal support for innovation activities, and strengthen cross-sectoral cooperation.

DISCUSSION

Thus, the study results demonstrate that the methodology proposed in this article for analyzing patent data of innovative technologies aimed at identifying and countering financial fraud, which provides for dynamic analysis, analysis by technological areas, geospatial analysis and analysis by patent rights holders, is effective. The methodology is based on the results of previous research (Danėnas, 2015) while introducing new insights into the peculiarities of patent data analysis.

In contrast to traditional methods (Geng & Yang (2021), Louzada & Ara (2012)) which focus mainly on the development of approaches to identify and combat financial fraud based on the analysis of existing data on financial crimes, the approach proposed in this study proposes to consider patented innovative solutions as benchmarks, followed by consideration of the possibilities of their implementation.

The innovation of the proposed methodology lies in the complex application of dynamic, thematic, geospatial and subjective analysis approaches, as well as an online tool built on the principles of AI – for data visualization.

It is also important to note that the proposed methodology excludes subjectivism in analyzing patent data, which was typical for other studies, particularly Tang et al., 2019. In general, the proposed methodology is characterized by its versatility and the possibility of adapting to different industries.

In addition, the study's results correlate with the conclusions made in the scientific work of Poddar & Singh (2022) on the importance of patent data for strategic planning of innovation activities.

The analysis of patents by owners empirically confirmed the conclusions provided in the study by Bashir et al. (2022) on the importance of patent data in assessing the competitive potential of organizations.

The results complement the findings made in the scientific paper of Djouadi et al. (2024) on the key role of innovative technologies such as AI and blockchain in ensuring financial security and countering financial fraud and money laundering.

Compared to the work of Lau et al. (2015), our work covers the current risks associated with cryptocurrencies that have not been considered in previous studies.

However, the research presented in this article has a number of limitations that should be taken into account, in particular, patent data should be taken exclusively from one source, which, although built on the principles of AI, does not guarantee one hundred percent result. When conducting further research for patent analysis, it is planned to cover several data sources (for example, analysis of data from state registers).

In addition, unlike the study by Zhou et al. (2019), the study does not cover an empirical assessment of the implementation of patented technologies in practice.

Overall, the results of this study are consistent with existing theoretical concepts while offering new perspectives for further research.

CONCLUSIONS

This study developed a methodology and analyzed the patent landscape of innovative technologies aimed at identifying and combating financial fraud, money laundering and money laundering, based on dynamic, thematic, spatial and subject (by patent rights holders) analysis, as well as graphical analysis based on AI.

The dynamic analysis demonstrated a relatively small number of patents in the context of the studied subject matter worldwide (4553), of which almost half (49.7%) were registered in 2023-2024. This growth can be attributed to the availability and increased adoption of AI in all areas, as well as the growth of cyber threats and the need for protection due to economic uncertainty.

The analysis of a random sample of 1,000 patents revealed that the main technologies used in the field of financial fraud are machine learning, artificial intelligence, blockchain technologies, and predictive modelling.

The results of the geospatial analysis study showed that the leading countries in this area are the United States, China and India, which demonstrate the largest number of registered patents.

Based on the analysis of data on patent rights holders, it was found that the key patent holders are companies such as IBM, Capital One Financial Corp, Mastercard Inc, which are actively investing in innovative solutions in the field of prevention, identification and counteraction to financial fraud.

Further research could be focused on:

- analyzing patent data on innovative technologies in the field of identification, prevention and counteraction to fraudulent activities with cryptocurrency transactions;
- analysis of patent data on the prevention of financial crimes based on the integration of innovative approaches to data authentication and artificial intelligence;
- analyzing patent data in the context of the subject matter under study separately by country (for example, in the context of Ukraine);
- conducting an empirical assessment of the implementation of patented technologies in practice and their alignment with existing regulatory requirements.

Such studies will be useful not only for the financial sector but also for other industries related to the fight against fraud.

ADDITIONAL INFORMATION

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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АНАЛІЗ ПАТЕНТНОЇ ІНФОРМАЦІЇ ЩОДО ІННОВАЦІЙНИХ ТЕХНОЛОГІЙ У ЦАРИНІ ВИЯВЛЕННЯ ФІНАНСОВОГО ШАХРАЙСТВА, ЗАПОБІГАННЯ ТА ПРОТИДІЇ ЙОМУ

Сучасний фінансовий сектор стикається з масштабними викликами в боротьбі з шахрайством через зростання цифрових транзакцій, складність злочинних схем і розвиток кіберзагроз. У зв'язку з цим інноваційні технології виявлення фінансового шахрайства та протидії йому набувають вирішального значення для забезпечення економічної стабільності й довіри до фінансових установ. Метою дослідження є аналіз патентного ландшафту інноваційних технологій, спрямованих на ідентифікацію фінансових шахрайств і протидію їм, відмиванню коштів та легалізації незаконних доходів.

Запропонована методологія аналізу полягає в комплексному застосуванні підходів динамічного, тематичного географічного та суб'єктного аналізів. Результати базуються на використанні онлайн-інструмента GetFocus, що побудований на засадах ШІ та надає доступ до найбільших міжнародних патентних баз даних світу. Результати проведеного динамічного аналізу продемонстрували відносно незначну кількість патентів у розрізі досліджуваної тематики в усьому світі (4553 шт.), з яких майже половину патентів (49,7%) – було зареєстровано протягом 2023-2024 років. Таке зростання пояснене інтенсифікацією кіберзагроз протягом досліджуваного періоду. Визначено ключові тематичні напрями патентів: використання машинного навчання, штучного інтелекту, технологій блокчейн, прогнозне моделювання. Географічний аналіз продемонстрував, що країнами-лідерами в цій області є США, Китай та Індія, які демонструють найбільшу кількість зареєстрованих патентів. Суб'єктний аналіз засвідчив, що ключовими патентотримачами є такі компанії, як IBM Corp, Capital One Financial Corp, Mastercard Inc, які активно інвестують в інноваційні рішення в царині ідентифікації фінансових шахрайств, запобігання та протидії їм. Перспективними напрямками дослідження визначено дослідження патентів щодо інноваційних технологій у царині ідентифікації шахрайських дій із криптовалютними транзакціями, запобігання та протидії їм; проведення аналізу патентних даних за країнами та

здійснення емпіричної оцінки впровадження запатентованих технологій на практиці, їх узгодження з наявними регуляторними вимогами.

Ключові слова: патентний аналіз, інноваційні технології, фінансове шахрайство, інтелектуальна власність, технологічні інновації, запобігання шахрайству, патент, фінансова безпека, аналіз даних, кібербезпека

JEL Класифікація: G14, O31, O34, K42