

Stock Market Consequences of Financial Fraud: Evidence from Fraudulent Firms Listed on PSX

A. Wahid^{*1}, S. Rizwan², K. Ullah³

^{1,3} PMAS-Arid Agriculture University Rawalpindi, Pakistan

² Fatima Jinnah Women University Rawalpindi, Pakistan

Abstract. This study examines the impact of financial fraud on the stock performance of 59 non-financial firms listed on the Pakistan Stock Exchange, as identified by the Securities and Exchange Commission of Pakistan (SECP). Financial fraud poses a serious threat to market efficiency, investor confidence, and firm valuation, yet limited empirical evidence exists on its long-term financial consequences in emerging markets. Using a sample of 59 fraudulent firms identified by the Securities and Exchange Commission of Pakistan (SECP), the study analyzes post-fraud performance over a five-year period, under the condition that these firms remained going concerns. Given the reputational and financial risks associated with fraud, the study analyzes post-fraud data over five years using a Two-Stage Least Squares (2SLS) regression and event study methodology. Results show significant negative abnormal returns, increased trading volume and a decline in market capitalization following fraud disclosures. The 2SLS model confirms that increased bid-ask spreads—reflecting information asymmetry—are linked to lower stock returns. These findings highlight the long-term financial consequences of fraud and emphasize the need for stronger regulatory oversight and improved corporate governance to protect investor confidence.

Key words: Financial fraud, Stock returns, Event study, 2SLS, Pakistan Stock Market

1 Introduction

Fraud is understood here as a characteristic of a course of action that provides sufficient grounds for a regulatory enforcement action, successful private litigation, criminal prosecution in the courts, or all of these. For the purpose of this study, financial frauds can then be defined as “intentionally and knowingly deceive the victim by misrepresenting, concealing, or omitting facts about promised goods, services, or other benefits and consequences that are nonexistent, unnecessary, never intended to be provided, or deliberately distorted for the purpose of monetary gain” (Powers and Severson, 2021).

Stock market fraud problems cause major difficulties, leading to serious impact on both individual investors and the financial sector. Intentionally falsifying a company’s financial reports, known as financial statement fraud, has often contributed to a drop in stock prices and put investors off. Scandals such as those at Enron and WorldCom exist as warning signs and show

*Corresponding author.

Email: wahid@uaar.edu.pk

that lying about finances not only makes firms appear dishonest but also ruins the trust people place in finance markets (Ebaid, 2023; Wang, 2022).

The impairment of these financial misconducts reaches further than only the immediate financial problems. According to research, businesses involved in fraud witness significant drops in their share prices after the public learns about their actions (Seifzadeh et al., 2021; Tay et al., 2016). These adverse impacts can cause 'reputational damage' to the entity and it can also make investors less inclined to join the market, leading to less liquidity and an increase in market instability (Wang, 2022). Also, regulators are under increasing demand to improve their effectiveness, making the existing structure of the financial system even more difficult to manage (Tay et al., 2016).

Also, how a firm is managed helps a lot in preventing fraudulent activities. Companies with strong corporate governance tend to reduce the risk of fraud which helps protect investors (Ebaid, 2023; Rostami and Rezaei, 2021). If these systems break down, financial fraud becomes more common which leads to declining trust in them and adds to the challenges for regulators (Seifzadeh et al., 2021). Therefore, realizing how corporate governance, investor decisions and government oversight interact is crucial for handling problems caused by financial fraud to the stock market (Ebaid, 2023; Rostami and Rezaei, 2021).

Stock markets rely on their integrity which is put at risk by financial fraud that greatly affects investors and causes serious disturbances to the financial systems. Solving this issue will need updated detection tools, better governance at companies and tighter government oversight to restore confidence and stabilize the markets.

There are distinct issues with financial fraud in their stock markets for emerging economies, including Pakistan and not many studies suggest solutions to this problem. Even though there are now more cases of corporate fraud in Pakistan, not much research has been done on just how these frauds affect the stock market and investors. Although forensic accounting, corporate governance and financial fraud have been widely covered in literature, there are few complete studies on them in the Pakistani context (Naz et al., 2024; Shahzadi et al., 2024).

Past studies show that because ownership and regulations differ in emerging economies, corporate fraud there often takes on different forms (Rizwan, 2019). Since many firms in Pakistan are controlled by just a few people, there may be less transparency and so, it may increase the chance of bad financial behaviour (Rizwan, 2019). Various investigations have exposed fraud in the market and explained detection methods; still, there is not much information as to how these frauds impact the stock market and the economy of Pakistan (Rizwan, 2019; Shahzadi et al., 2024). For this reason, an intensive review should be undertaken to show how corporate fraud impacts the way investor's view companies and impacts the capital markets in Pakistan.

So far, while research has pointed out the role of forensic accounting and regulations in fighting financial fraud, there are not many specific suggestions for Pakistan, given its unique system (Diansari and Wijaya, 2019; Zahid et al., 2020). There has not been enough attention given to studying practical matters like training employees to spot fraud, following international guidelines and securing whistleblower rights (Naz; Rizwan, 2019). As a result, there is not good understanding of corporate fraud in local countries or of ways to prevent it.

Although many studies have analyzed fraud in general, relatively little attention has been paid to its specific effect on stock market prices and investor confidence. As Akhtar (2026) note, the insight gained into these dynamics is critical to understanding market behaviour. In the case of Pakistan, work on the topic is still in its early stages to understand the reaction of the financial markets to news regarding financial fraud. Reurink (2018) points out that the relevant information on the market impacts of fraud is still scarce, and Cao et al. (2022) also find

that the empirical evidence on investors' attitudes regarding fraud events is scarce. Filling in these research gaps will contribute to design better financial structures that inspire trust among investors when corporate fraud happens in Pakistan.

It is important because it may address key issues in understanding financial fraud on the emerging stock exchange in Pakistan, namely the Pakistan Stock Exchange (PSX). Financial fraud is an international problem, particularly difficult in emerging economies such as Pakistan which calls for further study. Various incidents of financial reporting fraud have happened on the PSX, with significant results for both individual firms as well as market and investor trust. This research study provides facts on how these frauds affect the performance of the stock market, investors' actions and the country's economic health.

A main point of the study is that financial fraud damages investors' trust. Literature suggests that financial fraud causes companies to lose their good reputation. Such a reputation loss may make it hard to bring new investors on board and keep the market functional (Filatova et al., 2023; Wang, 2022). There is a link between fraud cases and times when people are less interested in the market (Rashid et al., 2022). That is why knowing how fraud affects investors' feelings and the performance of Pakistan's stock exchange helps regulators make better policies and improves corporate governance (Reurink, 2018).

Additionally, the research prods changes in public policy and regulatory structure. Recognizing possible financial misconduct threats in the PSX, the research can advise policymakers and regulators on how to address the issues. It has been suggested by previous studies that having strong public policies helps economies deal with financial fraud in emerging markets (Filatova et al., 2023; Jiang et al., 2022). Because Pakistan's regulatory framework is less advanced than that of other markets, improving oversight is very important. These improvements would support greater transparency and integrity which are important factors for encouraging investors to hold their assets on the PSX in the long run (Chen et al., 2014; Reurink, 2018).

Also, this research would help to expand the ongoing discussion on how good corporate governance can limit fraudulent activities. In studies by (Rashid et al., 2022) and Sallal et al. (2021), authors found that better corporate governance has helped avoid financial misconduct and increased responsibility within corporations. This research can show how companies in Pakistan can better meet the needs and guidelines of their investors and regulators through better corporate governance practices (Sallal et al., 2021; Wang, 2022).

Finally, this study used the fraud triangle and similar theories to explore what causes financial crimes in the emerging market setting of Pakistan (Rahman and Jie, 2024). With this approach, this study investigates the reasons behind financial fraud but also examines its consequences on stock performance and investor trust, while exploring governance and policy responses. All in all, besides contributing theoretically, this study can guide decisions in policy, enhance ways companies are managed and contribute to a more durable financial system in Pakistan.

2 Literature Review

There has been substantial progress in financial fraud studies, mainly about the impact and processes in developed countries. This paper brings together important results from several studies about financial fraud, what causes it and its consequences for the capital markets in the U.S., Europe and elsewhere. Fraud needs pressure, opportunity and rationalization to exist which is what the Fraud Triangle explains. Said et al. (2017) believe it is important to include

ethical considerations in this framework, especially in cases like banking, where fraud could heavily lower investor confidence and risk upsetting financial markets. They found that dealing with ethics in companies helps create integrity which in turn reduces risks of fraud.

It has been found through research that when there is a financial crisis, fraud tends to rise. [Reurink \(2018\)](#) states that fraud increases during periods of economic recession and while research agrees with this, experts disagree on what causes the rise of fraud. For example, [Jiang et al. \(2022\)](#) how problems within an organization, for example, poor compliance and weak internal rules, can increase the risks associated with an economic crisis. They expose major cases of fraud, proving the importance of strong corporate governance for stopping conduct that breaks the law.

Our reliance on audits can be seen in [Jiang et al. \(2022\)](#) work which points out their inadequacy in stopping fraud. It is pointed out that careful and unbiased auditing helps protect the company and requires stricter rules to stay effective. Board makeup and fraud are also topics researchers examine. According to [Rostami and Rezaei \(2021\)](#), independent boards and the board's structure greatly influence chances of financial statement fraud, highlighting the vital part strong oversight has in maintaining proper ethical practices.

The impact of financial fraud after it happens in developed countries usually causes great disruptions in their financial markets. The authors document that investors react instantly by bringing down stock prices after discovering white-collar crime in a company ([Tay et al., 2016](#)) due to concerns about the company's standing. The results here are consistent with [Wang \(2022\)](#) research which shows that trust in the market declines after discovering fraud and this affects the behavior of investors as a group.

The study of how stock prices, volatility and market capitalization are related has become very important in emerging markets. While these markets grow more integrated with the world's financial sector, it is important for investors, policymakers and businesses to understand these dynamics. It brings together key points from studies to display how these elements influence each other in developing economies.

Studies have shown that the prices of stocks in developing economies are influenced a lot by things unique to the companies. The author of the article [Avdaloović \(2018\)](#) reveals that internal features like market capitalization are tied to changes in the stock price in Belgrade. The research explains that big companies typically have steadier share prices because they collect more investment and appear lower risk. That means when companies get stronger and improve their foundations, their market prices should go up.

In addition, [Shabbir et al. \(2020\)](#) pointed out that commodity prices influence the prices of stocks on the Pakistan stock market. It was revealed in the results that an increase in gold prices lets trading on the stock market rise or fall, depending on the situation. That means financial variables are related and external shocks can spread through the markets to alter local stock prices.

In developing economies, volatility becomes very important since these countries tend to be easily disrupted by sudden and important events. In their study, [Cao \(2020\)](#) examined how various bits of information can affect the speed and direction of changes in a stock's trading, concluding that rapid negative changes in sentiment generally lead to a decrease in a stock's price. In developing countries, this situation becomes more prominent since investors often lack information and the markets are not as deep which increases volatility.

[Jebran et al. \(2019\)](#) and others investigate how a company's management and governance are related to the stability and fluctuation of its stock prices. Analysts observe that when executives do not share bad information, the revelation later may result in increased market activity and big

changes in stock prices. They show that good government plays an important role in controlling the dangers linked to high volatility in emerging markets.

Market capitalization which tells how large a company is in the market, is mainly influenced by both share prices and how much the stock market fluctuates. Studies carried out by [Mizuno et al. \(2017\)](#) found that when there is economic instability, the market capitalization may change a lot, resulting in higher asset values in developing market areas. Share prices in the market often follow some basics related to the economy, yet speculative trading may also create market bubbles.

Besides, [Arouri and Rault \(2012\)](#) address the role external forces like oil price changes play in impacting market capitalization, especially in exporting countries within developing economies. Scientists have shown that changes in commodity prices can immediately impact companies' earnings which leads to shifts in their market worth. Such a relationship highlights how quickly and intensively stock market changes can take place because of disturbances in the economy.

This study uses fraud triangle theory to explain the model and thus the findings. Many researchers have attempted to widen the fraud triangle. The ground-breaking work in this field was done by [Wolfe and Hermanson \(2004\)](#) when they introduced a fourth dimension—capacity—to the fraud triangle. The authors called the resultant expanded version of the fraud triangle as the fraud diamond. Subsequent researchers have pronounced the fraud diamond a significant advancement and improvement over the fraud triangle ([Ruankaew, 2016](#)).

3 Data and Methodology

The false financial disclosures are the type of fraud used here to group a variety of behaviours in which financial market participants make false statements about the performance or financial health of an investment outlet— that is, a company, fund, borrower, or investment product (U.S. Securities & Exchange Commission Whistleblower Attorneys, n.d.). False financial disclosures thus exploit the information asymmetry that exists between different parties in a financial transaction. By combining the illusion of disclosure with false information, false financial disclosures increase this information asymmetry while appearing to minimize it ([Black, 2009](#)).

This study reviews 59 companies on the Pakistan Stock Exchange (PSX) which were officially classified as fraudulent by the Securities and Exchange Commission of Pakistan (SECP). The firms included in the analysis must have stayed in business on a normal basis due to the establishment going concern post the fraud declaration. Using this approach, the study could track and study the finances and market standing of these companies for 5 years after the fraud event. In this study, we looked at how changes in the bid-ask spread, trading volume and market cap impacted stocks by using the method as suggested by [Jain and Kim \(2006\)](#). Due to 2SLS, potential endogeneity can be handled and researchers get a better idea of how a firm's liquidity and mismatched information influence the performance of its shares.

As well as econometric analysis, the study applies an event study method to observe how the stock market reacts to the exposure of the fraud. For this reason, certain event windows were set up: the event day itself, a short window for the days prior and after the announcement and an additional window for the next twenty trading days following the announcement following [Bacidore and Sofianos \(2002\)](#). The control sample consists of non-fraud PSX firms matched by industry and size, assigned the same event dates as fraud firms to compare abnormal returns and market reactions. The goal of using these event windows was to see the effects of fraud

on stock performance, volumes of trading and the total market value. When combining 2SLS regression with event study, the study examines both the quick changes seen in the market and the effects that last as time goes on.

3.1 Model Specification

A Two-Stages Least Squares (2SLS) regression model is used to analyze how fraud-related information asymmetry and market liquidity affect stock performance. The first stage involves estimating the change in the bid-ask spread as a function of changes in the stock price, price variance, volume of trades, and market capitalization:

$$\Delta Spread_{it} = \alpha_0 + \alpha_1 \Delta Price_{it} + \alpha_2 \Delta Variance_{it} + \alpha_3 \Delta Volume_{it} + \alpha_4 \Delta MCap_{it} + u_{it}$$

where $\Delta Spread_{it}$ represents the change in the bid-ask spread of firm i during period t ; $\Delta Price_{it}$ is the change in stock price; $\Delta Variance_{it}$ is the change in stock-price variance; $\Delta Volume_{it}$ is the change in trading volume; and $\Delta MCap_{it}$ is the change in market capitalization. The fitted value obtained from the first-stage regression is used as the instrumented measure of the bid-ask spread in the second stage.

The second-stage model is specified as follows:

$$\Delta CAR_{it} = \beta_0 + \beta_1 \widehat{\Delta Spread}_{it} + \varepsilon_{it}$$

where ΔCAR_{it} represents the change in cumulative abnormal return and $\widehat{\Delta Spread}_{it}$ is the predicted change in the bid-ask spread obtained from the first-stage regression. A negative value of β_1 indicates that greater information asymmetry and reduced market liquidity following a fraud disclosure adversely affect stock performance.

The event-study analysis measures abnormal returns by comparing the return of each fraudulent firm with that of its industry- and size-matched non-fraud control firm:

$$AR_{it} = R_{it}^F - R_{it}^C$$

where AR_{it} is the abnormal return of fraudulent firm i on event day t , R_{it}^F is the actual return of the fraudulent firm, and R_{it}^C is the return of the corresponding matched control firm.

The cumulative abnormal return for each firm over an event window (τ_1, τ_2) is calculated as:

$$CAR_i(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AR_{it}$$

The average abnormal return across the sample is calculated as:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it}$$

The cumulative average abnormal return over the selected event window is calculated as:

$$CAAR(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AAR_t = \frac{1}{N} \sum_{i=1}^N CAR_i(\tau_1, \tau_2)$$

where N represents the number of fraudulent firms and (τ_1, τ_2) represents the selected event window surrounding the fraud announcement.

4 Results and Discussion

This section outlines the various data analyses and discusses the findings.

4.1 Descriptive Statistics

The study applies the summary statistics on the measures of return, volume and market capitalization. The findings are reported in table 4.1 below.

Table 4.1: Summary Statistics

	Mean	SD
Return (%)	-.034	3.811
Volume (million)	84,210	2,869
Market capitalization (million)	35,126	1,535

In detail, Table 4.1 reports the descriptive patterns for 59 companies listed on the Pakistan Stock Exchange for a three-year period following the declaration of financial fraud by the SECP. Studies show that the average stock price drops slightly after each fraud event in the post-fraud period. Recent data shows that the return standard deviation for these firms is 3.811%, a sign that the market is uncertain about them. Average trading is continuing at a high level but it is also highly changeable (SD = 2,869 million), indicating that investors remain unstable. Market capitalization ranges widely, since the mean is PKR 35,126 million and the standard deviation is 1,535 million, indicating that there are companies in our sample of all sizes. The findings confirm that the negative effects of financial fraud can have long-term results on a firm's reputation and market value, no matter how large the company might be.

4.2 Univariate Analysis

The event study results, reported in table 4.2, reveal a clear and statistically significant market reaction to financial fraud disclosures among firms listed on the Pakistan Stock Exchange (PSX). In terms of stock returns, the market did not immediately react significantly on the event day (Day 0), but a delayed negative response was observed. On Day +1, the return dropped significantly by -.605% (significant at the 5% level) and further declined to -.562 on Day +2. These results indicate that investors gradually processed the implications of the fraud, leading to intensified sell-offs in the days following the announcement. This pattern suggests a loss of confidence and a revaluation of firm fundamentals by the market.

Trading volume also responded to the fraud announcements, with a significant spike on Day +2 (significant at the 10% level), indicating heightened trading activity. This increase could be attributed to both panic selling by risk-averse investors and speculative trading by others attempting to capitalize on price volatility. Furthermore, the volume remained significantly elevated in the intermediate period, reflecting sustained investor attention and continued market adjustments beyond the initial shock.

Market capitalization experienced a statistically significant decline on Day -1, falling to PKR 18,654 million (significant at the 10% level) and declined further to PKR 17,028 million by Day +1

Table 4.2: Event Study

	Benchmark	Day -2	Day -1	Day 0	Day +1	Day +2	Intermediate
Return	-.021	-.230	-.261	-.583*	-.605**	-.562	-.083
Volume	.682	.871	1.152	1.346	1.274*	.983*	-.047
Market capitalization	32,356	20,215	18,654*	19,563	17,028**	16,446**	18,995

*, **, *** represent the level of significance at 10%, 5% and 1% respectively.

(significant at the 5% level). Although some recovery was observed in the intermediate period (PKR 18,995 million), the figure remained significantly lower than the pre-event level, indicating that the loss in firm value was not quickly reversed. This persistent decline highlights the long-lasting reputational and financial damage caused by fraud, as well as the cautious stance adopted by investors in the aftermath of such events.

4.3 Results of 2SLS Model

The first-stage of 2SLS regression model as reported in table 4.3 examines how financial variables influence changes in bid-ask spread capturing liquidity and information asymmetry as a channel through which fraud heightens market uncertainty, consistent with insights from the fraud triangle theory. The intercept term is statistically significant, indicating that even in the absence of changes in the explanatory variables, there is a base-level widening of the spread, possibly due to structural effects of the fraud event. A statistically significant and negative coefficient for the change in stock price suggests that a decline in price is associated with an increase in the bid-ask spread. This relationship highlights the tendency of financial markets to become more illiquid as share prices fall post-fraud. Furthermore, the positive and significant coefficient for the change in price variance implies that increased volatility leads to a broader spread, consistent with the notion that uncertainty heightens transaction costs and widens the gap between buy and sell prices.

The coefficient for trading volume is negative and marginally significant, indicating that higher trading activity slightly narrows the spread. This suggests that more active trading helps absorb some of the post-fraud shock by restoring investor interest or confidence. Meanwhile, the change in market capitalization shows a weak positive relationship with the spread, implying that even larger firms are not immune to a rise in trading friction after fraud declarations. The adjusted R^2 of 0.251 indicates that approximately 25% of the variation in the bid-ask spread can be explained by the model.

In the second stage of the 2SLS model, the dependent variable is the change in cumulative abnormal returns (CAR). The key regressor in this model—the change in bid-ask spread—has a negative and statistically significant coefficient. This confirms that an increase in spread, reflective of heightened market friction and perceived risk, leads to a decline in stock performance. The adjusted R^2 of 0.184 shows that while the model explains a modest proportion of the variation in CAR, the relationship is economically and statistically meaningful.

Table 4.3: Results of 2SLS

Dependent variable: Change in spread		
Variable	Estimate	P-value
Intercept	.016	.011
Change in price	-.697	.042
Change in variance	1.028	.031
Change in volume	-.047	.050
Change in market Cap	.008	.064
<i>Adj_R square</i>	.251	
Dependent variable: Change in cumulative average return (CAR)		
Intercept	.004	.006
Change in spread	-.141	.048
<i>Adj_R square</i>	.184	

5 Conclusion and Implications

The study provides robust empirical evidence on the adverse impact of financial fraud on the stock performance of listed firms in Pakistan. Descriptive statistics showed that fraudulent firms experience persistent negative average returns and high volatility in trading volume and market capitalization even five years after the fraud declaration, indicating prolonged financial instability and market skepticism. The event study further confirmed that the announcement of financial fraud triggers statistically significant negative returns, increased trading volumes and a notable drop in market capitalization, particularly in the immediate days following the disclosure. These market reactions demonstrate that investors respond strongly and negatively to fraud-related news, leading to substantial erosion in firm value. The results of the two-stage least squares (2SLS) regression reinforce these findings by establishing a significant negative relationship between changes in the bid-ask spread (used as a proxy for market uncertainty) and cumulative abnormal returns. This suggests that increased information asymmetry and reduced liquidity—both consequences of fraud—directly harm stock performance. Together, these analyses present a consistent picture of how financial misconduct damages investor confidence, disrupts trading behavior and diminishes firm valuation in both the short and intermediate term.

The findings have important implications for regulators, investors and corporate managers. For regulators such as the Securities and Exchange Commission of Pakistan (SECP), the evidence calls for more proactive monitoring, transparent enforcement of corporate reporting standards and timely public disclosure of fraudulent activity to contain market disruption. For investors, the results underline the importance of scrutinizing governance quality and transparency indicators when making investment decisions, particularly in emerging markets where regulatory oversight may vary. Firms themselves must recognize that fraudulent behavior leads not only to legal penalties but also to long-term damage to their financial standing and investor relationships. Implementing stronger internal controls, ethical corporate governance structures and

timely communication with shareholders can help mitigate these risks. Moreover, the market's strong reaction to fraud events suggests that reputational capital is a key intangible asset that must be preserved to maintain investor trust and financial performance over time.

References

- Akhtar, T. (2026). The role of fintech on the relationship between ownership structure and dividend payments. *International Journal of Finance & Economics*, 31(1):99–128.
- Arouri, M. E. H. and Rault, C. (2012). Oil prices and stock markets in gcc countries: empirical evidence from panel analysis. *International Journal of Finance & Economics*, 17(3):242–253.
- Avdaloović, S. M. (2018). The impact of firm specific factors on the stock prices: Empirical evidence from belgrade stock exchange. *Industry/Industrija*, 46(2).
- Bacidore, J. M. and Sofianos, G. (2002). Liquidity provision and specialist trading in nyse-listed non-us stocks. *Journal of Financial Economics*, 63(1):133–158.
- Black, W. K. (2009). Cette finance frauduleuse que l'on ne veut pas voir. *L'Économie politique*, 42(2):52–58.
- Cao, L. (2020). Ai in finance: A review. Available at SSRN 3647625.
- Chen, M., Mao, S., and Liu, Y. (2014). Big data: A survey. *Mobile networks and applications*, 19(2):171–209.
- Diansari, R. E. and Wijaya, A. T. (2019). Diamond fraud analysis in detecting financial statement fraud. *Journal of Business and Information Systems (e-ISSN: 2685-2543)*, 1(2):63–76.
- Ebaid, I. E.-S. (2023). Nexus between sustainability reporting and corporate financial performance: evidence from an emerging market. *International Journal of Law and Management*, 65(2):152–171.
- Filatova, H. P., Tumpach, M., Reshetniak, Y. V., Lieonov, S. V., Vynnychenko, N. V., et al. (2023). Public policy and financial regulation in preventing and combating financial fraud: a bibliometric analysis.
- Jain, P. K. and Kim, J.-C. (2006). Investor recognition, liquidity, and exchange listings in the reformed markets. *Financial Management*, 35(2):21–42.
- Jebran, K., Chen, S., and Tauni, M. Z. (2019). Principal-principal conflicts and corporate cash holdings: Evidence from china. *Research in International Business and Finance*, 49:55–70.
- Jiang, Y., Guo, C., and Wu, Y. (2022). Does digital finance improve the green investment of chinese listed heavily polluting companies? the perspective of corporate financialization. *Environmental Science and Pollution Research*, 29(47):71047–71063.
- Mizuno, T., Ohnishi, T., and Watanabe, T. (2017). Novel and topical business news and their impact on stock market activity. *EPJ Data Science*, 6(1):26.
- Naz, M. A., Ahmed, Z., Khan, S. N., Mustafa, F., Yaseen, M. N., and Ditta, A. (2024). Adoption of blockchain technology in financial reporting of commercial banks: Evidence from pakistan. *Journal of Asian Development Studies*, 13(3):360–365.
- Naz, R. Financial technology adoption and financial performance: A dynamic panel analysis of banking institutions in asean countries.
- Powers, R. A. and Severson, R. (2021). Bureau of justice statistics. *The Encyclopedia of Research Methods in Criminology and Criminal Justice*, 2:780–782.
- Rahman, M. J. and Jie, X. (2024). Fraud detection using fraud triangle theory: evidence from china. *Journal of Financial Crime*, 31(1):101–118.
- Rashid, M., Ahmad, R., and Tariq, S. (2022). Financial revolution: from traditional finance to behavioral and neuro-finance. *South Asian Journal of Social Sciences and Humanities*, 3(4):95–108.
- Reurink, A. (2018). Financial fraud: A literature review. *Journal of Economic Surveys*, 32(5):1292–1325.

- Rizwan, S. (2019). Corporate frauds, information asymmetry and stock market reaction. *Global Regional Review*, 4(2):126–133.
- Rostami, V. and Rezaei, L. (2021). The effect of competition in the product market and financial flexibility on business strategy. *Journal of Facilities Management*, 19(5):632–651.
- Ruankaew, T. (2016). Beyond the fraud diamond. *International Journal of Business Management and Economic Research*, 7(1):474–476.
- Sallal, F., Bagherpour Velashani, M. A., and Saei, M. J. (2021). Fraudulent financial reporting motivations in emerging markets. *Journal of Financial Crime*, 28(3):892–905.
- Seifzadeh, M., Salehi, M., Abedini, B., and Ranjbar, M. H. (2021). The relationship between management characteristics and financial statement readability. *EuroMed Journal of Business*, 16(1):108–126.
- Shabbir, Z., Sardar, A., Shabbir, A., Abbas, G., Shamshad, S., Khalid, S., Murtaza, G., Dumat, C., Shahid, M., et al. (2020). Copper uptake, essentiality, toxicity, detoxification and risk assessment in soil-plant environment. *Chemosphere*, 259:127436.
- Shahzadi, G., Jia, F., Chen, L., and John, A. (2024). Ai adoption in supply chain management: A systematic literature review. *Journal of Manufacturing Technology Management*, 35(6):1125–1150.
- Tay, L.-M., Puah, C.-H., Brahmana, R. K., and Abdul Malek, N. I. (2016). The effect of white collar crime announcement on stock price performance: Evidence from malaysian stock market. *Journal of Financial Crime*, 23(4):1126–1139.
- Wang, Z. (2022). Digital finance, financing constraint and enterprise financial risk. *Journal of Mathematics*, 2022(1):2882113.
- Wolfe, D. T. and Hermanson, D. R. (2004). The fraud diamond: Considering the four elements of fraud.
- Zahid, M., Rahman, H. U., Khan, M., Ali, W., and Shad, F. (2020). Addressing endogeneity by proposing novel instrumental variables in the nexus of sustainability reporting and firm financial performance: A step-by-step procedure for non-experts. *Business Strategy and the Environment*, 29(8):3086–3103.