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Unravelling Financial Statement Fraud in Emerging Markets: Insights from Vietnam with the Fraud Diamond Framework

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Abstract

This study examines factors influencing financial statement fraud (FSF) in Vietnamese listed companies using the Fraud Diamond Framework and explores how the COVID-19 pandemic shapes these factors in emerging markets. Logistic regression analysis was conducted on data from 216 companies listed on the HOSE and HNX stock exchanges between 2017 and 2021, analyzing key variables across pre-COVID-19 and COVID-19 periods. The results reveal six significant factors associated with FSF. External pressure and financial stability positively correlate with FSF, while financial targets have a negative impact. Ineffective monitoring and director changes are positively linked to FSF, whereas frequent auditor changes mitigate fraud risks. The COVID-19 period intensified financial pressures, highlighting the dynamic nature of fraud determinants during crises. The findings emphasize the need for adaptive governance strategies to address FSF during economic uncertainty. The study provides recommendations for strengthening governance frameworks and fraud detection measures to improve transparency and investor trust in emerging economies. This study uniquely applies the Fraud Diamond Framework in a growing economy, offering insights on FSF mitigation during crises and the interplay between governance and economic factors.

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1. Introduction

Financial statement fraud (FSF) poses a significant risk to corporate governance, public confidence, and the stability of financial markets. Worldwide, financial statement fraud incurs billions in expenses for firms each year, as exemplified by the catastrophic incidents of Enron and Wirecard (ACFE, 2016; Dechow, Ge, Larson, & Sloan, 2011). In Vietnam, although prominent incidents such as the FLC Group probe in 2022 have highlighted fraudulent practices, the issue persists widely and remains insufficiently examined. These occurrences underscore the pressing necessity to comprehend the factors influencing FSF in Vietnam, especially within its swift economic expansion and market liberalization[1].

Research in Vietnam has increasingly focused on financial reporting fraud, particularly in light of the country's anticipated elevation to secondary emerging market status by 2024 (FTSE, 2023). This transition necessitates enhanced financial transparency and the production of robust financial reports to foster investor confidence. Nonetheless, contemporary studies in Vietnam predominantly employ conventional models such as Cressey's fraud triangle (Cressey, 1953) or Beneish's M-score (Beneish, 1999). This study employs Wolfe and

[1] https://vietnamnews.vn/society/1660164/fraud-and-stock-manipulation-in-flc-case-are-deliberate-prosecutors.html?utm_source=chatgpt.com

Hermanson's Diamond Fraud Model, integrating "competence" with pressure, opportunity, and rationalization (Wolfe & Hermanson, 2004), aiming to thoroughly examine the dynamics of financial reporting fraud within the specific socio-economic context of Vietnam

This research also examines the COVID-19 pandemic, which has significantly affected all economic and social sectors of nations. The intricate evolution of the epidemic might profoundly impact the credibility of financial reporting of publicly traded firms due to concerns over fraud or the manipulation of appealing financial statements for the advantage of stakeholders. The findings of this study are expected to enrich academic literature and offer pragmatic assistance for policymakers and practitioners. This study employs the Fraud Diamond framework and an extensive dataset to underscore the imperative for adaptive governance strategies to mitigate FSF risks, improve financial transparency, and promote sustainable development in Vietnam and other emerging countries.

The COVID-19 pandemic underscores the importance of this research. The global economic downturn of 2020 (IMF, 2020) exerted unprecedented constraints on businesses, creating conditions favorable for financial statement fraud (FSF) as companies sought to meet financial targets and stakeholder demands (Pratiwi & Ghozali, 2022). In Vietnam, these challenges present an opportunity to enhance governance frameworks and bolster company resilience against prospective disasters. The findings of this study are expected to enrich academic literature and offer pragmatic assistance for policymakers and practitioners. This study employs the Fraud Diamond framework and an extensive dataset to underscore the imperative for adaptive governance strategies to mitigate FSF risks, improve financial transparency, and promote sustainable development in Vietnam and other emerging countries.

The primary research issues this paper aims to tackle are the inadequate comprehension of the socio-economic and governance elements influencing FSF in Vietnam. The research specifically seeks to address the following inquiries: What are the principal factors influencing FSF in Vietnam, given the nation's distinctive socio-economic context? What governance solutions might successfully reduce FSF risks in Vietnam, particularly in a post-pandemic economy? By addressing these inquiries, the study not only underscores significant knowledge deficiencies but also emphasizes the necessity of improving Vietnam's financial ecosystem during its transition to an emerging economy.

2. Literature Review

2.1. Fraud Definition

Being the world's largest anti-fraud organization and a main provider of anti-fraud education, the Association of Certified Fraud Examiners (ACFE) has introduced the concept of fraud as follows: "Fraud" is any activity based on deception to gain benefits. Fraud becomes a crime when it is acted upon as "misrepresenting the truth or hiding an important truth to incite others to act to their detriment" (ACFE, 2016). Their definition suggests that if one fabricates or forges something to deprive a person or organization of money or property, one is committing fraud (ACFE, 2016).

Analogously, several authors have added additional aspects when they define fraud. For instance, they underscore fraud as criminal deception, not allowing it to be seen, a deliberate violation of the law, and abuse of trust in the form of money, goods, or other assets, done consciously and intentionally. Reurink (2018) has added another dimension to the meaning of fraud. To the author, fraud is intentional conduct committed by one or more individuals in management, employees, or third parties to create errors in financial statements.

Besides those elements concerning deliberation, over-declaration, the parties involved, and fraud contexts, depicted by international scholars and organizations, the notion of fraud is also shared by Vietnam's academia and government with some elaborate elements. According to the Vietnamese dictionary, fraud is a dishonest act, a lie, or a trick aimed at deceiving others. Likewise, as stated by the Vietnam Auditing Standard No. 240 (VAS240, 2012): "Fraud is a deliberate act committed by one or more persons in the board of directors, employees, or a third party through fraudulent acts for illicit or illegal profits."

Thus far, though there have been numerous definitions in connection with fraud, in general, fraud can be defined as intentional (deliberate) acts of falsifying economic and financial information, which are carried out by an individual or organization in order either to deceive or to achieve a certain benefit.

2.2. Financial Statement Fraud

A fundamental understanding of what fraud is must provide grounds for getting an idea of what financial statement fraud means. According to the Association of Certified Fraud Examiners (ACFE), fraud on financial statements is either a case of intentionally distorting information on financial reports or instances of dishonestly reflecting the financial situation to deceive information users.

Several features of financial statement fraud have been identified as follows. First, financial statement fraud is more likely to occur in financially troubled companies than in others (Beasley, Carcello, & Hermanson, 1999). Second, according to Beasley and colleagues, financial statement fraud can be divided into two categories. The first involves the intention of the regulator to publish seriously misleading financial statements. The second concerns the prevalence of asset misappropriation by senior executives, including the treasurer, the president, the vice president, the chief financial officer, and the chief executive officer.

In addition to those features mentioned, financial statement fraud can take the forms which are primarily associated with exaggerating a company's revenues and assets (Beasley et al., 1999). First, with reference to the exaggeration of sales, companies can record fictitious sales and related transactions. Second, with reference to exaggerating assets, companies might exaggerate inventory, facilities such as plants, equipment, and other tangible assets, while these, in reality, do not exist.

The forms of financial statement fraud just outlined is in line with the detailed statement made in the set of auditing standard (SAS) No. 99. According to the standard specified, financial statement fraud can transpire in several acts, namely (1) manipulating, falsifying, or changing the accounting books, the financial statements have been compiled; (2) confusion or negligence concerning important information on financial statements, (3) intentional misuse of the principles of quantity, classification, method of presentation or explanation.

Among the definitions cited regarding financial statement fraud, Rezaee and Riley's (2009) definition deserves attention. To them, "Financial statement fraud is a calculated endeavor by corporations to mislead or defraud stakeholders, particularly investors and creditors, through the preparation and dissemination of misleading financial statements." Their definition has been taken as the core concept that this study relies on to build a way of measuring the dependent variable(s) in the research model.

2.3. Fraud Detection Models

2.3.1. Fraud Triangle Model

Given that financial statement fraud is a criminal activity, there have been attempts to detect it. Several models have been proposed. Cressey (1953), an Indiana University (USA) criminologist and ACFE founder, devised the fraud triangle hypothesis. He concentrated on evaluating fraud from the standpoint of embezzlement. By assessing around 200 economic crime instances from this standpoint to see what incited the criminals' illegal behaviors, he developed the Fraud Triangle model, composed of the factors that lead to fraudulent behaviors. Nowadays, the model has become one of the auditors' mainstream fraud detection models.

Figure 1 illustrates Cressey's model in which people tend to commit fraud if there exist three factors, namely:

(1) Pressure/motivation which is connected to the individual or organization under pressure may result in fraud. Under pressure, people are sufficiently motivated to perpetrate fraud. Such pressure might take some forms, such as financial or economic challenges, meeting a specific level of profitability established by top management, or disagreements in the employer-employee relationship, and so forth.

(2) Opportunity: referring to chances that lead people to commit fraud when they are under pressure or motivated to cheat. Two factors create opportunities for fraud: (a) having enough information to be able to commit fraud without any supervision or detection from the business owner, (b) having the necessary skills to help them commit fraud.

(3) Attitude/Personality: When people are under pressure and given opportunities, they may cheat; nevertheless, the manner in which a person behaves is closely related to each individual's attitude and mentality. Hence, when organizations are under pressure, particularly in terms of cash flow or profit motives, and there is a chance to modify the data on financial statements to fulfill their objectives, firms are more likely to commit fraud.

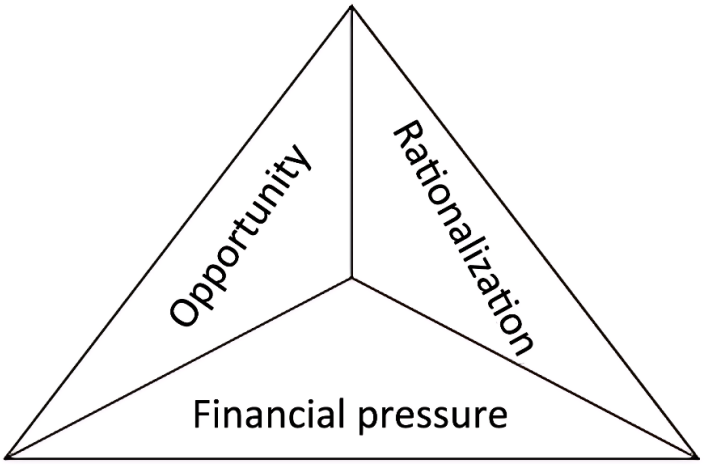

Figure 1. The fraud triangle.

Source: Cressey (1953).

2.3.2. Fraud Diamond Model

Wolfe and Hermanson (2004) developed an additional fraud detection model, the fraud diamond model (Figure 2), which incorporates a fourth element representing the capacity factor, so augmenting Cressey's fraud triangle model (Cressey, 1953). According to the analysis by Wolfe and Hermanson, the factors contributing to financial statement fraud in corporations include: (1) pressure, referring to incentives that motivate individuals

to engage in fraudulent activities; (2) opportunity, a circumstance that facilitates the occurrence of fraud; (3) rationalization, which pertains to the mindset and character that justify deceitful behavior; (4) capacity, indicating an individual's inherent traits and capabilities that enable significant involvement in fraudulent actions. The fraud would not have occurred without the individual's opportunity. To perpetrate fraud, an individual must identify a loophole as an opportunity and use it accordingly. Fraud arises from the chance to do it, the pressure and reasoning individuals experience, and their capacity to identify issues. Consequently, corporations engage public accountants to audit their financial statements, which is anticipated to mitigate fraudulent activities and enhance public trust in the financial reports.

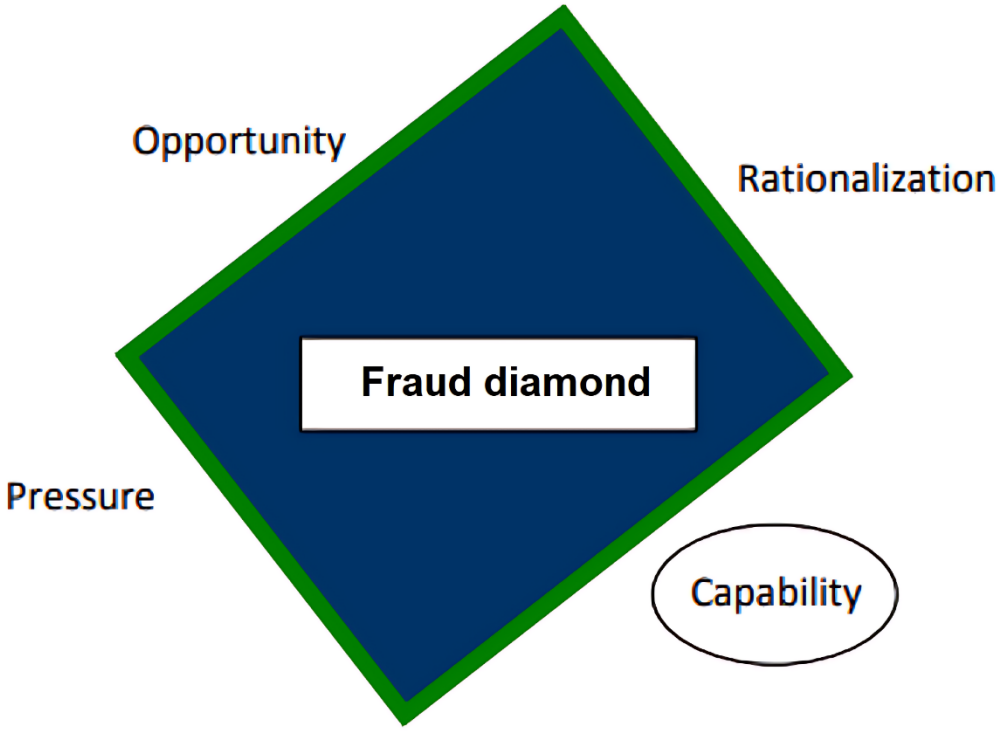

Figure 2. The fraud diamond.

Source: Wolfe and Hermanson (2004).

2.4. Empirical Evidence

A literature study on financial statement fraud, utilizing the diamond fraud model in developing countries, reveals inconsistencies in research findings. This illustrates the difficulties of implementing this paradigm.

In the expanding market of Indonesia, several researchers have conducted investigations; yet, the findings exhibit inconsistency. The research by Fadli and Junaidi (2022) indicates that external pressure (assessed by LEV) adversely affects financial statement fraud. Conversely, the writers Indarto and Ghozali (2016) and Diansari and Wijaya (2019) contend that this link is affirmative. This discrepancy might be attributed to the influence of macroeconomic variables or the distinct physical attributes of each stock market in Indonesia over various research periods.

Another facet of the diamond fraud model is that the effective monitoring element, which signifies the opportunity component, exhibits conflicting study findings. Pratiwi and Ghozali (2022) established that this component significantly influences financial reporting fraud in developing economies, however, Irawan, Susilowati, and Puspasari (2019) and Fadli and Junaidi (2022) found no evidence supporting this association. This prompts an inquiry into the efficacy of the monitoring element in mitigating fraud within emerging markets.

In Vietnam, evaluations of developing markets predominantly utilize Dechow's F-score methodology. Research conducted by Trâm (2015), Huyền (2016), and Lê Sơn (2019) demonstrates that elements of the F-score model influence the probability of fraud among publicly listed firms in Vietnam prior to the COVID-19 epidemic. Nonetheless, the representativeness of these research is limited due to the sample size exclusively including businesses listed on the HOSE market. The research conducted by Chi, Thuy, and Huong (2021) examines financial reporting fraud by employing Beneish (1999) in conjunction with Dechow et al. (2011) and variables related to business characteristics, including company age, size, and listing status, to assess the propensity for committing financial reporting fraud.

Through the literature review, three primary research gaps are identified. Firstly, there is a deficiency of quantitative research utilizing the diamond fraud model within the Vietnamese context. Secondly, there is no

research in Vietnam that evaluates the influence of unusual occurrences, such as the COVID-19 epidemic, on the determinants of financial statement fraud. Adjustments must be made in quantifying the elements of the diamond fraud model to align with the characteristics of a market poised for transition to an emerging market, such as Vietnam.

3. Methodology

3.1. Hypothesis and Conceptual Model

The purpose of this study was to elucidate how financial statement fraud is affected by four criteria taken from the fraud diamond hypothesis. They are pressure, opportunity, rationalization, and capability. The fraudulent diamond theory suggests that its four risk factors are directly related to fraud (Lokanan & Sharma, 2018). However, the components of the fraud diamond (pressure, opportunity, rationalization, and capability) cannot be directly observed, there are a set of proxy variables which based on instances of fraud risk factors mentioned in SAS No. 99 as well as previous accounting research related to fraud. The following section provides a description of these factors and the reasoning for our selection.

Pressure: According to SAS No. 99, pressure is categorized as financial statement fraud into the following primary categories: External pressure, financial stability, and financial targets.

First, as far as pressure is taken into account, external pressure is a condition in which a company receives pressure from outside the company. This pressure is represented/measured using the leverage ratio (LEV). The higher a company's financial leverage, the higher its debt capacity; as such, the greater its credit risk. This suggests that the higher the credit risk, the greater the creditor's interest in the company. Similarly, the lower the risk of fraud in the financial statements. This has been proved by Fadli and Junaidi (2022) argue that external pressures have a significant negative impact on financial statement fraud. Based on the above arguments, the following hypothesis was proposed:

Hypothesis H_1: External pressures have a negative impact on financial statement fraud.

Second, also with reference to the pressure factor, in their research, Skousen, Smith, and Wright (2009) and Prasmaulida (2016) applied the rate of change of total assets as a measure of financial stability. The higher the rate of change in a company's total assets, namely, the higher the rate of increase in a company's assets, the greater the risk of financial fraud. Financial stability is the stable financial condition of a company; however, the stability can be affected by the economic situation of the country. If a country's financial situation is unstable, such an instance might have an impact on the company's financial stability. Managers are put under pressure when financial stability is jeopardized due to economic, industry, and entity-specific factors. This can lead to fraud since management will have to strive to alter and show a beautiful financial statement to attract investment. Therefore, it was hypothesized that:

Hypothesis H_2: Financial stability has a positive impact on financial statement fraud.

Third, another element of the pressure factor is financial goals, which are set to require the executives of a company to achieve the best performance. Managers, consequently, will have to try their best to keep the company's performance up to what was attained in previous years. For this reason, this puts pressure on managers to run all their work. On the one hand, managers must improve the performance of the company and ensure that the company has good financial conditions. Conversely, managers must also execute their duties in compliance with established regulations. Skousen et al. (2009) assert that the return on total assets might be an indicator of a company's performance. The higher the rate of return on total assets, the higher the likelihood of managers committing fraud. Therefore, the hypothesis regarding this issue was:

Hypothesis H_3: Financial targets have a positive impact on fraudulent financial statements.

Opportunities that have the potential to result in financial statement fraud can be divided into two distinct kinds: nature of industry and effective monitoring (Summers & Sweeney, 1998). By utilizing these categories, we have proposed the following two hypotheses for opportunity.

According to Muariya, Karyanti, and Widyarti (2022), the nature of the industry is measured by financial items on an estimated basis, such as inventory items. The reason is that inventory is a liquid asset that is susceptible to theft and fraud. In addition, it is common for companies to have a large amount of inventory, which can be used by management to manipulate financial statements because inventory items can significantly affect the balance sheet and profit calculation. Therefore, the higher the inventory value in a company, the higher the likelihood of theft and fraud of financial statements. On the other hand, Summers and Sweeney (1998) rely on the measurement of the rate of change in receivables when it comes to the nature of the industry, which has a positive impact on financial statement fraud. Given this argument, the following hypothesis was advanced:

Hypothesis H_4: The nature of the industry has a positive impact on fraudulent financial statements.

Concerning the capability factor, fraud can be reduced by effective monitoring mechanisms (Diansari & Wijaya, 2019). The audit committee is claimed to be capable of increasing the efficacy of the company's monitoring (Rengganis, Sari, Budiasih, Wirajaya, & Suprasto, 2019). On the other hand, effective monitoring can maintain the reliability of reports, preventing fraud. In other words, weak internal controls can increase the likelihood of material fraud (Lou & Wang, 2009). Fraud can be minimized when there is a multi-sided monitoring system. Independent board members are members of the board of directors who meet requirements unrelated to shareholders, directors, or other trustees. An increased number of independent commissioners within a

corporation correlates with a reduced likelihood of financial statement manipulation and enhances the efficacy of the monitoring system. The presence of an independent board member enhances the efficacy of the company's oversight activities.

Hypothesis H_5: Effective monitoring has a negative impact on financial statement fraud.

Rationalization is the third component of the fraud diamond and is the most challenging to measure (Skousen et al., 2009). Based on literature review (St. Pierre & Anderson, 1984; Stice, 1991), there is existing research that suggests that the occurrence of audit failures and legal disputes tends to rise shortly following a transition in auditors. Thus, we incorporate the change of auditor as a measure for rationalization. To lessen the uncovering of financial statement fraud, the company might change its auditor (Lou & Wang, 2009). Based on that, the following hypothesis was postulated:

Hypothesis H_6: Change of auditor has a positive impact on financial statement fraud.

With reference to capability which is an attempt by someone to commit fraud to achieve certain goals (Diansari & Wijaya, 2019) change of director as a criterion represents the ability to detect the occurrence of financial statement fraud because changing directors can lead to suboptimal initial performance due to being in the adaptation phase (Sihombing & Rahardjo, 2014). The board of directors of the company is authorized and responsible for the management of the company and is responsible for the interests of the company. Therefore, the director is likely to commit financial statement fraud because he is the holder of the highest position in a company. Altering the board of directors may represent the company's effort to rectify indications of fraud perpetrated by the former board. On the other hand, a change of interim director can be interpreted as an attempt by the company to remove directors who are considered to have discovered the company engaged in fraudulent behavior. So, the more often the company changes its board of directors, the more likely it is to commit fraud. The hypothesis was formulated as follows, based on the aforementioned description:

Hypothesis H_7: A change of director has a positive impact on fraud in financial statements.

Based on the research hypotheses formulated above, the following research model was put forward (Figure 3).

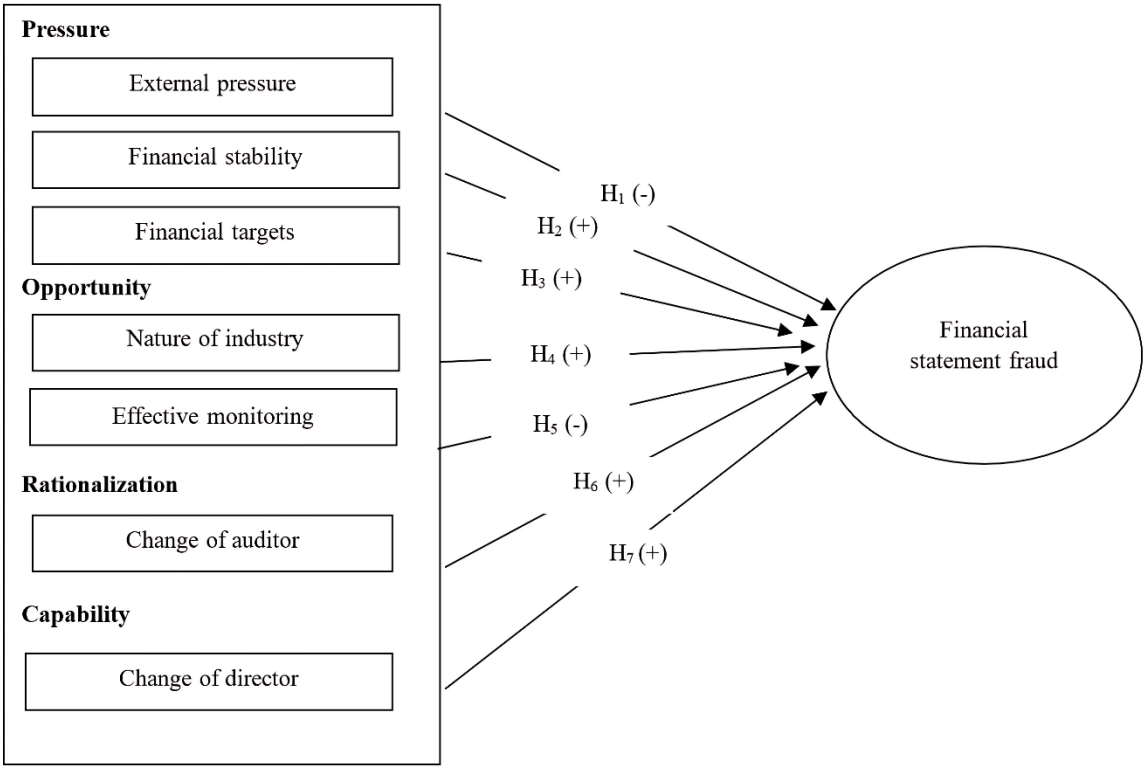

Figure 3. Proposed research model.

3.2. Data Collection

Our analysis focuses on publicly listed firms on Vietnam's two major stock exchanges (HOSE and HNX) throughout the period 2017-2021. This era is particularly noteworthy as it spans both pre-COVID-19 (2017-2019) and pandemic periods (2020-2021), enabling research of fraud trends under contrasting economic situations. The timeframe also corresponds with Vietnam's planning for reclassification as a secondary emerging market in 2024, making the findings highly significant for future policy considerations.

The sample selection employs a systematic methodology with defined exclusion criteria. We omit financial institutions, banks, insurance businesses, and securities firms because of their unique regulatory obligations and

financial reporting criteria. To guarantee data consistency, we exclusively incorporate organizations that sustained uninterrupted operations and listing status over the research period. This methodology resulted in a final sample of 216 companies, yielding 1,080 firm-year observations across the five-year span.

3.3. Variables Measurement

The variables manipulated in this study were of two kinds: independent variables and one dependent variable.

- Dependent variables: The primary variable of interest in this study is the fraudulent manipulation of financial statements, indicating that these statements are presented deceptively. This nominal variable was coded as FRAUD, consisting of two values: 1: fraud exists and 0: no fraud. The variable is determined by calculating the difference in profit after tax before and after the audit of 5% (Point d, Clause 2, Article 7 of HOSE's information disclosure regulations).
- Independent variables: This study examines potential indicators of fraud through the four dimensions of the Fraud Diamond Framework: Pressure, Opportunity, Rationalization, and Capability. Each dimension is defined by specific variables.

3.3.1. Pressure

- External Pressure: This variable is concerned with excessive pressure exerted on management to meet third-party expectations or requirements (Annisya & Asmaranti, 2016). The external pressure variable is represented by the leverage ratio (LEV) calculated by the formula of Skousen et al. (2009), specifically:

$$\text{LEV} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

- Financial stability, also considered to be an independent variable, is a condition that reflects the stable financial position of a company. The higher the rate of change in the company's total assets, the higher the likelihood of fraud. The stability variable is determined by the rate of change of total assets (ACHANGE), with the following formula (Skousen et al., 2009):

$$\text{ACHANGE} = \frac{\text{Total assets}_t - \text{Total assets}_{t-1}}{\text{Total assets}_{t-1}}$$

- Financial targets: This independent variable may exert undue pressure on management to meet the financial objectives set by the director or managers. Company executives are tasked with overseeing the attainment of predetermined objectives. The financial goals represented by ROA are calculated as exemplified in the following formula:

$$\text{ROA} = \frac{\text{Profit after tax and dividends}}{\text{Total assets}}$$

3.3.2. Opportunity

- The nature of the industry: The nature of the industry, also deemed to be an independent variable, is the ideal state of a company in the industry (Annisya & Asmaranti, 2016). Balances in a particular account are determined primarily based on estimates and subjective judgments (Skousen et al., 2009). On the other hand, receivables and inventories require subjective evaluation in estimating difficult receivables (Skousen et al., 2009). Accordingly, this study used those variables listed below as the independent variable to represent the nature of the industry:

$$\text{INVENTORY} = \frac{\text{Inventory}_t}{\text{Total revenue}_t} - \frac{\text{Inventory}_{t-1}}{\text{Total revenue}_{t-1}}$$

- Effective Monitoring: This independent variable manifests the fact that companies that cheat continuously will have fewer independent board members than other companies that do not cheat (Skousen et al., 2009). Thus, the mathematical determination of effective monitoring (BDOUT) was performed as follows:

$$\text{BDOUT} = \frac{\text{Number of independent boards}}{\text{Total number of boards}}$$

3.3.3. Rationalization

- Auditor change (AUCHANGE): during the study period from 2017 to 2021, if a company experienced a change of the auditor, then this independent variable would be encrypted as 1, otherwise it would be encrypted as 0.

3.3.4. Capability

- Change of directors (DCHANGE): This independent variable refers to the case in which there is a change in the board of directors in a company. Such an instance was coded as 1, and the opposite would be 0.

3.4. Data Analysis Methods

We utilize a logistic regression framework, which is especially appropriate for our binary dependent variable and mixed-type independent variables. The selection of logistic regression over alternative techniques, such as probit models or discriminant analysis, is predicated on several advantages. Initially, Pampel (2020) asserts that this technique yields comprehensible odds ratios. Subsequently, Hosmer Jr, Lemeshow, and Sturdivant (2013) indicate that this method does not need stringent assumptions regarding normal distributions or the homogeneity of variance-covariance matrices. Ultimately, as noted by Persons (1995) and Kaminski, Sterling Wetzel, and Guan (2004), logistic regression facilitates the management of both continuous and categorical variables while preserving strong estimation characteristics (Kaminski et al., 2004; Persons, 1995).

The definition of our basic model is as follows:

$$FRAUD = \beta_0 + \beta_1 LEV + \beta_2 ACHANGE + \beta_3 ROA + \beta_4 INVENTORY + \beta_5 BDOUT + \beta_6 AUCHANGE + \beta_7 DCHANGE + \varepsilon_{it} + \mu_{it}$$

Furthermore, to guarantee the integrity of our results, we employ various diagnostic techniques. We specifically examine the variance inflation factor (VIF) to mitigate multi-collinearity. The Hosmer-Lemeshow test is employed to evaluate model fit. This work addresses the last problem of panel structure using cluster analysis and the requisite fixed effects assumptions.

4. Research Results

4.1. Description of the Data

Table 1 presents descriptive statistics of financial statement fraud variables, showing significant variations in the sample. Financial stability (ACHANGE) shows significant variation, with values ranging from -0.8846 to 21.1932, while external pressure (LEV) displays moderate variation, with values spanning from 0.0006 to 3.8623. Financial targets (ROA) exhibit substantial differences, with the highest recorded at 0.9745 and the lowest at -0.4673. Opportunity-related variables, such as effective monitoring (BDOUT) and the nature of the industry (INVENTORY), also highlight considerable variability, with inventory changes ranging from -64.3617 to 66.6920 and monitoring ratios spanning from 0.0000 to 0.8889. Furthermore, the rationalization factor (AUDCHANGE) indicates that 18.24% of firms experienced auditor changes, while the capability factor (DCHANGE) shows that 48.15% of firms underwent director changes, reflecting governance dynamics that may influence fraudulent behavior.

Table 1. Descriptive statistics for variables in the model.

Variable	Observations	Mean value	Standard deviation	Minimum value	Maximum value
ACHANGE	1,080	0.1744	1.0359	-0.8846	21.1932
LEV	1,080	0.4676	0.2523	0.0006	3.8623
ROA	1,080	0.0561	0.0811	-0.4673	0.9745
INVENTORY	1,080	0.0065	3.0862	-64.3617	66.692
BDOUT	1,080	0.0878	0.1639	0.000	0.8889
AUCHANGE	1,080	0.1824	0.3864	0.000	1.0000
DCHANGE	1,080	0.4815	0.4999	0.000	1.0000

4.2. Correlation Test

The correlation analysis examines the linear relationships between the dependent variable (Financial Statement Fraud - FRAUD) and seven independent variables in the proposed model, providing insights into variable interactions and potential multi-collinearity. Table 2 indicates that FRAUD is positively correlated with ACHANGE (percentage change in total assets) and negatively correlated with ROA (return on total assets), with correlation coefficients of 0.0938 and -0.0678, respectively, both significant at the 5% level. Furthermore, the independent variables exhibit moderate correlations among themselves: ACHANGE shows positive correlations with INVENTORY, AUCHANGE, and DCHANGE, while LEV is positively correlated with ROA, BDOUT, AUCHANGE, and DCHANGE. Similarly, ROA is positively correlated with LEV, BDOUT, and AUCHANGE, and BDOUT correlates positively with AUCHANGE and DCHANGE. These findings suggest that the independent variables are appropriately structured with no strong multi-collinearity, supporting the validity of the subsequent regression analysis

Table 2. Correlation matrix.

Variable	ACHANGE	Lev	ROA	Inventory	BDOUT	AUCHANGE	DCHANGE
ACHANGE	1.0000						
LEV	-0.0168 0.5810	1.0000					
ROA	-0.0157 0.6065	0.3184 0.0000	1.0000				
INVENTORY	0.1293 0.0000	0.0316 0.2993	-0.0036 0.9060	1.0000			
BDOUT	0.0525 0.0844	0.0861 0.0046	0.3698 0.0000	0.0406 0.1821	1.0000		
AUCHANGE	0.0679 0.0257	0.1220 0.0001	0.1117 0.0002	0.0239 0.4319	0.2987 0.0000	1.0000	
DCHANGE	0.0673 0.0270	0.2725 0.0000	-0.0412 0.1763	0.0284 0.3509	0.1117 0.0002	0.6465 0.0000	1.0000

4.3. Regression Analysis

Financial statement fraud poses a significant risk across all economic conditions, causing substantial harm to organizations, individuals, and financial markets. This study employed logistic regression analysis on data from 110 firms registered on the Ho Chi Minh Stock Exchange (HOSE) and 106 companies listed on the Hanoi Stock Exchange (HNX) during a five-year period (2017–2021) to identify six critical indicators linked to fraud. These factors span across the pressure, opportunity, rationalization, and capability dimensions of the Diamond Fraud Model. Specifically, in Table 3, three variables from the pressure dimension (included: external pressure, financial stability, and financial targets), one from the opportunity dimension (ineffective monitoring), one from the rationalization dimension (auditor change), and one from the capability dimension (director change) show varying degrees of influence on fraud. The nature of the industry, however, does not exhibit a significant correlation with fraud. These findings are discussed in detail below, contextualized with prior research to enhance understanding.

Table 3. Estimation results of the logit model.

Variable	Coefficient	Std.err	P > |z|
Achange	0.8045086	0.3165561	0.011
Lev	0.5151155	0.309203	0.096
Roa	-2.220611	0.6774064	0.001
Inventory	0.2197648	0.6062142	0.717
Bdout	1.640926	0.5072377	0.001
Auchange	-0.6815347	0.280412	0.015
Dchange	0.3144915	0.2131769	0.140
Constant	-0.7536757	0.1450733	0.000
Number of observations		1,080	
LR chi2 (7)		55.20	
Prob > chi2		0.0000	
Pseudo R2		0.0428	
Log likelihood		-617.08426	

This study provides significant insights into the factors influencing financial statement fraud (FSF) in Vietnamese publicly traded firms, highlighting both consistencies and discrepancies with the current literature. Our research illustrates the unique operation of fraud risk variables within Vietnam's growing market, enhancing the overall comprehension of fraud detection and prevention.

4.3.1. Findings on Pressure Dimension

The "pressure" dimension includes three variables:

Financial Stability (ACHANGE): This variable shows a positive relationship with FSF (coefficient = 0.8045, p-value = 0.011), suggesting that heightened pressure to maintain financial stability increases the likelihood of fraud. Our findings are consistent with recent studies by Fadli and Junaidi (2022) and Pratiwi and Ghozali (2022), although they contradict the foundational research of Diansari and Wijaya (2019) and Irawan et al. (2019), which concluded that financial instability, rather than stability, is the primary catalyst for fraud. This disparity may be ascribed to Vietnam's distinct market features, wherein stable financial conditions might foster overconfidence in management's capacity to hide fraudulent operations. Moreover, in developing nations, consistent growth may intensify the need to sustain falsely elevated performance metrics to entice foreign investment, a phenomenon less seen in industrialized markets.

The positive association between External Pressure (LEV) and FSF (coefficient = 0.5151, $p < 0.1$) is beyond mere conformity with the findings of Diansari and Wijaya (2019). Although research in mature countries, such

as Dechow et al. (2011), identified leverage as a poor predictor of fraud, our findings indicate a more robust correlation, suggesting that in emerging economies like Vietnam, debt constraints may significantly influence fraudulent conduct. This may be ascribed to underdeveloped debt markets, elevated borrowing rates, and stringent collateral requirements in emerging economies, rendering leverage a more critical pressure point for management.

The empirical findings indicate that *External Pressure* (proxied by Leverage (LEV)) has a strong positive link with Financial Reporting Fraud (FSF), evidenced by a regression coefficient of 0.5151; p value < 0.1. External pressure may originate from stakeholders and investors, compelling management to deliver flawless financial results. A high leverage ratio indicates that the organization is struggling to meet its debt obligations and interest payments, which may compel managers to manipulate financial data to appease stakeholders. Conversely, organizations with constrained resources are likely to pursue external capital, resulting in elevated debt. This may enable management to manipulate financial statements to enhance access to market funding despite heightened credit risk and creditor obligations. This indicates that external pressure can compromise reporting accuracy via both direct and indirect means, particularly in emerging nations where alternative financing sources may be constrained. This conclusion is corroborated by the research of Diansari and Wijaya (2019), who observed a comparable positive link between external pressure and dishonest reporting behavior.

Our investigation reveals that *Financial Targets*, as indicated by Return on Assets (ROA), have a substantial negative correlation with financial reporting fraud (FSF) in the Vietnamese market, with a coefficient of -2.2206 ($p < 0.05$). This discovery represents a notable divergence from known work in developed markets, namely Persons (1995) and Summers and Sweeney (1998), who reported positive correlations between profitability objectives and fraudulent conduct. Our findings, however, correspond with the conclusions of Diansari and Wijaya (2019) in emerging markets, indicating that financial objectives adversely affect FSF inclination. This paradoxical link might be ascribed to the unique institutional attributes of Vietnam's developing market context. Firms exhibiting more profitability generally encounter increased regulatory scrutiny and benefit from better access to genuine financial markets, thereby diminishing motivations for dishonest reporting. These findings indicate that conventional fraud risk indicators may function differently in developing market situations, where institutional variables significantly influence financial reporting behavior.

4.3.2. Insights of Opportunity Dimension

4.3.2.1. Opportunity Factors

The opportunity dimension includes two variables:

Nature of the Industry (INVENTORY) does not significantly correlate with FSF (coefficient = 0.2198, p-value = 0.717), which contrasts with the significant industry effects identified by Beasley et al. (1999) in developed markets. This divergence may indicate variations in regulatory oversight and the application of accounting standards among industries in emerging markets, implying that the potential for fraud in Vietnam is likely more associated with institutional factors than with industry characteristics. However, this finding aligns with Fadli and Junaidi (2022), who similarly found no significant relationship.

Ineffective Monitoring (BDOUT) demonstrates a positive correlation with financial statement fraud (FSF) in Vietnamese listed businesses, evidenced by a regression coefficient of 1.6409 and a statistical significance level of 0.001 ($p < 0.05$). This finding indicates that augmenting corporate governance through an increase in independent board members in Vietnamese listed businesses diminishes the probability of financial statement fraud. An increased proportion of independent board members leads to enhanced monitoring mechanisms, as these directors typically exhibit better professionalism and diligence in fulfilling their responsibilities. Their presence substantially enhances oversight efficacy, thereby reducing the potential for fraudulent conduct. This result, however, contradicts the conclusions of Fadli and Junaidi (2022), who determined that poor monitoring negatively correlates with FSF, indicating that an increase in independent board members may diminish the efficacy of oversight procedures.

4.3.2.2. Rationalization Factor (Proxied by Auditor Change-AUCHANGE)

The variable rationalization exhibits an inverse correlation with financial statement fraud (FSF) in Vietnamese listed businesses, evidenced by a regression coefficient of -0.6815 and a statistical significance level of 0.015 ($p < 0.05$). This result indicates that a corporation that infrequently changes its auditors is more likely to participate in financial statement fraud (FSF). In contrast, firms that regularly alter their auditors exhibit a diminished propensity for engaging in fraudulent activities. Auditor adjustments can be viewed from two perspectives: obligatory and discretionary. Mandatory auditor rotations are implemented in accordance with corporate regulations, stipulating a change every two or three years. Voluntary auditor changes may occur when an auditor resigns owing to a preference to discontinue their association with the company. This suggests that changes in auditors among Vietnamese listed businesses are not inherently intended to obscure fraudulent operations, but may stem from obligatory corporate regulations or other circumstances associated with the auditing firm. These findings corroborate previous studies by Diansari and Wijaya (2019), Fadli and Junaidi (2022), and Pratiwi and Ghozali (2022), which also determined that rationalization adversely affects FSF.

4.3.2.3. Capability Factor (Proxied by Director Change - DCHANGE)

The alteration of directors, although exhibiting a positive link with financial statement fraud (FSF), shown by a coefficient of 1.6409, lacks statistical significance (p-value = 0.140). Director changes are frequently due to resignations, retirements, or organizational reorganization intended to improve performance, rather than indicating fraudulent activity. The results align with the research conducted by Fadli and Junaidi (2022) and Pratiwi and Ghozali (2022), which similarly identified no clear correlation between changes in directors and fraudulent conduct. Nonetheless, their findings diverge from those of Diansari and Wijaya (2019) and Irawan et al. (2019), who indicated a negative correlation, implying that changes in directorship could diminish the probability of FSF.

This research offers empirical information regarding the determinants of financial statement fraud in publicly traded companies in Vietnam. The findings underscore the essential influence of financial stability, external pressures, financial objectives, inadequate monitoring, rationalization, and capacity in determining fraud risks. Certain elements, including external pressure and inadequate oversight, heighten the probability of fraud, whereas others, such as financial objectives and alterations in auditors, function as mitigating influences. These findings enhance the existing literature on financial statement fraud and provide practical implications for regulatory bodies, investors, and corporate governance in emerging economies.

4.4. Results of Financial Statement Fraud (FSF) During, Pre-COVID-19 and after COVID-19 Periods

This study analyzes the varying effects of elements from the Diamond Fraud Model on financial statement fraud (FSF) across two separate periods: pre-COVID-19 (2017–2019) and during COVID-19 (2020–2021). The regression results in Table 4 demonstrate significant differences in the impact of these factors on FSF throughout the periods, offering important insights into the dynamics of fraudulent activity under differing economic conditions.

Table 4. Research results.

Variable	Pre_Covid 19 (2017-2019) (dy/dx)	During_Covid 19 (2020-2021) (dy/dx)
ACHANGE	-0.0283135	-0.0913367
LEV	-0.4661828***	0.006241
ROA	-2.702279***	-0.787698
INVENTORY	0.0174451	0.0376571
BDOUT	-0.4116698**	-0.0030803
AUCHANGE	-0.0541821	0.1851083
DCHANGE	0.0886978	0.2147673***
Number of Obs.	432	432
Prob > chi2	0.0000	0.0095
Pseudo R2	0.1788	0.1385

Note: ** p<0.05, *** p<0.01.

4.4.1. Pre-COVID-19 Period (2017–2019)

The empirical analysis presented in Table 4 reveals that during the pre-pandemic period (2017-2019), two pressure components from the Fraud Diamond Model—financial targets (ROA) and external pressure (LEV)—exhibited significant negative associations with financial reporting fraud (FSF), with coefficients of -0.283135 and -0.4661828, respectively. These findings present an intriguing departure from established literature, particularly Skousen et al. (2009) and Lou and Wang (2009), who documented positive associations between these pressure indicators and fraudulent reporting. This divergence can be attributed to the distinctive institutional characteristics of Vietnam's economy, where stable financial performance and conservative leverage levels may signal enhanced corporate governance mechanisms and reduced incentives for financial misconduct.

A particularly noteworthy finding is the substantial negative relationship between ROA and FSF, which challenges both the traditional fraud triangle theory (Cressey, 1953) and the empirical evidence presented by Persons (1995). While prior literature suggests that the pressure to maintain high profitability can induce fraudulent behavior, our results indicate that profitable Vietnamese firms demonstrate a lower propensity for fraud, potentially due to reduced financial pressures and greater resources available for strengthening internal control systems.

Furthermore, the significant negative association between ineffective monitoring (BDOUT) and FSF (-0.4116693) during the pre-pandemic period aligns with Chen, Luo, Tang, and Tong (2015) and Peasnell, Pope, and Young (2005), who emphasized the vital role of independent directors in fraud deterrence. The magnitude of this effect appears more pronounced in the Vietnamese context, possibly reflecting the impact of corporate governance reforms and heightened emphasis on board independence implemented since 2015. These findings collectively suggest that the institutional and regulatory environment in Vietnam may have created unique conditions where traditional fraud risk indicators operate differently from established theoretical frameworks

4.4.2. During COVID-19 Period (2020–2021)

Our empirical study indicates substantial structural alterations in the drivers of fraud during the COVID-19 pandemic (2020-2021), providing new insights into the literature on financial malfeasance in times of crisis. Although prior research on financial crises, especially the 2008 Global Financial Crisis (Cohen, Dey, & Lys, 2013; Kothari, Shu, & Wysocki, 2009) has shown enhanced correlations between financial stress and false reporting, our results indicate a notable divergence from these recognized trends. We note a diminished effect of conventional fraud indicators, particularly return on assets (ROA) and leverage (LEV), indicating that the extraordinary operational disruptions and market volatility during COVID-19 may have fundamentally changed the expression of fraud risk factors relative to prior financial crises.

Moreover, this result reveals that leadership change is a significant factor influencing financial reporting fraud during the epidemic, indicated by a positive coefficient of 0.2147673. This discovery aligns with Larcker, Tayan, and Taylor (2020), who recorded heightened vulnerability to fraudulent conduct during leadership changes, especially under market turmoil. Although existing literature has mainly focused on board composition and monitoring mechanisms during the pandemic (Arum, Wijaya, Wahyudi, & Brilliant, 2023; Grove, Clouse, & Xu, 2021), our study broadens this discussion by underscoring the essential role of leadership succession in influencing financial reporting integrity amid increased uncertainty. The findings indicate that the distinctive attributes of the COVID-19 crisis have transformed conventional perceptions of fraud risk variables and highlight the need for leadership stability in preserving financial reporting quality during extraordinary market conditions.

5. Conclusion

This study utilizes the Fraud Diamond Model to analyze the factors influencing financial reporting fraud (FSF) in Vietnamese listed firms, focusing on two separate periods: pre-COVID-19 (2017-2019) and during the pandemic (2020-2021). Our empirical investigation uncovers unique patterns in the functioning of the Fraud Diamond Model's components within Vietnam's institutional setting, especially during the crisis period, indicating a necessity for theoretical enhancements to current fraud frameworks. The results surpass usual fraud theory applications by illustrating how institutional traits in emerging economies, along with significant external shocks, may require alterations to standard fraud detection models. In addition, our findings have substantial ramifications for regulatory policy and fraud detection methodologies. The study highlights the necessity of modifying governance control methods and conventional fraud indicators to address changing market dynamics and extraordinary disruptions like the COVID-19 pandemic. These insights enhance the theoretical comprehension of financial reporting fraud in emerging markets and have practical implications for fraud detection and prevention in developing economies under substantial market instability.

Moreover, this paper enhances fraud theory by identifying unique patterns in the operation of pressure components within emerging markets. The relationships among financial stability, external pressure, and fraud risk indicate that conventional fraud risk factors exhibit distinct manifestations in different institutional contexts. Our findings indicate that the effectiveness of governance mechanisms varies significantly between normal and crisis periods, thereby extending agency theory by illustrating how the efficacy of monitoring mechanisms is heavily influenced by environmental conditions. The analysis of pre-COVID and COVID-19 periods provides important insights into crisis management theory, demonstrating how operational disruptions can significantly change fraud risk dynamics in ways not previously documented during financial crises.

Theoretical insights hold substantial implications for future research. Researchers should examine whether the identified disparities in fraud risk factors between developed and emerging markets remain consistent across various institutional contexts and stages of development. The evolving importance of governance mechanisms amid COVID-19 indicates a necessity for research focused on crisis-resistant monitoring systems. Researchers should investigate the impact of cultural and institutional factors in emerging markets on the effectiveness of anti-fraud mechanisms, especially as organizations undergo digital transformation and remote operations.

Our findings provide practitioners with actionable strategies for enhancing corporate governance. Organizations must establish adaptive monitoring systems that maintain effectiveness amid operational disruptions while also enhancing leadership stability mechanisms for crisis situations. Organizations must establish fraud risk assessment frameworks tailored to specific crises and modify their governance structures to reflect the characteristics of emerging markets. The practical applications directly engage with theoretical insights concerning the differing effectiveness of traditional monitoring mechanisms in various operational contexts. Regulators may enhance their efforts by creating fraud detection models tailored to specific markets, taking into account local institutional characteristics. Policy frameworks must integrate governance requirements that address crises, and there may be a need to enhance mandatory auditor rotation policies in emerging markets. Theoretical insights into the distinct operation of fraud risk factors in emerging markets should guide the formulation of regulatory oversight tailored to varying risk profiles during crisis periods.

Moreover, based on the research results, investors should integrate market-specific fraud risk factors into their investment risk assessment processes. Due diligence procedures must consider the distinct operation of governance mechanisms in emerging markets, while investments during crises necessitate enhanced scrutiny of

leadership stability and monitoring effectiveness. The practical applications arise directly from our theoretical findings concerning the distinct characteristics of fraud risk in emerging markets and during crises.

The synthesis of our theoretical and empirical results indicates multiple future priorities. Organizations and regulators must prioritize the development of governance mechanisms that are resilient to crises, as well as address market-specific fraud.

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