E-ISSN: 3025-0994
Halaman 2902-2916
Volume 4 Nomor 4 Tahun 2026

A Systematic Review of the Fraud Triangle Theory: Theoritical Mapping and Future Directions (2016-2026)

Suci Mawardha[1], Sambas Ade Kesuma[2], Boy Fernandes Sihombing[3]

[1,2,3] Program Studi Akuntansi, Fakultas Ekonomi dan Bisnis, Universitas Sumatera Utara, Medan, Indonesia
e-mail: sucimawardha@students.usu.ac.id sambas@usu.ac.id
boyfernandes@students.usu.ac.id

Abstract

Fraud is still an important problem in the fields of accounting, auditing, public sector, banking, and corporate management, while the application of the Fraud Triangle Theory in previous research is very diverse and the results are not uniform. This study aims to map the context or sector of use of the theory, the models and analytical approaches related to it, and the research gaps that still exist. The method used was a systematic literature review of articles published from 2016 to 2026 that were indexed by Scopus. Of the 278 articles that were initially searched, 61 articles met the criteria and were analyzed based on country, sector, method, and results. The results showed that this theory was most widely used in the corporate sector and public companies (23 articles), followed by the public sector (9 articles), and began to expand to banking, education, and technology. The analytical approaches found include quantitative, qualitative, conceptual, and computational, with some studies integrating these theories with other frameworks such as the Fraud Diamond Theory. The gaps identified include differences in the operational definitions of the components of the theory, uneven representation of contexts, and differences in evaluation sizes that make it difficult to compare results. In conclusion, the application of the Fraud Triangle Theory has extended to various sectors, but the comparability of the findings is still limited. Further research is recommended to develop consistent measurements of the components of the theory and test its application in sectors that have not been extensively studied, such as micro, small, and medium enterprises.

Keywords: Fraud Triangle Theory, Fraud, Systematic Literature Review, Sector Of Application, Analytical Approach

INTRODUCTION

In the current era, the problem of fraud is still a crucial problem in various fields. The fields included are accounting, auditing, the public sector, banking, and corporate management. Fraud behavior can be in the form of misuse of assets, manipulation of financial statements, irregularities in procurement, and some unethical behavior in the work environment. Understanding the factors that encourage the occurrence of fraud is needed to help in risk assessment, strengthening internal control, and developing fraud prevention and detection efforts. One of the theories that is widely used to understand a person's motivation for committing fraud is the Fraud Triangle Theory (FTT).

The Fraud Triangle Theory originated from the research of Donald R. Cressey discussing fraudulent acts committed by a person who is entrusted to take care of funds or assets. This theory explains three things related to why someone might commit fraud, namely pressure, opportunity, and how to justify the action. Pressure is a problem or impulse that a person feels, an opportunity arises when there is a situation that allows dishonest actions to be committed, while rationalization is a way to justify such actions. These three components are the basis for evaluating various risk factors for fraud in accounting research or other fields.

The Fraud Triangle Theory is widely used and its development remains related to the debate about the origins and limitations that exist. Tickner and Button (2021), in their article titled Deconstructing the Origins of Cressey's Fraud Triangle, said that Cressey's ideas are related to Svend Riemer's research on financial irregularities. The article also criticizes the limitations in the application of the Fraud Triangle theory, especially since the initial research was based on the context of embezzlement perpetrators who were only limited to certain periods, regions, and characteristics. In addition, the existence of pressure and opportunity cannot always explain why someone chooses to cheat, while others in the same situation do not. Therefore, the Fraud Triangle Theory can still be used as a framework to understand the reasons for fraudulent actions, but in its application it must pay attention to the research situation and its lack of explanation.

In its development, research on Fraud Triangle Theory shows various applications and results obtained from direct research, although the results are not entirely the same. Based on the results of previous research collected in the mapping article, Zulaikha, Ghozali, and Hadiprajitno's (2016) research on fraud in government procurement in Indonesia shows that pressure does not significantly affect the occurrence of fraud, but several other factors related to the quality of procurement teams and system weaknesses have a significant influence. On the other hand, research conducted by Said et al. (2017) in the Malaysian banking sector revealed that the opportunity and rationalization factors have a significant influence on employee corrupt behavior, while the pressure factor does not show a significant influence. Research by Said et al. (2018) conducted on the Malaysian police showed that pressure, opportunity, and rationalization factors had a positive and significant impact on the improper use of assets, while the level of religiosity had a negative and significant impact. The difference in results showed that the influence of each component of the Fraud Triangle Theory could be different depending on the object, environment, additional variables, and characteristics of the study.

In addition to the differences in results, the mapping of the article shows that research on Fraud Triangle Theory has developed beyond the usual fraud context. Topics covered include fraud in financial statements, misuse of assets, corruption in the public sector, corrupt acts in banking, immoral behavior, and the use of computational techniques to analyze and detect fraudulent acts. In terms of methods, the research discussed also uses quantitative and qualitative approaches, case studies, and computational techniques. This diversity shows that the Fraud Triangle Theory is used in a variety of contexts, but it also requires us to understand how each component is applied and how the results of the research differ in each field. Other fraud theories, such as Fraud Diamond, also show an attempt to expand the explanation of fraud by paying attention to factors beyond the initial three components.

Based on these conditions, it is necessary to conduct a Systematic Literature Review (SLR) in order to understand the development of research on Fraud Triangle Theory in a more structured manner. Previous research that is in various contexts and uses various approaches needs to be looked at neatly so that the pattern of how to write, the use of the Fraud Triangle Theory part, the methods used, and the uniformity of the research results can be known. This Systematic Literature Review (SLR) refers to the PRISMA 2009 approach to explain the steps in identifying, filtering, evaluating the feasibility, and selecting the articles used. The research questions were made using the PICO approach so that the research focused more on the object or issue of fraud, the components of Fraud Triangle Theory, the comparison between the contexts or approaches used, and the results of the research became clearer and more directed.

To address the issues mentioned above, this review was guided by the following research questions (RQs):

RQ1: In what context or sector is *the Fraud Triangle Theory* used?
RQ2: What types of models and analytical approaches are related to *Fraud Triangle Theory* ?
RQ3: What are the theoretical, contextual, and methodological gaps contained in the current research on *Fraud Triangle Theory*?

This study aims to analyze the development of *Fraud Triangle Theory* research based on mapped articles, identify how *pressure*, *opportunity*, and *rationalization* are used in previous research, and examine patterns of similarities and differences in reported results. This research also seeks to identify limitations and gaps in research that can be the basis for future research. Through this synthesis, it is hoped that a clearer picture of FTT's contribution in explaining *fraud*, variations in its application in various contexts, and aspects that still need further development.

RESEARCH METHODS

This study used the *Systematic Literature Review* (SLR) method to search, select, and analyze previous research related to the Fraud Triangle (FTT) theory. The article selection process followed the 2009 PRISMA guidelines which contained systematic reporting items for systematic review and meta-analysis, while the creation of research questions was carried out using the PICO approach, which included population, intervention or exposure, comparison, and outcomes. The literature search was conducted using the Scopus database, by entering the keyword "*fraud triangle theory*" and limiting the range of years of publication from 2016 to 2026. The selection criteria included the year of publication, type of article, use of English, and availability of open access. The articles obtained are then selected based on the research criteria and the full text is available for analysis.

Based on the PRISMA 2009 flowchart, the initial search yielded 278 articles from Scopus. After that, 183 articles were removed through a screening process based on the criteria that had been set, leaving 95 articles for the next check step. Of the total, 34 articles were not included because the full text or open access was not available, the article could not be downloaded, or the journal was no longer indexed by Scopus. After going through the selection process, 61 articles were obtained which were used as the final sample in the literature synthesis and mapping of previous research. The number of articles at each stage is presented in the PRISMA 2009 flowchart.

A total of 61 articles were analyzed based on the information recorded in the concept map, which included the year the research was conducted, the country, the author's name, the title of the research, the theory used, the research method, the variables studied, the research results, and additional notes from the researcher. The data was used to create a frequency table and find the development pattern of *Fraud Triangle Theory* research, how to use *the pressure, opportunity,* and *rationalization components*, various variations of research methods, as well as similarities and differences in research results. The PICO approach is used to guide the synthesis process of the fraud object or problem being studied, the components *of the Fraud Triangle Theory* analyzed, comparisons between contexts or research approaches, and reported results. The results of the analysis are then used to determine the direction of research that is trending and parts that have not been widely researched, so that it can be a reference in building further research.

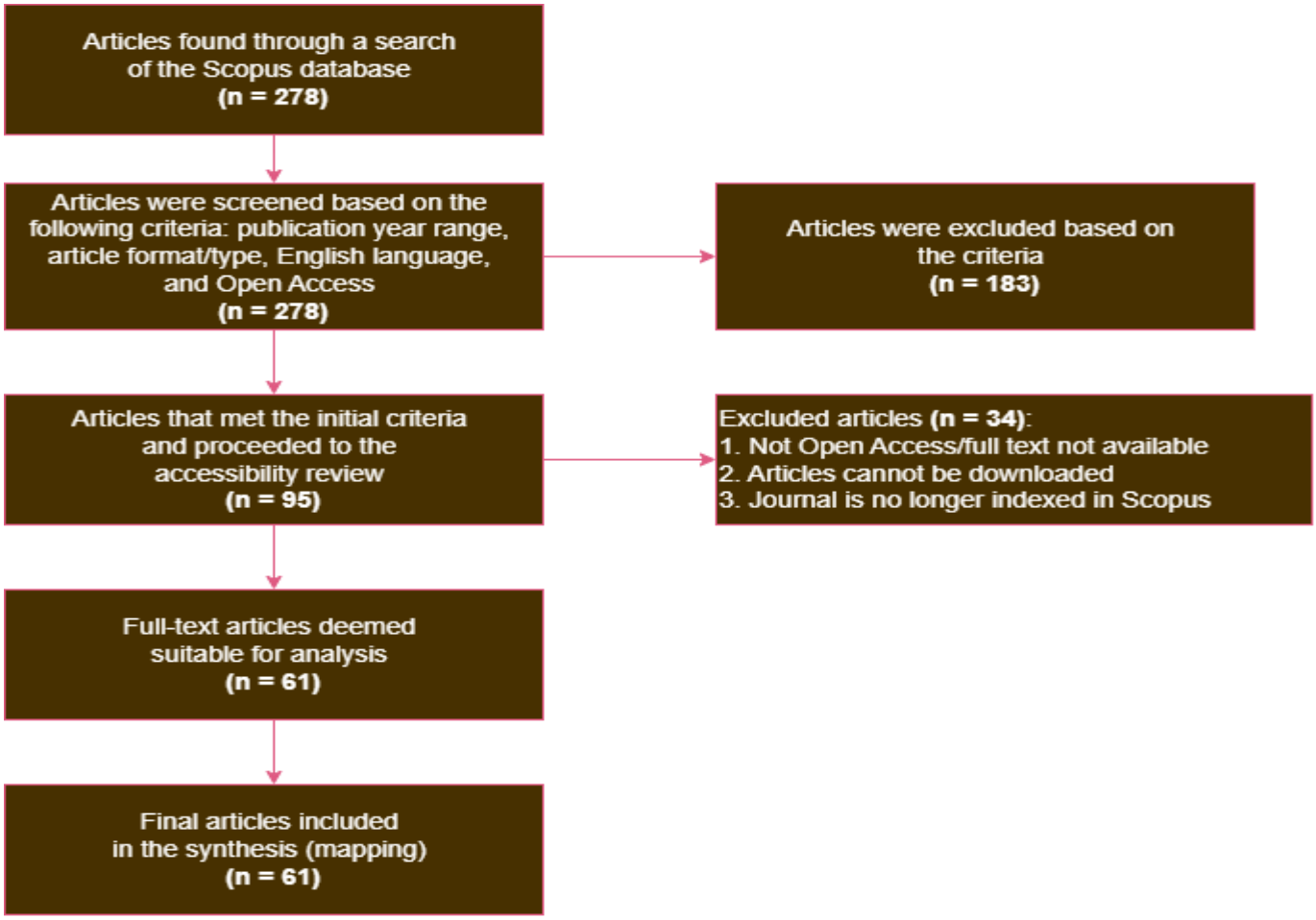


Figure 1. PRISMA Flow Chart of the Study Selection Process

The determination of the criteria used to include or exclude articles is carried out so that the selected articles in the *Systematic Literature Review* (SLR) are in accordance with the objectives and research questions regarding *Fraud Triangle Theory* (FTT). This criterion is used as a guideline in the process of filtering literature using the PRISMA 2009 method, starting from selection based on the characteristics of the publication to evaluating the suitability of the topic and the availability of the complete text.

The first criterion is the publication period, which is articles published in the range of 2016 to 2026. This range is used to limit research on the development of *the Fraud Triangle Theory* to only a predetermined period. Articles published outside of that range are not included in the study. Second, the language used in publications is limited to English only in order to remain consistent in the literature review and preparation process. Therefore, articles written in languages other than English will not be selected.

Third, the availability of access and complete text is a consideration in selecting articles. Eligible articles must have open access and full text that can be viewed and checked. This provision is necessary so that information about theories, methods, variables, and research results can be adequately checked. Articles with limited access or full text that are not available are excluded based on the team's selected notes. Fourth, only the article document type is included, while other types of documents are not involved so that the characteristics of the analyzed source remain in accordance with the predetermined criteria.

Fifth, the accuracy of the topic is determined by looking at the extent to which the article is related to the Fraud Triangle Theory and the research questions that have been formulated using the PICO approach. Articles are included if they use, discuss, test, or apply *the Fraud Triangle Theory* in a context that is appropriate to the research topic being reviewed. The

relevance includes a discussion of the components of pressure, opportunities, and rationalization, as well as its application in understanding or analyzing acts of corruption. Articles that do not fit the research topic are excluded from the synthesis process.

By applying all these criteria, a collection of articles is then analyzed based on a map of previous research. This map includes the year of publication, country, author, title, theory, method, variables, results, and research notes. This method is intended to ensure a synthesis of literature that fits the scope of the research. It allows for a systematic analysis of the development pattern of publications, the application of the components of the Fraud Triangle Theory, method variations, equations and differences in results.

Table 1. Inclusion and Exclusion Criteria

Category	Inclusion	Exclusion
Publication period	Published from 2016 to 2026	Outside the specified period
Language	English	Not in English
Access	The full open-access text is available for review	Restricted access or full text not available, according to the selection team's notes
Document Type	Article	Document types other than articles
Relevance of the Topic	Use, discuss, investigate, or apply the theory of the fraud spiral in a way that is relevant to the exam questions.	Does not meet the review's topic focus

According to the results of the mapping of 61 articles of the research sample, publications on the Fraud Triangle theory came from various publishers with different numbers. The recapitulation results showed that Elsevier was the publisher with the most publications, with 11 articles, or 18.03% of the total publications. Furthermore, Emerald and MDPI published 7 articles (11.48 percent), followed by Virtus Interpress with 5 articles (8.20 percent), SAGE Publications with 4 articles (6.56 percent), and Taylor & Francis with 3 articles (4.92 percent). De Gruyter and LLC CPC Business Perspectives each published 2 articles, each accounting for 3.28% of the total publications. Meanwhile, twenty additional articles were published by various publishers, with a contribution of one article from each publisher.

The distribution shows that research on Fraud Triangle Theory is spread across multiple channels of scientific publications rather than concentrated on a single publisher. Nonetheless, the largest publication in the set of articles analyzed is distributed by Elsevier. The diversity of publishers indicates that the Fraud Triangle Theory research is published on various academic platforms. However, the distribution does not directly show the quality of the publication or the degree of influence of each publisher on the development of the theory; it only shows the distribution of articles by publisher in the study sample.

To complete the analysis of the characteristics of the literature of this study, mapping by publisher is used. This information is used in conjunction with other characteristics, such as year of publication, country, research method, variables, and research results, to provide an overview of the distribution of literature discussing the Fraud Triangle Theory during the period 2016–2026.

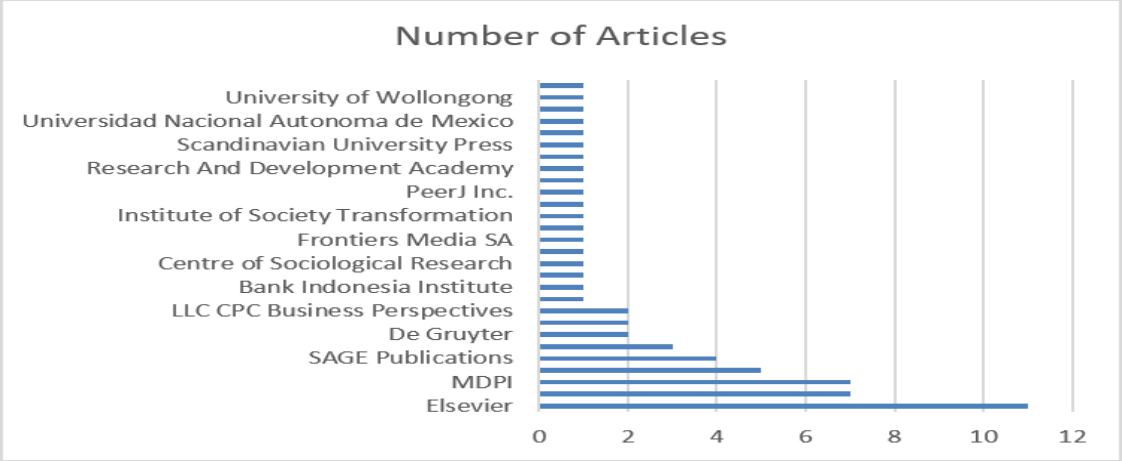


Figure 2. Soure Database Publisher

Previous research covered various countries and geographical contexts, according to mapping results from 61 articles discussing Fraud Triangle Theory (FTT). The columns on the map showing the context or location of the research in each article determined the distribution of countries in this study. The results of the recapitulation showed that the two countries with the highest number of articles were Indonesia and China (China), each with 12 articles, or 19.67% of the total articles. Malaysia and the US also contributed 5 articles, or 8.20% of the total. Vietnam, Wales, and the United Kingdom each recorded 3.92% of the articles.

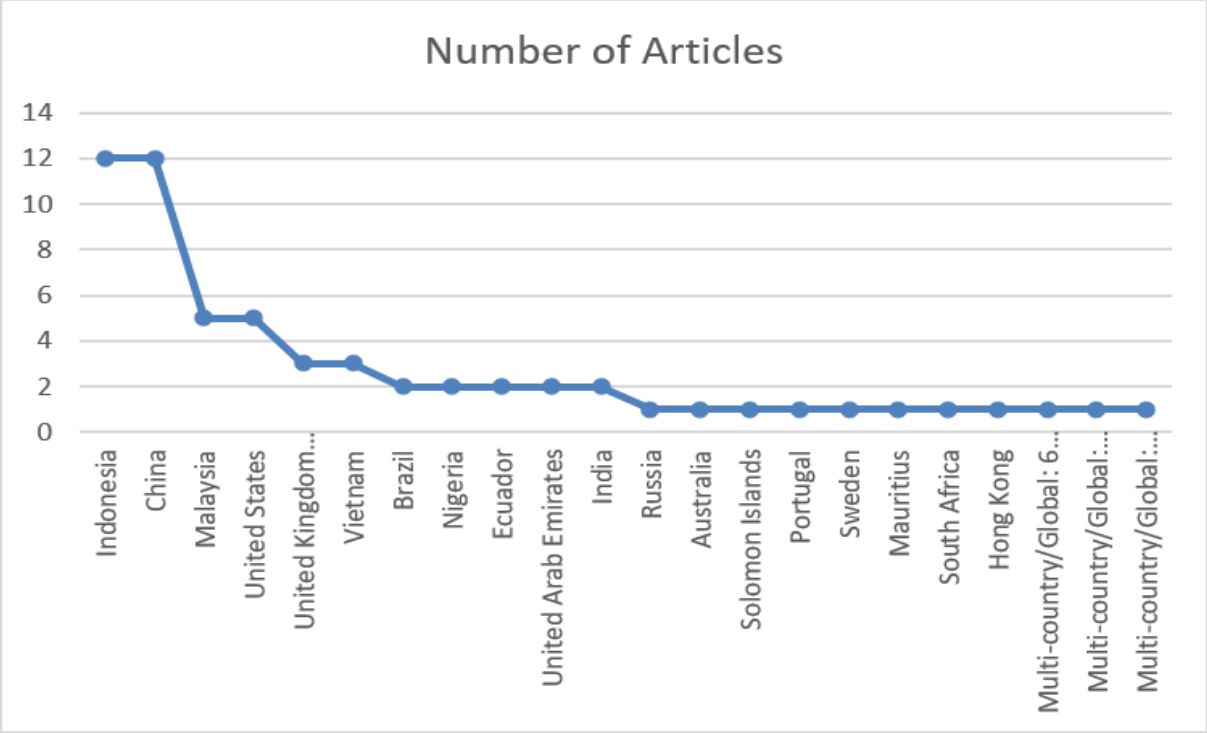
The number of publications in other countries is less. Brazil, Nigeria, Ecuador, the United Arab Emirates, and India each had 2 articles or 3.28%, while Russia, Australia, the Solomon Islands, Portugal, Sweden, Mauritius, South Africa, and Hong Kong each had 1 article or 1.64%. In addition, there were three articles with cross-country or global coverage, namely research on six ASEAN countries, China, and Southeast Asia, and research with cross-country or global coverage. One article, or 1.64% of the overall sample, represented each of these categories.

The distribution shows that the Fraud Triangle Theory research has a diverse geographical scope in the literature pool analyzed. Indonesia and China are the most popular places for mapping research, followed by Malaysia and the United States. Many articles focusing on Indonesia show that the Indonesian context is quite dominant in this study sample. Many articles from China also show that the literature reviewed is highly representative of the country. However, the dominance of the two countries only describes the distribution of articles in this SLR sample and cannot be used to say that the Fraud Triangle Theory research is most widely conducted worldwide in both countries.

The existence of articles from various countries shows that the application of Fraud Triangle Theory can be studied in various contexts. Geographical differences are important to note when comparing the use of pressure, opportunity, and rationalization as well as the results of previous research. However, country differences alone are not enough to explain the difference in results, so it is necessary to look further at the objects, methods, variables, and findings of each study.

The country mapping provides an overview of the geographical distribution of the 61 articles that passed the selection in this SLR. The results complement the analysis based on the year of publication, publisher, research method, and components of the Fraud Triangle Theory. All of these mapping are the basis for understanding the development of Fraud Triangle Theory research, looking at the patterns of findings in various contexts, and identifying aspects that still need further research.

Figure 3. Distribution of studies by geographical region.



RESULTS AND DISCUSSION

RQ1: In what context or sector is *the Fraud Triangle Theory* used?

A review of the study of 61 articles shows that the Fraud Triangle Theory (FTT) can be used in many sectors and is not only focused on accounting and finance. From the results of the mapping, it was found that the sectors that most often appeared were corporations and public companies, which were 23 articles (around 38%). Studies in this sector are generally about financial report fraud, corporate governance, and recently also ESG or greenwashing issues. Next is the public sector or government with 9 articles (around 15%), which mostly research government procurement, local governments, and corruption of civil servants, especially in Indonesia. Meanwhile, 6 articles (about 10%) are conceptual or cross-sectoral, and 5 articles (around 8%) are in the banking sector which usually examines employee fraud. In addition, FTT has also begun to be used in the fields of education (4 articles), technology and cybercrime (4 articles), auditing and the accounting profession (3 articles), and non-profit and religious institutions (3 articles). There are also several special contexts, such as construction megaprojects and family crimes (3 articles). Interestingly, the MSME sector has only been researched in 1 article, so it can be said that it is still rarely touched. From this, it can be seen that FTT is no longer limited as a theory to explain financial statement fraud, but has developed into a framework used to explain deviant behavior in various fields, ranging from student academic fraud to cyber fraud.

RQ2: What types of models and analytical approaches are related to *Fraud Triangle Theory* ?

The results of the mapping of 61 articles show that *the Fraud Triangle Theory* is used in a variety of theoretical models and analytical approaches. These variations are not only seen from the research method, but also from the function of the theory in each study. Some articles use *the Fraud Triangle Theory* to test the relationship between *pressure*, *opportunity*, *rationalization*, and fraud events or tendencies. Other articles integrate the theory with other theoretical frameworks, develop conceptual models, or use it as a basis for computational-based fraud analysis and detection. Therefore, analytical models and approaches in mapping need to be differentiated based on the research objectives and the way the theory is applied.

First, an empirical quantitative approach to test the relationship between variables**.** In this approach, *Fraud Triangle Theory* is used to explain the relationship between factors related to fraud and the variables that are the focus of the research. The analysis techniques recorded in the mapping include multiple linear regression and panel data regression with *fixed effects* models. For example, research on the perception of corruption by perpetrators uses a quantitative approach to test the relationship between pressure, opportunity, and rationalization with corruption. Meanwhile, research on digital transformation and corporate breaches uses panel data regression to analyze the relationship between digital transformation and corporate breaches in a framework that also involves *Fraud Triangle Theory*.

Both studies show that the application of *Fraud Triangle Theory* in quantitative research does not always have the same analytical objectives. Research that directly examines the components of the theory focuses on the direction and significance of each component's relationship with fraud. On the other hand, research that combines the theory with other variables or frameworks can examine a broader relationship according to the research model. Thus, the interpretation of the results needs to be based on the variables that are actually tested, not solely on the inclusion of *the Fraud Triangle Theory* in the theoretical foundation. The mention of a component also cannot be directly considered as evidence that it has a significant effect on fraud.

Second, a qualitative approach to understanding the context in which fraud occurs. Mapping also includes research using semi-structured interviews and document analysis. One example is a public sector study in the Solomon Islands that combines interviews with accounting and audit practitioners as well as an examination of historical documents, financial statements, and audit reports. In contrast to the quantitative approach that examines the relationship between variables, the qualitative approach provides an understanding of how factors related to pressure, opportunity, and rationalization arise in a particular organizational context. Its contribution lies in the explanation of processes, experiences, and institutional conditions that cannot always be revealed through statistical analysis. However, these contextual findings cannot be treated as a measure of the magnitude of a component's influence on fraud.

Third, conceptual approach and integration of fraud theory**.** A number of articles use *Fraud Triangle Theory* along with other theoretical models, including *Fraud Diamond Theory* and *Fraud Hexagon Model*, as well as companion theories according to the focus of research. The integration shows that *Fraud Triangle Theory* is not always used as the only framework to explain fraud. The addition of elements such as *capability* and *collusion* reflects an effort to expand theoretical explanations of the conditions related to the occurrence of fraud.

In addition to theoretical integration, mapping includes conceptual articles that develop *the Comprehensive Layered Embezzlement and Fraud (CLEF) Model*. The model combines elements of pressure, opportunity, rationalization, ability, collusion, and ego with psychological, organizational, and external environmental factors. However, the article has not been successful in empirical validation because the number of expert responses obtained is insufficient. Therefore, the CLEF model in mapping is more appropriately understood as a conceptual development, not as a model that has been proven to have empirical predictive capabilities.

Fourth, a computational approach to fraud classification and detection. This group showed the use of *Fraud Triangle Theory* in data analysis aimed at identifying fraud patterns or distinguishing fraud and non-fraud data. One of the studies recorded in the mapping used a synthetic dataset of 14,000 data, consisting of 7,000 fraud data and 7,000 non-fraud data. The analysis was carried out through *text mining* and *topic modeling* using *Latent Dirichlet Allocation* (LDA), *Non-negative Matrix Factorization* (NMF), and *Latent Semantic Analysis* (LSA). Furthermore, the study compared a number of classification algorithms, namely *Logistic Regression*, *Random Forest*, *Gradient Boosting*, *Gaussian Naive Bayes*, *k-Nearest Neighbors* (k-NN), *Decision Tree*, and *Support Vector Machine* (SVM). The study also tested *deep learning models*, including *Deep Neural Network* (DNN), *Convolutional Neural Network* (CNN),

and *Long Short-Term Memory* (LSTM), with evaluation using ROC curves and *Area Under the Curve* (AUC).

The results showed that *Random Forest* and *Gradient Boosting* produced an average AUC of 0.81, while the *deep learning* model produced an AUC of around 0.68–0.69. The *Fraud Triangle Theory-based* approach also produced an AUC of 0.81, higher than the reported comparison method of 0.68. The findings suggest that information related to *the Fraud Triangle Theory* can be used in the classification process in the study scenario. However, because the study used synthetic datasets, the results cannot be directly generalized as the level of accuracy of fraud detection in real companies or organizations. The AUC value measures the model's ability to distinguish classes in the evaluation data, not the magnitude of the influence *of pressure*, *opportunity*, or *rationalization* on fraud events.

Another computational approach was seen in the study that combined *semi-supervised topic modeling*, *Natural Language Processing* (NLP), and classification. In the study, CorEx was used to form themes relevant to *Fraud Triangle Theory*, while *Gradient Boosting* and *Random Forest* were used in the classification stage. The results showed that *Gradient Boosting* slightly outperformed *Random Forest*, with AUC values of 88% and 87%, respectively. These differences show that the selection of algorithms can affect the classification performance of the dataset used. However, these results are not enough to establish one algorithm as the best method for all forms of fraud because the performance of the model depends on the data, modeling procedures, and evaluation measures used.

In addition to research that develops algorithms directly, mapping also contains *a systematic literature review* on the use of *big data analytics* in the detection of financial fraud. The article uses literature synthesis, meta-analysis, content analysis, and bibliometrics. The reported results show that *predictive analytics* is one of the widely used approaches in fraud detection. The use of structured and unstructured data simultaneously is also reported to support the improvement of detection accuracy. Since the article is a literature review, the findings illustrate the tendency of the approach in the study examined, not the results of new experiments that test the direct influence of the three components of *Fraud Triangle Theory*.

Overall, the mapping results show that *the Fraud Triangle Theory* relates to a wide variety of theoretical models and analytical approaches. Quantitative approaches are used to test relationships between variables, qualitative approaches are used to understand the context in which fraud occurs, conceptual approaches are used to develop or integrate theoretical frameworks, while computational approaches are used to identify patterns, classify, and detect fraud. These differences have implications for how research results are interpreted. Regression coefficients and statistical significance cannot be directly compared with AUC values or classification accuracy because they assess different aspects. Similarly, conceptual models cannot be assessed using predictive performance measures if they have not undergone empirical validation.

Thus, the answer to RQ2 suggests that the use of *Fraud Triangle Theory* in the mapped literature is not limited to testing its three main components, but also includes theory integration, conceptual framework development, qualitative research, as well as data-driven analytical approaches. This diversity shows an expansion of the function of *Fraud Triangle Theory* in contemporary research. However, the synthesis of results still needs to take into account differences in research objectives, data types, variables, and evaluation measures because the evidence generated by each approach is not fully comparable.

RQ3: What are the theoretical, contextual, and methodological gaps contained in the current research on *Fraud Triangle Theory* ?

Based on a mapping of 61 articles for the period 2016–2026, research on *Fraud Triangle Theory* shows variations in the use of theoretical frameworks, application contexts, and analytical approaches. This theory is used to examine various problems, ranging from financial statement fraud, asset abuse, public sector corruption, deviant behavior in the workplace, to fraud related to technology and the digital environment. In addition, the mapped research uses quantitative, qualitative, conceptual, and computational approaches. This diversity expands the application of *Fraud Triangle Theory*, but also poses problems in

comparing findings and assessing the extent to which this theory is able to explain various forms of fraud. Based on these characteristics, research gaps can be discussed through three aspects, namely theoretical, contextual, and methodological.

First, the theoretical gap. One of the problems seen in mapping is the difference in the function of *the Fraud Triangle Theory* in previous research. Some articles use *pressure*, *opportunity*, and *rationalization* as the variables that are empirically tested, while others put the theory as a supporting framework, integrate it with other theories, or use it as a basis for developing conceptual models and fraud detection. This difference causes the use of *the Fraud Triangle Theory* not always to show that the three components are tested directly. As a result, the strength of the empirical evidence produced by each study cannot be equalized based solely on the existence of such theories within the framework of the research.

Theoretical gaps are also related to differences in operational definitions and indicators used to represent each component. *Pressure* can be related to financial pressures or incentives in an organizational context, while *opportunity* can be assessed through weaknesses in control or conditions that allow deviations to occur. Meanwhile, *rationalization* is related to justification for behavior. Because the indicators and measurement contexts are different, research results that use the same component names do not necessarily measure fully comparable phenomena. These variations are a reason to clarify the operational definition and the relationship between theoretical concepts and the empirical indicators used.

In addition, the mapping shows the use of *Fraud Triangle Theory* along with other frameworks, such as *the Fraud Diamond Theory* and *the Fraud Hexagon Model*, as well as the development of conceptual models such as *the Comprehensive Layered Embezzlement and Fraud (CLEF) Model*. This development shows that there are efforts to expand the explanation of fraud through the addition of factors or the incorporation of perspectives. However, the existence of these various frameworks does not in itself explain the additional contribution made by each theory. Therefore, research is needed that explicitly distinguishes the role of *Fraud Triangle Theory* from companion theory, including explaining whether the integration of the theory results in a broader explanation, tests different factors, or simply provides an additional conceptual foundation. This gap is a direction of research derived from the variation in the use of theory in mapping, not the conclusion that all integrative models examined are inadequate.

Second, contextual gaps. The mapped articles cover various countries and research environments, including Indonesia, China, Malaysia, the United States, and other countries and regions. In terms of objects, the research includes the public sector and government procurement, banking, companies, employee behavior, education, financial reporting, and technology-based fraud detection. This diversity shows that *the Fraud Triangle Theory* is used in a broad context. However, the difference in context also poses challenges in drawing conclusions across studies because the characteristics of the perpetrators, the form of fraud, the source of pressure, the available opportunities, and the supervisory mechanism can differ between the research objects.

For example, research on corruption in government procurement cannot be directly compared with research on the manipulation of financial statements or the detection of electronic banking fraud. Although all three can be studied using *the Fraud Triangle Theory*, the form of behavior, unit of analysis, indicators, and results measured are not always the same. Therefore, the similarity of *the terms pressure*, *opportunity*, and *rationalization* is not enough to conclude that the three components work in a uniform pattern in all contexts. Cross-sector comparisons need to consider the characteristics of the object, the definition of the variable, and the type of outcome analyzed.

In addition to the differences in sectors, geographical variations in mapping indicate the need to pay attention to the institutional and organizational environment when interpreting the findings. However, the number of articles from a country only describes the representation of that country in the study sample, not the incidence of fraud or the magnitude of the influence *of the Fraud Triangle Theory* in that country. Thus, the identifiable contextual gap is the need to compare the application of the theory in a more structured manner between countries and

sectors, while still taking into account differences in research design and fraud characteristics. Further research can test whether a pattern of findings persists in different contexts or only applies to specific environments.

Third, methodological gaps. Mapping shows a variety of research approaches, ranging from surveys and statistical analysis, the use of secondary and regression data, case studies and document analysis, to computational approaches involving *text mining*, *topic modeling*, *machine learning*, and *deep learning*. These variations show that *Fraud Triangle Theory* research is not only directed to explain factors related to fraud, but is also used in the development of analysis and detection approaches. However, differences in analytical objectives and techniques make the results of research not always directly comparable.

In empirical research, regression and statistical techniques are used to test relationships between variables, while machine learning-based research generally evaluates the model's ability to classify or detect fraud. The regression coefficient and significance level inform the statistical relationship according to the model used, while the *Area Under the Curve* (AUC) value describes the model's ability to distinguish classes on the evaluation data. The two measures answer different questions. Therefore, a high AUC value cannot be considered evidence that a component of *the Fraud Triangle Theory* has a stronger influence on fraud. Similarly, significant regression results do not automatically indicate that the model has a high detection capability.

Another methodological gap relates to the need for more transparent reporting on variable definitions, data sources, sample characteristics, analysis procedures, and generalization limitations. Differences in how to measure theoretical components and research results can make it difficult to compare if the information is not adequately explained. In computational research, the characteristics of the dataset, the data sharing process, and the evaluation size also need to be considered before the performance between models is compared. Meanwhile, conceptual research requires further validation if the developed model is to be used to explain or predict empirical phenomena. This need can be seen, for example, in CLEF development articles that have not received an adequate number of expert responses to carry out empirical validation.

Based on these conditions, subsequent research needs to use more standardized extraction and coding procedures so that the functions of *the Fraud Triangle Theory*, the indicators of each component, the research design, and the reported results can be compared more systematically. Article grouping needs to distinguish between studies that test relationships between variables, studies that use theory as a supporting framework, conceptual research, and studies that are classification or detection-oriented. This distinction can help avoid overly broad conclusions when the available evidence comes from different analysis objectives and evaluation measures.

Overall, the mapping results show that the gap in *the Fraud Triangle Theory research does* not lie in the absence of application of the theory, but in the need to clarify its theoretical function, consider differences in contexts, and increase the comparability of results through transparent methodological reporting. From the theoretical side, clarity is needed regarding the operational definition and contribution of the theory when integrated with other frameworks. From the contextual side, a comparison is needed that considers differences in countries, sectors, objects, and forms of fraud. From the methodological side, a distinction is needed between testing the relationship between variables and the development of detection models, accompanied by adequate data reporting and analysis procedures. These three aspects are the direction of further research that can be developed based on patterns and variations in the 61 mapped articles.

CONCLUSION

Based on a review of 61 articles for the period 2016–2026, the Fraud Triangle Theory research shows the development of publications, the use of diverse analytical models and approaches, as well as theoretical, contextual, and methodological gaps. Differences in operational definitions, research contexts, and analysis methods limit the comparability of

findings. Researchers are further advised to develop consistent measurements of theoretical components and test their application to various sectors. Auditors and organizational management are advised to use the Fraud Triangle Theory to identify fraud risk factors and complement them with an evaluation of internal controls and fraud detection procedures.

REFERENCES

Adelopo, I., & Meier, F. (2022). UK Professional Accounting Bodies (PAB): Members' Unethical Behaviours And Exclusion. Journal Of Corporate Accounting & Finance, 33(3), 47–64.

Adeoti, M. O., Shamsudin, F. M., & Mohammad, A. M. (2021). Neutralisation, Opportunity, Job Pressure And Workplace Deviance: A Study Of Faculty Members In Nigeria. European Journal Of Management And Business Economics, 30(2), 170–190.

Alwehaib, A. (2025). Comprehensive Layered Embezzlement And Fraud Model In Financial Crime Prevention. Monatsschrift Für Kriminologie Und Strafrechtsreform.

Arend, R. J. (2024). Role, Values, Person And Context: A Story Of 'Bent'repreneurship. Administrative Sciences, 14(6), 118.

Ariffin, N. A. M., Hasnan, S., Ali, M. M., & Harymawan, I. (2023). The Effect Of Pressure, Opportunity, And Rationalisation On Asset Misappropriation In Public Organisations: Evidence From Emerging Markets. Journal Of Asian Scientific Research, 13(4), 178–194.

Arum, E. D. P., Alfaridzi, H., Wijaya, R., Wiralestari, Brilliant, A. B., & Wahyudi, I. (2026). Internal Motivations Versus External Deterrence: Validating GONE Theory On Financial Statement Fraud In An Emerging Market. Journal Of Risk And Financial Management, 19(8), 0596.

Awalluddin, M. A., Tuan Ismail, T. N., & Maznorbalia, A. S. (2022). The Relationship Between Perceived Pressure, Perceived Opportunity, Perceived Rationalization And Fraud Tendency Among Employees: A Study From The People's Trust In Malaysia. Studies In Business And Economics, 17(2), 243–258.

Binde, P., Cisneros Örnberg, J., & Forsström, D. (2022). Violating Trust: A Study Of Court Verdicts In Cases Of Gambling-Driven Economic Crimes In The Workplace. Nordic Studies On Alcohol And Drugs.

Chao, T. N., Dang, N. H., & Vu, T. T. B. (2024). Using Random Forest And Artificial Neural Network To Detect Fraudulent Financial Reporting: Data From Listed Companies In Vietnam. QUALITY Access To Success, 25(202), 17.

Chen, J., Hong, J., Zhong, W., Wang, C., & Liu, X. (2024). Doing Right At Home: Do Hometown Ceos Curb Corporate Misconduct?. Technological Forecasting And Social Change, 205, Article 123461.

Chindara, T. M., Smith, R. J., & Leke, C. A. (2025). Examining The Key Drivers Of Electronic Banking Fraud Prevalence In The South African Banking Sector. Cogent Business & Management, 12(1), 2508366.

Corporate Board: Role, Duties & Composition. (2016). Predicting Dishonest Actions And Governance Mechanisms In Public Procurement. Corporate Board: Role, Duties & Composition, 12(3), 1–10.

Din, M., Munawarah, M., Ghozali, I., Achmad, T., & Karim, F. (2022). Governance Of Financial Management And Regulation-Based Fiscal Accountability. Journal Of Governance And Regulation, 11(2), 116–123.

Doan, T. N., & Ta, T. T. (2023). Factors Of Fraud Triangle Affecting The Likelihood Of Material Misstatements In Financial Statements: An Empirical Study. Journal Of Governance And Regulation, 12(1), 82–92.

Fitri, F. A., Syukur, M., & Justisa, G. (2019). Do The Fraud Triangle Components Motivate Fraud In Indonesia?. Australasian Accounting, Business And Finance Journal, 13(4), 63–72.

Forbes, J. K. (2025). The Relationship Between Higher Education Faculty's Motivation To Report Suspected Academic Dishonesty And Likelihood To Report. International Journal For Educational Integrity, 21(1), 27.

Freeman, C. (2025). Fraud And Complexity Theory: Moving Beyond The Fraud Triangle Towards A New Theoretical Framework. Journal Of Economic Criminology, 9, 100198.
Fu, J., Gao, W., Zhang, B., & Ye, J. (2026). Corporate AI Adoption And ESG Decoupling Under China's Dual-Carbon Policy: A Fraud Triangle Analysis. Sustainability, 18(15), 7669.
Gleason, K., Kannan, Y. H., & Rauch, C. (2022). Fraud In Startups. Journal Of Financial Crime, 29(4), 1191–1221.
Gomes Macedo, P. S., Inácio, H. C., & Vieira, E. S. (2022). A Model To Detect Financial Statement Fraud In Portuguese Companies By The Auditor. Contaduría Y Administración, 67(3), 185–209.
Homer, E. M. (2020). Testing The Fraud Triangle: A Systematic Review. Journal Of Financial Crime, 27(1), 172–187.
Hou, C., & Liu, H. (2025). Human Capital Structure Upgrading And Corporate Fraud: Evidence From China. International Review Of Economics & Finance, 98, 104368.
Huang, S., Chen, Y., & Li, B. (2025). Does Gambling Preference Level Affect Occupational Fraud Behavior?—Evidence From A Survey Study In China. Frontiers In Psychology, 16, 1494990.
Jiang, R., & Zhang, J. (2023). The Impact Of Work Pressure And Work Completion Justification On Intentional Nonmalicious Information Security Policy Violation Intention. Computers & Security, 130, Article 103253.
Ju, T., Wang, Z., He, Q., & Zuo, J. (2023). Research On Megaprojects And Greenwashing/Misconduct Behaviors In Construction Projects: The Alienation Of MER Behavior. Engineering, Construction And Architectural Management, 30(7), 2809–2813.
Julian, L., Johari, R. J., Said, J., & Wondabio, L. S. (2022). Fraud Risk Judgment Measurement Scale Development. Journal Of Governance And Regulation, 11(1), 303–311.
Kawedar, W., Handayani, R. S., & Milawati. (2025). Perceptions Of Corruption By Perpetrators: An Empirical Analysis Of The Fraud Triangle And Attribution Theories. Problems And Perspectives In Management, 23(1), 524–526.
Lazarus, S. T., Tickner, P., & Button, M. (2025). Pulpit, Power, And Predation: "Yahoo Men Of God," Prosperity Theology, And The Twin Fraud Triangles. Journal Of Infrastructure, Policy And Development, 8(8), 5906.
Li, W., Liu, X., Li, Z., Qin, Z., Dong, J., & Li, S. (2026). A Decoupling-Fusion System For Financial Fraud Detection: Operationalizing Causal–Temporal Asynchrony In Multimodal Data. Systems, 14(1), 0025.
Machado, M. R. R., & Gartner, I. R. (2018). The Cressey Hypothesis (1953) And An Investigation Into The Occurrence Of Corporate Fraud: An Empirical Analysis Conducted In Brazilian Banking Institutions. Revista Contabilidade & Finanças, 29(76), 60–81.
Marquart, J. W., & Thompson, R. A. (2024). Exploring Relation Fraud, Murder, And The Fraud Triangle. Journal Of Economic Criminology, 4, 100061.
Masrom, S., Abdul Samad, N. H., Septiyanti, R., Roslan, N., & Abdul Rahman, R. (2024). Machine Learning Prediction For Academic Misconduct Prediction: An Analysis Of Binary Classification Metrics. Bulletin Of Electrical Engineering And Informatics, 13(1), 388–395.
Mbaidin, H. O. (2024). The Dynamic Role Of The Internet Of Things (Iot) On The Excel Performance Of Islamic Banks In United Arab Emirates. Decision Science Letters, 13(2), 261–286.
Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred Reporting Items For Systematic Reviews And Meta-Analyses: The PRISMA Statement. Plos Medicine, 6(7), E1000097.
Nguyen Thanh, C., & Phan Huy, T. (2025). Predicting Financial Reports Fraud By Machine Learning: The Proxy Of Auditor Opinions. Cogent Business & Management, 12(1), 2510556.

Ohalehi, P. (2018). Workplace Fraud And Auditing Mechanisms In Public Sector Organizations. Managerial Auditing Journal, 36(2), 258–260.
Ohalehi, P. (2019). Fraud, Accountability, And Deterrents In Nonprofit Organizations. Journal Of Financial Crime, 26(1), 212–222.
Parameswaran, P., & Shafi, M. S. (2025). Criminological And Socioeconomic Aspects Of Corporate Delinquency: A 21st Century Perspective. Journal Of Economic Criminology, 9, 100185.
Pribytkova, G. V. (2005). Analysis And Risk Assessment Of Industrial Enterprises In The Process Of Investment Project Development. Bulletin Of The Moscow State Technical University.
Rahayu, D. V. R. W., & Widuri, R. (2025). Artificial Neural Network Methodology In Financial Statements Fraud: An Empirical Study In The Property And Real Estate Sector. Risk Governance & Control: Financial Markets & Institutions, 15(1), 237–248.
Ratmono, D., & Darsono, D. (2022). New Public Management And Corruption: Empirical Evidence Of Local Governments In Indonesia. Public And Municipal Finance, 11(1), 54–62.
Said, J., Alam, M. M., Karim, Z. A., & Johari, R. J. (2018a). Integrating Religiosity Into Fraud Triangle Theory: Empirical Findings From Malaysian Enforcement Officer. Journal Of Criminological Research, Policy And Practice, 4(2), 111–123.
Said, J., Alam, M. M., Karim, Z. A., & Johari, R. J. (2018b). Integrating Religiosity Into Fraud Triangle Theory: Empirical Findings From Malaysian Enforcement Officer. Journal Of Criminological Research, Policy And Practice, 4(2), 111–123.
Said, J., Alam, M. M., Ramli, M., & Rafidi, M. (2017). Integrating Ethical Values Into Fraud Triangle Theory In Assessing Employee Fraud: Evidence From The Malaysian Banking Industry. Journal Of International Studies, 10(2), 170–184.
Sánchez, M., & Urquiza, L. (2024). Improving Fraud Detection With Semisupervised Topic Modeling And Keyword Integration. Peerj Computer Science, 10, Article E1733.
Sánchez-Aguayo, M., Urquiza-Aguiar, L., & Estrada-Jiménez, J. (2022). Predictive Fraud Analysis Applying The Fraud Triangle Theory Through Data Mining Techniques. Applied Sciences, 12(7), Article 3382.
Sangale, R. P., Vakrani, D. S., Pathare, S. B., & Roy, J. K. (2026). Examining The Role Of Accountant's Knowledge Of Forensic Accounting, Corporate Governance Policies And Fraud Awareness Training In Preventing Fraud: A Survey Of Indian Corporates. Journal Of Risk And Financial Management, 19(2), 0118.
Setiorini, K. R., Rahmawati, Payamta, & Hartoko, S. (2021). The Pentagon Fraud Theory Perspective: Understanding Of Motivation Of Executives To Manipulate With The Financial Statements Of A State-Owned Enterprise. Economic Annals-XXI, 194(11-12), 104–110.
Sun, J., Gu, S., Su, R., & Zhang, Y. (2026). A Cat And Mouse Game: How Cyberfraud Syndicates Evade Responsive Policing By Adapting Motivational Postures In China And The Golden Triangle. Crime & Delinquency, 72(11), 3318–3345.
Sunecher, Y., & Dookhy, N. S. (2025). Risk Management In The Banking Sector Of Mauritius. Journal Of Central Banking Law And Institutions, 4(2), 387–402.
Tarigan, N. M. R., Simbolon, R., & Elviani, S. (2025). Reducing Unethical Behavior In Smes Using Fraud Triangle Theory And Anti-Fraud Technology: A Case Study From Medan City. Heritage And Sustainable Development, 7(2), 1341–1350.
Tickner, P., & Button, M. (2021). Deconstructing The Origins Of Cressey's Fraud Triangle. Journal Of Financial Crime, 28(3), 722–731.
Tommasetti, R., De Oliveira Leite, R., Et Al. (2021). Revisiting The Accounting Fraud Components: A Bottom-Up Approach Using The Twitter Platform. SAGE Open, 11(4), 1–12.
Triyanto, D. N., & Ali, S. (2026). The Role Of Big Data Analytics In Financial Fraud Detection: A Systematic Literature Review. International Review Of Economics & Finance, 109, 105453.

Umam, M. K., Lisnawati, Herlina, E., Riyan, A. B., & Rahardjo, W. S. (2026). Digital Governance And Fraud Risk Management In SIHALAL-Based Halal Certification In Indonesia: Towards A Sharia-Compliant Information System Framework And Artificial Intelligence (AI)-Assisted Verification. Daengku: Journal Of Humanities And Social Sciences Innovation, 6(3), 493–511.

Wang, X., Wang, N., Sun, W., Xu, A., & Zhang, Z. (2024). Enterprise Digital Transformation And Violation Risk Management. Heliyon, 10(19), Article E39125.

Wibowo, D. (2024). Women Behind The Veil: Power And Lifestyle In Workplace Fraud. Journal Of Infrastructure, Policy And Development, 8(8), 5906.

Wong, R. K. H., & Wong, C. K. (2026). Application Of Fraud Triangle Theory: Case Study For Ecogreen International Group Limited. Global Business Review.

Yang, L., Huang, L., Xiong, L., & Tong, Y. (2026). Can The CSRC's Random Inspection System Curb Corporate Goodwill Bubbles? China Journal Of Accounting Studies.

Yu, J., & Hwang, Y.-S. (2026a). Behind The Green Veil: Board Characteristics, Greenwashing, And The Fraud Triangle. Humanities & Social Sciences Communications.

Yu, J., & Hwang, Y.-S. (2026b). Optimizing Board Structure For ESG Integrity: Nonlinear Size Effects And Diversity Moderation On Greenwashing. Plos ONE, 21(1), E0335803.

Yu, W., Yan, Y., Zhu, K., & Zhang, P. (2024). Can Value-Added Tax Refund Policy Inhibit Corporate Financial Fraud? Evidence From China. Emerging Markets Review, 63, 101212.

Zhang, H., & Chen, Y. (2026). Antecedents And Consequences Of AI Misuse Among University Students: An Empirical Investigation. Education Sciences, 16(7), 1087.

Zhao, D., Wang, Z., Schweizer-Gamborino, F., & Sornette, D. (2025). Polytope Fraud Theory. International Review Of Financial Analysis, 97, 103734.