Journal of
Risk and Financial Management

MDPI

Article

Organizational Risk Management and Performance from the Perspective of Fraud: A Comparative Study in Iraq, Iran, and Saudi Arabia

Hussein Alkhyyoon, Mohammad Reza Abbaszadeh * and Farzaneh Nassir Zadeh

Department of Economics and Administrative Sciences, Ferdowsi University of Mashhad, Mashhad 9177948974, Iran
* Correspondence: abbas33@um.ac.ir

Abstract: This study aimed to examine the impact of enterprise risk management (ERM) on the firm performance of capital markets in developing nations such as Iran, Saudi Arabia, and Iraq. In order to achieve the study's primary purpose, the economic environments of Iran, Iraq, and Saudi Arabia, three neighboring and developing nations, were examined from 2012 to 2019. The hypotheses were tested using panel regression analysis. According to the data, ERM might boost the return on assets and lower the total assets of Iranian enterprises while raising the total assets of Iraqi firms. In addition, the data demonstrated that ERM decreased sales growth and boosted net profit margins in Saudi Arabian companies. ERM enhanced the return on assets in Iranian enterprises and sales growth in Saudi Arabian firms while lowering sales growth in Iraqi firms. In addition, it was shown that total asset turnover increased in non-fraudulent Iranian companies but fell in their Iraqi counterparts. The outcomes of this study revealed substantial evidence regarding the financial conditions and performance of companies operating in emerging nations. As a result, it can be inferred that ERM efficiency and firm performance can be influenced by the firm's nature and structure, as the findings in these three economic environments were fundamentally distinct. This research contributed to the literature on ERM as one of the essential elements influencing business performance in emerging economies with varying capital market laws. In addition, the literature and acquired data demonstrate the scope of fraud and its influence on the performance of businesses in developing nations.

Keywords: intellectual capital; human capital; structural capital; relational capital; financial restatement; audit fees

Citation: Alkhyyoon, Hussein, Mohammad Reza Abbaszadeh, and Farzaneh Nassir Zadeh. 2023. Organizational Risk Management and Performance from the Perspective of Fraud: A Comparative Study in Iraq, Iran, and Saudi Arabia. *Journal of Risk and Financial Management* 16: 205. https://doi.org/10.3390/jrfm16030205

Academic Editor: Eleftherios I. Thalassinos

Received: 24 January 2023
Revised: 23 February 2023
Accepted: 27 February 2023
Published: 16 March 2023

1. Introduction

The rise in fraudulent financial reporting and the misrepresentation of financial accounts, sometimes accompanied by significant firms' insolvency, has raised questions about reporting accuracy (Amiram et al. 2018). For this reason, investors, lawmakers, managers, and auditors are always interested in preventing or detecting fraud in financial reporting. Insolvency, fraud, and corporate failure have long been complex and significant challenges. Today, human wants and needs are limitless, but resources are limited. The birth and collapse of all phenomena are rooted in the actual and logical demands of individuals within society (Tourish 2019). In professional services, the rise of fraudulent audits cannot be an exception to this criterion. Even though technological advancements and widespread changes in the corporate environment have resulted in an increased economic acceleration in the modern world, rivalry among businesses has constrained predicted income (Simeunović et al. 2016; Singleton and Singleton 2010). Consequently, the incidence of fraud is on the rise. In contrast to other research topics, such as predicting bankruptcy or financial difficulties, relatively few studies have examined using a model to detect fraud (Malik et al. 2020).

Global rivalry and technology advancements have made corporate environments more complex (Abbas 2012; Dabbicco and Mattei 2021). Because of environmental unpredictability, businesses confront a myriad of hazards. The tumultuous business climate and high publicity surrounding corporate bankruptcy compel politicians and corporate leaders to implement effective risk management, which has become a fundamental business concept (Almasri 2021). Profitability cannot be achieved without an effective risk management system and an inherent control system component (Ak and Sahin 2021). In contrast to the old silo-based approach to risk management, organizations employing an effective risk management system must handle a broad spectrum of risks within a coordinated and strategic framework (Anton 2018). Effective risk management strategies are typically viewed as an economic risk absorber rather than a strategic management approach (Noreen 2020). Effective risk management prevents losses and finds, generates, and capitalizes on opportunities (Behzadi et al. 2018). In today's competitive financial services industry, effective risk management is a potent, dual-purpose tool for defense (Borovkova et al. 2019).

Effective risk management is one of the most critical factors that can dramatically boost a company's performance (Gordon et al. 2009; Nasr et al. 2019). Each business operation is defined to achieve the best level of effectiveness and efficiency, referred to as performance (McGuire et al. 1990; Pouraghajan et al. 2012). Financial performance measures the monetary results of a company's policies and operations (Gordon et al. 2009). Excellent company risk management as a holistic approach is essential for optimal performance control, and all business operations can benefit from effective risk management to achieve their full potential (Chinman et al. 2019). Ineffective risk management in businesses can result in higher costs for both the investor and the investee and a decline in performance (Saeidi et al. 2021). Numerous studies have demonstrated that an efficient enterprise risk management (ERM) system can enhance financial performance (Shad and Lai 2019).

In today's competitive environment, firms can only survive if they continually enhance their performance to achieve and maintain a competitive edge and increase their profitability. This is accomplished by goal setting, planning, and performance measurement to assess the success of accomplishing target goals (Danoshana and Ravivathani 2019). By comparing current figures to previous years, its target goals to its current state, and its current status to its competitors, performance measurement identifies strengths and weaknesses, formulate plans and objectives, and incentivizes managers and employees (Williams and Kedir 2017). Globalization and the quick rate of technological change have increased economic competition and the complexity of managing organizations (Guerrero-Villegas et al. 2018). When making significant decisions in complicated environments, organizations require managers to analyze and differentiate underlying complications (Aydiner et al. 2019). This decision-making process requires efficient risk management based on sound conceptual assumptions. ERM is a method of discovering, analyzing, and implementing control measures and minimizing the potential impact of risks that could devastate the organization (Yang et al. 2018). ERM controls risk to reasonably ensure that business objectives will be attained (Shou et al. 2018). As stated, ERM is crucial in enhancing business performance by assessing risks and designing risk detection systems. Researchers believe ERM offers a broader approach to risk management than its classic form. ERM is a systematic and integrated method to manage all of the firm's risks to reduce the overall risk of insolvency, boost performance, and ultimately raise the firm's value. These concerns demonstrate the significance of risk management to a company's performance. However, a detailed examination of developing economies reveals that ERM is not highly regarded. Consequently, this study aimed to empirically assess ERM's impact on business performance in three developing economies: Iran, Saudi Arabia, and Iraq. To achieve the purpose of this study, the following questions were addressed: How does risk management impact the performance of companies listed on the Tehran, Baghdad, and Riyadh stock markets? One of the breakthroughs of this research is a solution to this issue based on empirical research and actual data from the cited economic circumstances.

It has been proposed that risk management can enhance performance and value. However, nobody can disregard intervening variables, which are always problematic. Sadly, fraud is one of these elements, which has always posed a barrier in research, particularly for studies undertaken in poor economic situations. Any purposeful act or omission that deceives victims or perpetrators to acquire benefits or advantages is fraudulent (Auditing Standards, Section 240, paragraph 4; cited in Chen and Elder 2007). There are various conceptual classifications for handling fraud risks inside an organization. The Association of Certified Fraud Examiners report on embezzlement and employee fraud classifies fraud threats into three primary categories: dishonest financial reporting, misappropriation of assets, and corruption (Glancy and Yadav 2011). The overstatement and/or understatement of facts to deprive a person of valuable assets is fraudulent financial reporting. Financial statement fraud is a management deception that damages both investors and creditors by presenting deceptive materiality information (Homer 2019). Misappropriation of assets happens when employees, purchasers, or suppliers take advantage of their positions to steal tangible (cash or inventory) or intangible (intellectual property, confidential goods, or customer knowledge) assets. Therefore, fraud is an issue that impedes ERM and its assessment. Fraud is a challenge to ERM, according to the findings of prior studies (Chen et al. 2015; Hess and Cottrell 2016; Clauss et al. 2009; Sinha 2021), which can have a detrimental impact on business performance due to the intentional manipulation of financial statements. Ezu (2020) reported that electronic fraud could have a negative effect on bank performance. Moreover, Hand et al. (2008) and Mawutor et al. (2019) discovered that corporate fraud could diminish their financial performance and market share. These studies' conclusions indicate that fraud can impact ERM and firm performance. However, none of this research discusses the impact of fraud on the potential link between these two factors. In order to analyze and compare the influence of ERM on firm performance in fraudulent versus non-fraudulent enterprises, the present study sought to divide firms into two groups: fraudulent and non-fraudulent. Thus, it is anticipated that the outcomes of fraudulent firms will differ from those of non-fraudulent firms, and this difference can be traced to the presence or absence of fraud in enterprises. At this level, the objective is to determine whether or not fraud can influence the effect of ERM on the performance of enterprises in Iran, Saudi Arabia, and Iraq. Given that no empirical research has previously explored this topic, one may claim that the answer to this question is another new study component.

The results suggested that the impact of ERM on company performance in these three distinct economic environments varied. Moreover, ERM influences the firm performance of fraudulent and non-fraudulent businesses differently. Other elements of this research include a theoretical context, hypotheses, a research technique, results, a discussion, and a conclusion.

2. Literature Review and Hypothesis Development

2.1. Firm Performance

Performance is the consequence of actions. In other words, performance is a measurable outcome of a company's decisions and actions, reflecting its success rate and accomplishments (Taouab and Issor 2019). Evaluation and measurement of a company's performance have acquired significance due to the separation of ownership and management, creating a conflict of interest. Failure to evaluate the performance of enterprises results in a suboptimal allocation of resources, resulting in losses for the owner (shareholders) and, subsequently, the macroeconomic health of society (Škare and Hasić 2016). The operational definition of a company's performance has proven challenging and involves numerous measurements. Some researchers employ performance measures based on the data utilized to quantify the performance (Koufteros et al. 2014; Taouab and Issor 2019; Teeratansirikool et al. 2013). The performance of an economic entity is determined by accomplishing short- and long-term objectives (Bennett et al. 2017). Therefore, performance is a suitable criterion for accomplishing the specified objectives. This metric represents the rate at which businesses and organizations achieve their objectives. The firm's performance,

which shows its activity in utilizing resources and expenses, has always been influenced by elements substantially affecting resources, costs, and decision-making. Specifically, Varshney et al. (2012) identified corporate governance processes as significant and crucial company performance drivers. Iqbal et al. (2020) argued that economic policies can alter the performance of businesses. According to Aydiner et al. (2019), decisions made by managers are among the factors that determine a company's performance. Financial reporting was identified by Salah (2020) as a factor influencing corporate performance. Gordon et al. (2009) demonstrated that corporate risk management can substantially affect company performance.

2.2. Risk Management

Academics have extensively debated ERM, particularly during the 1998 and 2008 global economic crises, corporate scandals, and business failures (Samimi and Samimi 2021). ERM allows organizations to integrate a wide range of hazards in a comprehensive, holistic, and integrated manner, enabling them to identify, evaluate, and respond to risk more effectively and efficiently than traditional risk management. Consequently, managers can raise the company's worth (Alawattegama 2018). Multiple definitions of ERM exist. The Committee of Sponsoring Organizations (COSO) introduced an integrated ERM framework in the middle of 2004. According to COSO (2004), ERM is "a process, affected by an entity's board of directors, management, and other personnel, applied in strategy formulation and across the enterprise to identify potential events that may affect the entity and manage risk to be within its risk appetite, in order to provide reasonable assurance regarding the achievement of entity objectives" (cited in Silva et al. 2019).

ERM seeks not only to reduce company risks but also to identify profit potential for the organization. ERM highlights two fundamental points. The first is a comprehensive view of risk, and the second is that it views risk as an opportunity rather than a threat and develops opportunities from difficult situations. Because ERM is an integral component of the company's strategy and is of utmost importance, senior management directs it from the top down (Saeidi et al. 2021). Unquestionably, risk is an intrinsic component of business strategies. ERM gives the rationale to manage these risks, even though the risk is crucial to a company. Risk management is integrated into organizational control procedures and defines management control for most modern businesses (Kommunuri et al. 2015).

Although Wilmarth (2010) puts similar obligations on listed corporations in the United States, it falls short in terms of roles, duties, and risk management compared with UK rules (Wilmarth 2010). This relationship has been studied using several risk management proxies in the United States. Grace et al. (2015); Gordon et al. (2009); and McShane et al. (2011), among others, have found ERM to be both valuable and non-valuable in their risk management research (Beasley et al. 2008).

Companies are attempting to operationalize the ERM by improving corporate governance mechanisms and industry engagement to enhance their ability to manage risks and promote performance (Arena et al. 2010). Corporate governance mechanisms embrace the formation of assigned bodies, such as chief risk officers and board risk committees, to ensure the integration of RM and corporate governance mechanisms (Lundqvist 2015). Primarily, we discuss that such integration may lead to the assignment of an internal control and risk officer accountable for recognizing risky domains in the company, planning, designing, and operationalizing the necessary internal controls and altering RM procedure, and for timelier reporting of vital deficits to the board of directors or internal control and risk committee (Borsa Italiana 2011). Consequently, the assignment of such an accountable person may provide investors with positive signals that the environmental RM is dedicated to a proper person (for example, a senior-level executive), resulting in increased positive financial market response (Beasley et al. 2008) and enhanced firm value (Lundqvist 2014). Such an ameliorating process regarding the ERM may improve the firm performance (Power 2009) by optimizing earnings (Standard & Poor's 2007). ERM is prone to enhance financial performance due to assisting companies in precluding potential losses,

reputational costs and bankruptcy (Baxter et al. 2013). Additionally, the enhancement of the company decision-making process (Grace et al. 2015) and optimization of capital dedication processes (Baxter et al. 2013) are among the merits of ERM that are likely to enhance financial performance. as Additionally, other risk elements, such as the cost environment, as a proxy for RME, within the company are expected to influence the firm performance (Salehi et al. 2018b).

In contrast, efficient ERM may decrease firm risk-taking to a lower level from the point of view of stakeholders, leading to the negative association between ERM and firm financial performance due to excessive sophistication, particularly in a stable economy atmosphere (Ellul and Yerramilli 2013). Such an argument is likely to explain the available mixed empirical findings on the relationship between ERM and firm financial performance. On the one hand, Beasley et al. (2008) showed that control risk officer employment may positively influence the equity market response for non-financial companies but not financial companies. On the other hand, Hoyt and Liebenberg (2011) proposed a positive association between control risk officer employment and firm value. as Additionally, McShane et al. (2011) identified a positive association between effective ERM and firm value; however, they could not recognize any further increase in firm value for companies enhancing ERM sophistication. Baxter et al. (2013) also showed that the effectiveness of ERM is positively associated with wealth creation in the US banks and insurance firms, but just for the periods suffering from the global financial crisis (Baxter et al. 2013). Bertinetti et al. (2013) also documented resembling outcomes between ERM effectiveness and wealth creation for European financial and non-financial firms. Salehi et al. (2020) showed that corporate governance mechanisms, such as managerial characteristics, will likely influence the firm's operation.

Secondly, ERM will likely determine a firm's performance by nominating an internal control and risk committee and its potential risk management advice for the board of directors and internal auditors (Borsa Italiana 2011). Previous studies mainly concentrate on the risk committee employment as a representative for ERM (Yatim 2010). In line with Florio and Leoni (2017), we expect that the existence of a risk committee or internal control and risk committee means the higher priority of RM inside the company and effective consonance among the ERM elements. For example, the repetitive reporting and effective cooperation between the internal control and risk committee and the board of directors may also positively impact firm performance (Borsa Italiana 2011). Prior literature confirms that a strenuous board of directors' participation positively influences an efficient ERM structure (Sobel and Reding 2004). Additionally, it is suggested that ERM and corporate governance are mutually and interdependently incorporated, in which the value creation is significantly contingent upon the improvement and stability of those components (Quon et al. 2012). In other words, having repetitive interactions between the internal control and risk committee and the board of directors can assist in identifying risky domains, which in turn enables companies to alleviate risks effectively (Arena et al. 2010) and, eventually, improve their operation (Ellul and Yerramilli 2013). Daemigah (2020a) and Salehi et al. (2019b) argued that audit fees and quality are likely to be determinant by the environment of ERM of companies.

Three fundamental aspects specify the risk estimation and determine the firm performance, in which the primary one is the timely risk estimation subjected to the periodicity of the estimation. Regarding COSO (2012, p. 2), risk estimation is required to be exerted periodically, at least respecting the significant dynamic risks in the company, including special risks of production and market. Although, for keeping effective controls over potential risks, the frequency of risk estimation is necessary, which must be adjusted based on assessing the rate of business risk. Yet, the highly risky environment must be evaluated more frequently compared with other businesses (Mikes and Kaplan 2015). It is also necessary to consider that the complexity and viability of economic settings worldwide and the greater potentiality of the global financial crisis may increase the demands for a higher frequency of risk evaluation, since it might be helpful for companies to identify the risk levels in a timelier manner. Thus, we expect that a greater frequency of risk evaluation is willing to

increase ERM efficiency, resulting in ameliorated firm performance. Secondarily, the depth of risk evaluation might be another factor determining the ERM and firm performance. As recommended by COSO (2012, p. 2), risk recognition and evaluation must be exerted at both the business units and corporate levels through structuring risk elements by categories and sub-categories. In this sense, previous papers demonstrate that monitoring the risk behavior by business units might be an effective function to uncover and pursue the risks inside the company (Farrell and Gallagher 2015). Since listed companies are sophisticated units, an in-depth risk evaluation might be necessary to achieve an efficient ERM and better financial performance. Thirdly, the methodology used in risk evaluation is another crucial element. The COSO (2012, p. 2) recommends that having exerted primitive qualitative risk monitoring, companies must apply quantitative analysis on the most prominent risky area. For instance, it is examined whether the financial crisis is willing to determine the auditor's behavior and risk acceptance (Salehi et al. 2019a). The previous findings also show that continuous risk evaluation gives companies a favourable implication that enables them to uncover and pursue the risks inside them (Farrell and Gallagher 2015). Therefore, we expect that companies applying both quantitative and qualitative methodologies will likely have more effective ERM systems, which may assist them in improving their capability of risk identification and, eventually, better performance.

2.3. Fraud

The Association of Certified Fraud Examiners defines fraud as an illegal act characterized by deception, secrecy, and breach of trust (Morgan 2021). These actions always include physical force or coercion. Individuals and businesses commit fraud to obtain money, property, or services in order to avoid payment or loss of services; or to achieve commercial or private gain (Kaufman and Wunderlich 2009). According to the American Institute of Certified Public Accountants, fraud is a deliberate distortion to force a victim to to rely on the perpetrator, to give something of value to them, or to concede the legal right to a false representation of the truth, either by words or by false/misleading behavior, or by concealing what must be revealed, which is committed to misleading the victim in a way that is legally harmful (Singleton and Singleton 2010). Two conditions lead to misstatements in auditing (Jeppesen 2019).

The false financial statement purposefully misrepresents financial statements to deceive users. Asset misappropriation is theft where the effect is not adequately recognized in financial statements (US Auditing Standards No. 99, paragraph 6). According to definitions, fraud comprises purposeful acts conducted with deception, guile, or cunning (Singleton and Singleton 2010). These actions might be characterized as either false or covert pretences. The elements of fraud are deception, the risk of arrest, violation of trust, and rational justification. Fraud is immoral, resulting in incorrect but significant financial statement annotations (Amiram et al. 2018). There are numerous types of financial fraud, including false financial statements, employee theft, misappropriation of assets, and bankruptcy fraud (Amiram et al. 2018). Those who successfully commit and conceal fraud are considered conversant with the audit processes that auditors normally employ (Beneish 1999). The board of directors is responsible for preventing and identifying fraud and other irregular behavior (Salehi and Norouzi 2022). Nevertheless, the auditor and the statutory auditor are required to be involved. Comprehensively addressing fraud necessitates detailed research of the types of fraud, fraudsters, victims of fraud, the responsibility of auditors in prior fraud, the necessity for special audits to detect fraud, and the issues with computer systems (Salehi et al. 2022; Jeppesen 2019).

2.4. Hypothesis Development

Risk Management and Firm Performance

Risk management entails the strategies and processes by which organizations manage risks and seize opportunities per their strategic objectives (Aven and Renn 2010). Risk management enables the board of directors to determine if management is actively rec-

ognizing and reviewing the enterprise's risks. Brown et al. (2009) argued that effective risk management processes can aid in exploiting opportunities, improving information and communication processing, and enhancing corporate reputation, accountability, and dependability to enhance corporate planning and performance. ERM fosters disclosure of risk-related concerns at the board level, fostering greater transparency and improved business management (Brown et al. 2009). The ERM intends to give benefits by lowering expenses and stock price swings, boosting investment productivity, and developing synergies within the whole revenue process (Pagach and Warr 2015). Liebenberg and Hoyt (2003) contended that comprehensive ERM improves board-level decision-making, improving strategy implementation and effective operations, reducing costs and increasing positive cash flow. In addition, the benefits of macro and micro-level risk management were discussed. Risk management strives to create value that permits access to the market and other resources for the firm's management strategy by focusing on the amount and management of enterprise risk returns at the macro level (Salehi et al. 2018a). At the micro-level, risk management guarantees that decision-making is not centralized among senior managers but occurs at all organization levels, ensuring that each business unit considers risk as part of the decision-making process. Lam (2003) discussed how an effective ERM can boost business performance by enhancing governance and a streamlined chain of command. Several empirical studies provide evidence for ERM ideas. Most empirical research on risk management and performance is conducted on U.S.-based companies. Gordon et al. (2009) discovered the association between risk management and business performance-enhancing variables such as environmental unpredictability, industry competition, company size, complexity, and board monitoring. Successful ERM implementation increases shareholders' worth by at least 20%. According to Anton (2018), American companies with higher ERM quality have stronger financial positions and a higher market value, and risk management practices are closely correlated with improved company performance. According to Farrell and Gallagher (2015), the degree of ERM maturity corresponds to a maximum firm value of 25%. After assessing ERM maturity, they concluded that top–down executive engagement and ERM culture are significant value-creation elements. Grace et al. (2015) discovered that ERM boosted cost and revenue returns and indicated that risk management activities increase efficiency if there is a connection between the economic capital model and a board or CEO-specific revenue report. The essential advantage of ERM is that it enables organizations to effectively and consistently manage possible risks, lowering stock market volatility and costs while increasing efficiency, thereby enhancing firm performance and value (Alqahtani et al. 2020). Effective ERM implementation demands a substantial shift in risk management philosophy, organizational culture, business strategy, internal processes, and technology (Soliman and Mukhtar 2017). A central explanation in finance theory evaluates the relationship between ERM and business value. The first rationale is that ERM produces value for the company by reducing the financing costs caused by the financial crisis, the impact of taxes, and asymmetric information concerns (Salehi and Moghadam 2019). The second reason is that managers want to maximize profits regardless of whether they believe the economy is emerging or developing (Silva et al. 2019; Koolivand et al. 2021). Studies demonstrate that ERM enhances company performance (e.g., Florio and Leoni 2017; Lechner and Gatzert 2018). In addition, a study by Malik et al. (2020) showed that ERM's effectiveness has a considerable favorable impact on a company's performance. It is anticipated that ERM will positively impact the performance of stock exchange enterprises in Tehran, Baghdad, and Riyadh. However, empirical research on this topic has not yet been conducted; hence, the present study tested this assertion as an experimental hypothesis.

Hypothesis 1 (H1). *The association between ERM and firm performance is substantial.*

Risk management and firm performance in fraudulent and non-fraudulent businesses.

As a predictable occurrence, fraud can occur in both macro and micro contexts, as each effect is created by a unique set of factors (Perols et al. 2017). There is a correlation at the macro level between the general status of the economy and industry and the propensity to commit fraud (Khaksar et al. 2022). At the micro level, fraud prediction is based on the realization that most frauds share common characteristics (Beneish and Vorst 2022). Therefore, fraud, as a crucial aspect of the financial sphere, poses a grave danger to public confidence in financial information and the financial reporting process, resulting in high costs for many stakeholders (Lotfi et al. 2022). Professional associations have recently attempted to identify methods to investigate and detect financial statement fraud. Auditing Standards Board proposed for the first time in 1998 auditing standard (SAS) No. 53 entitled "The Auditor's Responsibility to Detect and Report Errors and Irregularities". In 1997, this SAS was replaced by NO 82, "Consideration of Fraud in Financial Statement Audit". In 2002, SAS No. 82 was superseded by SAS No. 99, which had the same title but minor alterations. The board of directors and the independent auditor of an organization must pay close attention to fraud, its detection, and its prevention as effective variables in the secrecy of financial reporting. Fraud can also impact the actions and strategies of businesses. According to studies (Chen et al. 2015; Hess and Cottrell 2016; Clauss et al. 2009; Sinha 2021), fraud can pose a barrier to risk management in organizations, which can negatively impact firm performance. Ezu (2020) found that electronic fraud can negatively affect the performance of banks. In addition, fraud can diminish a corporation's finances and market performance (Hand et al. 2008; Mawutor et al. 2019). According to the literature, fraud can impact the ERM and business performance and the positive link between these two financial variables. This causes the firm to become weak and unable to manage risks, which has a detrimental effect on the firm's performance. Accordingly, the link between ERM and business performance is anticipated to differ across fraudulent and non-fraudulent firms. To demonstrate this assertion's findings, the second and third hypotheses were established and tested experimentally for Tehran, Baghdad, and Riyadh stock exchange corporations.

Hypothesis 2 (H2). *A significant correlation exists between ERM and business performance in fraudulent firms.*

Hypothesis 3 (H3). *There is a substantial correlation between ERM and business performance among firms that do not engage in fraud.*

3. Empirical Methodology

3.1. Data Collection and Sample

From 2012 to 2019, the current study's samples included companies listed on the stock exchanges of Iran, Saudi Arabia, and Iraq. The selection of these three corporations from their capital markets (stock exchange) was based on the availability of access to their data and financial statements. In addition, the accessible information was dependable and precise due to the constant oversight of inspectors and auditors. The inclusion criteria for the companies were as follows:

1. The companies' fiscal years should not have changed during the study's inquiry period;
2. During the research period, the studied firms should continuously operate, and their stock should be actively traded;
3. From 2012 through 2019, the enterprises should have furnished all needed financial information;
4. The researched companies should be in the manufacturing industry in order to have the same reporting procedure and increase the comparability between included companies.

3.2. Empirical Model and Variables

This regression model was utilized to test the study hypotheses (Model 1). Note that the abovementioned models were fitted and analyzed independently for Iraq, Iran, and Saudi Arabia.

The following model was used to test hypotheses in research. Thus, this model was tested once at the general level to test the first hypothesis. Then it was used to test the second and third hypotheses after businesses were separated into fraudulent and non-fraudulent groups based on the stated criteria.

Model (1)

$$P_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 ROE_{it} + \beta_3 SIZE\ (LnAssets)_{it} + \beta_4 SIZE\ (LnIncome)_{it} + \beta_5 CEO\text{-}Duality_{it} + \beta_6 CEO\text{-}Independent_{it} + \beta_7 CEO\text{-}Tenure_{it} + e_{it}$$

3.2.1. Dependent Variable

Firm performance (*P*): Firm performance is measured using the following four indicators (Castellani and Sala 2010).

The following financial ratios were used to measure firm performance in the present research:

(A) *Sales growth rate* (*SG*): the rate at which a firm can increase revenue from sales during a fixed period, which is calculated as follows:

$$Growth_{it} = \frac{Sales_{i,t} - Sales_{i,t-1}}{Sales_{i,t-1}} \quad (1)$$

where $Sales_{i,t}$ is the firm's sales this year, $Sales_{i,t-1}$ denotes the firm's sales in the previous year;

(B) *Return on assets* (*ROA*): It is calculated by dividing the firm's net profit by the total assets;

(C) *Net profit margin* (*CR*): This is obtained by dividing the firm's net profit by sales;

(D) *Asset turnover* (*GAS*): This ratio is obtained by dividing net sales by assets.

3.2.2. Independent Variable

Measurement of ERM index: ERM was considered an independent variable in the current research measured according to the model by Gordon et al. (2009). These factors are identified based on their ability to achieve the firm's objectives.

Model (2)

$$ERMI_{i,t} = \beta_0 + \beta_1 EU_{i,t} + \beta_2 CI_{i,t} + \beta_3 FS_{i,t} + \beta_4 FC_{i,t} + \beta_5 MBD_{i,t} + \varepsilon_{i,t}$$

where, *ERMI*: Enterprise Risk Management Indicators; *EU*: Environmental uncertainty; *FS*: Firm size; *CI*: Industry competition; *FC*: Firm Complexity; *MBD*: Monitoring by the firm's board of directors.

In the abovementioned model, ε is an error that indicates a deviation from the best fit model proposed by Gordon et al. (2009). Therefore, the lower the model error, the higher the *ERMI*, so $|\varepsilon|$—is defined as risk management.

Risk Management Indicators: The COSO [III] in 2004 used the following four indicators to manage organizational risk, internal control to improve firm performance and governance, and decrease organizational fraud.

Equation (2)

$$ERMI = \sum_{k=1}^{2} Strategy + \sum_{k=1}^{2} Operation + \sum_{k=1}^{2} reporting + \sum_{k=1}^{2} Compliance \quad (2)$$

Strategy: Strategy refers to the action plan businesses adopt to remain competitive. In this instance, the company attempts to maintain its competitive advantage over other

enterprises in the industry. Maintaining a competitive strategy will lower failure costs and improve the organization's performance; firms in a particular industry attempt to maximize their sales prospects (Salehi and Arianpoor 2022). The company's above-average sales demonstrate that it maintains a competitive strategy (Gordon et al. 2009). Competitiveness is the capacity to expand market share, profitability, and value-added growth over the long term while remaining in fair competition. Another method for evaluating the efficacy of *ERM* is to assess firms' capacity for systematic risk reduction. The primary benefit of having a risk management system is lowering risk by adopting a portfolio policy to manage the risk of available resources (Hoyt and Liebenberg 2011). The two equations shown below were used to measure competition strategy:

$$Strategy1 = \frac{Sales_{it} - \mu Sales}{\eth Sales} \tag{3}$$

where, $Sales_{it}$: Sales of firm I in year t; $\mu Sales$: The average sales of the industry; $\eth Sales$: Deviation of sales criteria of firms in the industry.

$$Strategy2 = \frac{\Delta\beta - \mu\Delta\beta}{\eth\Delta\beta} \tag{4}$$

where, $\Delta\beta$: Firm beta in year t minus firm beta in year $t-1$; $\mu\Delta\beta$: Industry average beta; $\eth\Delta\beta$: Standard deviation of $\Delta\beta$ all firms in the industry.

Operation: Operation measurement is based on the relationship between the inputs and outputs of a company's operations. The greater the firm's output at a given amount of inputs, the better its performance. Increasing firm productivity decreases risk and boosts performance (Gordon et al. 2009). These two equations were utilized to calculate productivity (Gordon et al. 2009).

$$Operation1 = \frac{Sales}{Total\ Asset} \tag{5}$$

where, *Sales*: Firm sales; *Total Assets*: The sum of the total assets of the firm.

$$Operation2 = \frac{Sales}{Number\ of\ Employees} \tag{6}$$

where, *Sales*: Firm sales; *Number of Employees*: The number of firm personnel.

Reporting: The purpose of accounting is to produce trustworthy financial statements. Earning management distorted facts, and financial fraud shows inadequate financial reporting (Cohen et al. 2004). Inadequate financial reporting will increase the firm's failure risk and decrease its value. Poor financial reporting was measured by Johnson et al. (2002) and Gordon et al. (2009) using the discretionary and non-discretionary accruals of the modified model of Jones (1991). The reporting variable can be measured using the following equations:

$$Reporting1 = \frac{|NDA|}{|NDA| + |DA|} \tag{7}$$

$$NDA_t = \alpha_1\left(\frac{1}{A_{t-1}}\right) + \alpha_2\left(\frac{\Delta REV_t - \Delta REC_t}{A_{t-1}}\right) + \alpha_3\left(\frac{PPE_t}{A_{t-1}}\right) \tag{8}$$

$$DA_t = TA_t - NDA_t \tag{9}$$

where, NDA_t: Non-discretionary accruals in year t; A_{t-1}: Total assets in year $t-1$; DA_t: Discretionary accruals in year t; ΔREV_t: Change in revenues in year t from year $t-1$; PPE_t: Gross property, plant, and equipment in year t; ΔREC_t: Change in net receivable between

year t and year $t-1$; α_1, α_2, α_3: Firm-specific parameters that can be obtained using the following model:

$$\frac{TA_t}{A_{t-1}} = \alpha_1\left(\frac{1}{A_{t-1}}\right) + \alpha_2\left(\frac{\Delta REV_t}{A_{t-1}}\right) + \alpha_3\left(\frac{PPE_t}{A_{t-1}}\right) \tag{10}$$

TA_t: Total accruals in year t; A_{t-1}: Total assets at the end of year $t-1$; ΔREV_t: Change in revenues in year t from year $t-1$; PPE_t: Gross property, plant, and equipment in year t.

This model α_1, α_2, α_3 refers to OLS estimates.

$$Reporting1 = (Material\ Weakness) + (Auditor\ opinion) + (Restatemen) \tag{11}$$

Material Weakness is equivalent to the number of clauses in the independent auditor's financial report (Khurana and Kyung 2021).

If the auditor's report is deemed satisfactory, it receives a score of one; otherwise, it receives a score of zero.

Restatement denotes re-submission financial statements (score 1 in case of re-submission, otherwise zero).

Compliance: Compliance with more laws and regulations decreases risk and increases the company's value. According to Keefe et al. (1994), compliance with recognized auditing standards would necessitate auditing costs. According to a study by Gordon et al. (2009), the compliance variable can be measured using the following two relationships:

$$Compliance1 = \frac{Auditor\ Fees}{Total\ Assets} \tag{12}$$

$$Compliance2 = \frac{Settlement\ Net\ Gain\ (Loss)}{Total\ Assets} \tag{13}$$

Environmental uncertainty: Environmental uncertainty can be viewed as a rise in the unpredictability of future events, which can pose numerous challenges for businesses. Financial reporting and performance measurement are more difficult for businesses with variable operations. ERM is part of an organization's management control system that aims to identify and manage uncertain future events. Consequently, environmental uncertainty might be a factor in ERM.

This factor is measured using four parameters:

A. $CV(S_{i,t})$: Coefficient of variation of sales;

B: Coefficient of variation of capital costs;

C: $CV(I_{i,t})$: Coefficient of change in net profit before tax;

$I_{i,t}$: Net profit before firm tax i in year t.

Using the abovementioned three parameters, the environmental uncertainty can be measured using the following equation:

$$EU = Log\left(\sum_{k=1}^{3} CV(X_k)\right) \tag{14}$$

$$CV(X_k) = \frac{\sqrt{\frac{\sum_{t=1}^{11}\left(Z_{k,t}-\overline{Z}_k\right)}{n}}^2}{\left|\overline{Z}_k\right|} \tag{15}$$

where $CV(X_k)$ is the coefficient of variation of uncertainty and t is considered as the year range of 2012–2019.

$$(Uncertainty\ k\ in\ year\ t = X_{k,t})Z_{k,t} = (X_{k,t} - X_{k,t-1}) \tag{16}$$

where $\overline{Z}_k$: Average change of uncertainty k during n years;

K = 1, 2, and 3 for uncertainty, 1: Coefficient of variation of sales, 2: Coefficient of variation of capital costs, 3: Coefficient of change in net profit before tax.

The weighted average cost of the capital method was used to calculate the cost of capital.

$$WACC = \left(\left(\frac{E_M}{E_M + D_M}\right)K_s + \left(\frac{D_M}{E_M + D_M}\right)K_D\right) \quad (17)$$

where D_M: Market value of the firm's debt, E_M: Market value of the firm's equity, and K_D: the cost of debt after tax (the minimum interest rate expected on the facility is considered in the partnership contracts issued by the central bank within the scope of the study); K_S: Cost of shareholders

The Gordon model was used to calculate the expected price of common stock as follows:

$$K_s = \frac{D_0(1+g)}{P_0} + g \quad (18)$$

where D_0: Dividend in the current year; P_0: Share price at the beginning of the year; g: Dividend growth rate.

Industry competition: Industry competition reflects industry concentration; hence, the lower the concentration, the greater the competition. Given the severe competition between competing enterprises, each firm is attempting to implement a suitable strategy to surpass its rivals; hence, there is always the possibility of continuous unprofitability for firms. (Gordon et al. 2009).

$$CI = 1 - \sum_{i=1}^{n}\left(\frac{s_{i,t}}{TotalS_{st}}\right)^2 \quad (19)$$

where CI: Market share; $S_{i,t}$: Firm sales in year t; S_{st}: Industry sales in year t.

Firm size: There has been an interest in the relationship between firm size and firm structure within the organizational theory literature (Lawrence and Lorsch 1967). Researchers have recognized the significance of business size in designing and implementing management control systems (Haka et al. 1985; Myers et al. 1991; Shields 1995). This component was measured using the natural logarithm of average total assets.

$$FS = Ln\ (AVEASSET) \quad (20)$$

Firm complexity: Internal control system issues are exacerbated by the company's complexity, which diminishes the data's integrity. Consequently, competent firm management is required to eliminate complexity (Gordon et al. 2009). The complexity of the firm's cost structure is one of its constituents. The degree to which revenues cover costs is the definition of cost complexity. In organizations with lesser cost complexity, the cost is set based on revenue; therefore, expected revenue changes can be used to calculate earnings. If the cost does not change due to the revenue, understanding the components contributing to revenue forecasting cannot improve earnings forecasting behavior. As a result, earnings forecasting behavior is likely to be impacted by cost complexity if other factors remain unchanged. Therefore, cost complexity is determined by the correlation between sales and earnings before extraordinary items (Akın Ateş et al. 2022).

$$FC = -1 \times CORREL\ (revenues\&\ earnings) \quad (21)$$

Monitoring by the board of directors:

Monitoring by the board of directors is measured by dividing the number of board members into the sales logarithm.

$$MBD = \frac{BD}{Log(S_{i,t})} \quad (22)$$

where, BD: Number of board members; $Log(S_{i,t})$: logarithm of sales revenue.

3.2.3. Control Variables

ROEit: Return on equity; Operating profit divided by equity;

SIZE (LnAssets)it: Size of total assets, the natural logarithm of the firm's assets;

SIZE (LnIncome)it: Size of the net profit, the natural logarithm of the firm's net profit;

CEO-Dualityit: If the CEO is also the chairman or vice-chairman of the board, scores 1, otherwise zero;

B-Independentit: Independence of the board; Ratio of independent managers to non-independent managers;

CEO-Tenureit: Number of years of the CEO's tenure.

To test the second hypothesis, fraudulent and non-fraudulent firms must be identified as follows:

Fraudulent and non-fraudulent firms:

To identify the occurrence of financial fraud or the firm's willingness to commit fraud, the modified adjustment model is used as follows:

$$M = 0/002 + 0/665\ TATA + 0/257\ LVGI + 0/024\ SGAI - 0/641\ DEPI + 0/190\ SGI + 0/004\ AQI - 0/032\ GMI + 0/061\ DSRI \quad (23)$$

M represents the earnings manipulation score, $DSRI$ represents the days' sales in receivables index, GMI represents the gross margin index, AQI represents the asset quality index, SGI represents the sales growth index, $DEPI$ represents the depreciation index, $SGAI$ represents the sales, general, and administrative expenses index, $LVGI$ represents the leverage index, and $TATA$ represents the total accruals to total assets. The cutoff point in this model is set at 0.5. Therefore, if M Score exceeds 0.5, it is more likely that the company is falsifying its earnings.

1. Day sales in the receivables index is measured using Equation (24):

$$DSRI = \frac{REC(\mathrm{t})/SALES(\mathrm{t})}{REC(\mathrm{t}-1)/SALES(\mathrm{t}-1)} \quad (24)$$

The increase in the net receivables to sales ratio may be attributable to changes in credit practices intended to boost sales. Still, a disproportionate increase in receivables also contributes to a rise in revenue (Beneish 1999).

2. The gross margin index can be calculated using Equation (25). If the GMI exceeds 1, the gross margin is drastically lowered. The company's low gross profit margin does not generate significant sales prices relative to its ambition and raises the probability of earnings manipulation (Beneish 1999).

$$GMI = \frac{SALES(\mathrm{t}-1) - COG(\mathrm{t}-1)/SALES(\mathrm{t}-1)}{SALES(\mathrm{t}) - COG(\mathrm{t})/SALES(\mathrm{t})} \quad (25)$$

In the above-shown equation, $SALES$ signifies the annual sales, and the COG is the cost of goods sold.

3. The asset quality index is calculated using Equation (26). If this index is more than 1, the company may have accrued higher costs and intangible assets. Consequently, the probability of earnings manipulation also rises (Beneish 1999). CA refers to the total current assets, PPE is property, plant, and equipment, and $ASSETS$ is the total assets.

$$AQI = \frac{1 - (CA(\mathrm{t}) + PPE(\mathrm{t}))/ASSETS(\mathrm{t})}{1 - (CA(\mathrm{t}-1) + PPE(\mathrm{t}-1))/ASSETS(\mathrm{t}-1)} \quad (26)$$

4. The sales growth index is calculated using Equation (27). Even though sales growth alone does not suggest earnings manipulation, it is possible if sales increase relative to the prior period (Beneish 1999).

$$SGI = \frac{SALES(\mathrm{t})}{SALES(\mathrm{t}-1)} \quad (27)$$

5. The depreciation cost index is calculated using Equation (28). The corporation has boosted property, plant, and equipment estimates if this index exceeds 1. As a result, there is also a greater chance of earning manipulation (Beneish 1999). Property, plant, equipment, *PPE*, and depreciation index, and *DEP* are used in this calculation.

$$DEPI = \frac{DEP(\mathrm{t}-1)/PPE(\mathrm{t}-1)}{DEP(\mathrm{t})/PPE(\mathrm{t})} \tag{28}$$

6. Equation (29) determines the index of sales, general, and administrative expenses. This index's enormous size is a bad indication of the company's plans. Thus, it is possible to manipulate earnings (Beneish 1999).

$$SGAI = \frac{SGA.EXP(\mathrm{t})/SALES(\mathrm{t})}{SGA.\,EXP(\mathrm{t}-1)/SALES(\mathrm{t}-1)} \tag{29}$$

7. The leverage index was calculated using Equation (30). A value greater than 1 suggests that earnings manipulation may increase (Beneish 1999). In this equation, *LTD* and *CL* are the total long-term debt, current liabilities, and assets.

$$LVGI = \frac{LTD(t) + CL(\mathrm{t})/ASSETS(\mathrm{t})}{LTD(t-1) + CL(\mathrm{t}-1)/ASSETS(\mathrm{t}-1)} \tag{30}$$

8. Equation (31) determines the ratio of total accruals to total assets. The potential for manipulating earnings is linked to higher accruals (Beneish 1999). As a result, *ACC* in the equation represents accruals, the difference between operating profit and cash flow, and *ASSETS* represents all of the current year's assets.

$$TATA = \frac{ACC(\mathrm{t})}{ASSETS(\mathrm{t})} \tag{31}$$

4. Findings

4.1. Descriptive Statistics

In Table 1, descriptive data are shown. As seen, there were more Iraqi businesses than Iranian or Saudi businesses. Additionally, Saudi companies saw negative sales growth during the research period. The return on assets of Iranian companies was higher than that of Iraqi and Saudi companies, showing that Iranian companies had stronger asset loading. The profit margins of Saudi companies were larger, though. The usage of assets in Iranian enterprises was better demonstrated by the increased asset turnover in Iranian firms compared with Saudi and Iraqi firms. A summary of descriptive statistics relating to firm performance metrics exposed the various performances of businesses functioning in these three economic contexts. The level of risk management in companies listed in these three nations varied, according to ERM studies. According to descriptive statistics of these three groups in relation to the control variables, Iranian businesses had greater returns on equity. Even though Saudi companies were more profitable, the outcome showed that Iraqi businesses had higher assets. It was shown that Saudi companies had the greatest independent managers regarding board oversight. The ratio to Iraqi firms was 7%, suggesting that corporate governance was probably subpar. Iranian businesses had CEOs on staff for longer than Saudi and Iraqi businesses. As observed, the CEO tenure at Iranian companies could occasionally span as many as 17 fiscal years. In Iranian, Saudi, and Iraqi businesses, the dual position of the CEO was 30%, 27%, and 59%, respectively.

Table 1. The descriptive statistics.

Variable	Mean	Median	St.d	Max	Min	Obs
Panel A. Iran						
SG	0.259	0.219	0.335	0.987	−0.311	1304
ROA	0.127	0.104	0.122	0.626	−0.160	1304
CR	0.163	0.126	0.158	0.703	−0.098	1304
GAS	0.922	0.814	0.461	2.031	0.226	1304
ERM	−1.309	−1.323	0.680	−0.001	−2.597	1304
ROE	0.368	0.323	0.283	0.999	−0.171	1304
LnAsset	14.393	14.187	1.532	20.183	10.491	1304
LnIncome	11.079	11.743	3.640	18.812	0.000	1304
BINDEP	0.606	0.600	0.226	1.000	0.226	1304
CEOTenure	3.766	3.000	3.290	17.000	1.000	1304
M				1		1227
					0	77
CEODual				1		396
					0	908
Panel B. KSA						
SG	−0.069	−0.022	0.391	0.854	−0.833	435
ROA	0.040	0.005	0.075	0.374	−0.191	435
CR	0.455	0.313	0.403	0.351	−0.005	435
GAS	0.092	0.062	0.097	0.351	−0.005	435
ERM	−1.037	−1.027	0.764	−0.532	−1.758	435
ROE	0.126	0.116	0.104	0.350	−0.033	435
LnAsset	21.651	21.503	1.578	25.498	16.830	435
LnIncome	17.603	18.551	5.037	24.780	11.326	435
BINDEP	0.703	0.750	0.074	0.833	0.500	435
CEOTenure	2.710	2.000	0.959	4.000	1.000	435
M				1		423
					0	17
CEODual				1		121
					0	319
Panel C. Iraq						
SG	0.329	0.059	1.015	3.778	−0.708	280
ROA	−0.009	0.006	0.168	0.282	−0.393	280
CR	−0.196	0.069	0.941	0.861	−2.925	280
GAS	0.326	0.226	0.302	1.112	0.018	280
ERM	−0.241	−0.253	0.466	−0.001	−2.982	280
ROE	−0.034	0.001	0.122	−0.430	0.134	280
LnAsset	22.428	22.479	1.362	26.723	17.456	280
LnIncome	12.192	17.916	9.541	24.770	9.325	280
BINDEP	0.073	0.000	0.095	0.285	0.000	280
CEOTenure	2.892	3.000	0.860	4.000	0.000	280
M				1		245
					0	35
CEODual				1		167

The current study's second section distinguishes between fraudulent and honest businesses. The Banish model revealed that 94%, 86%, and 27% of Iranian, Iraqi, and Saudi Arabian companies had distorted earnings, respectively.

In Table 1, descriptive data are shown. As seen, there were more Iraqi businesses.

4.2. Inferential Statistics

4.2.1. Non-Stationarity Properties of Research Variables

The dataset's non-stationarity characteristics were assessed in the current study using the Levin, Lin, and Chu test. The outcomes of this test are shown in Table 2. A *p*-value of 0.05 or below was deemed statistically significant for all research variables, demonstrating

that their stationarity and their inclusion in the research model did not result in false regression.

Table 2. The Levin, Lin and Chu t, Null: Unit root (assume common Unit root test).

Panel A. Iran	
Variables	**t-Statistics**
SG	−26.514 ***
ROA	−22.919 ***
CR	−145.049 ***
GAS	−31.809 ***
ERM	−26.860 ***
ROE	−109.229 ***
LnAsset	−6.488 ***
LnIncome	−14.302 ***
BINDEP	−26.514 ***
CEOTenure	−12.235 ***
Panel B. KSA	
SG	−17.415 ***
ROA	−109.806 ***
CR	−92.800 ***
GAS	−17.331 ***
ERM	−31.663 ***
ROE	−32.220 ***
LnAsset	−12.859 ***
LnIncome	−16.093 ***
BINDEP	−8.869 ***
CEOTenure	−9.269 ***
Panel C. Iraq	
SG	−19.574 ***
ROA	−14.036 ***
CR	−6.589 ***
GAS	−15.525 ***
ERM	−12.803 ***
ROE	−8.859 ***
LnAsset	−13.090 ***
LnIncome	−98.462 ***
BINDEP	−8.869 ***
CEOTenure	−5.168 ***

*** $p < 0.01$.

4.2.2. The Results of Testing Research Hypotheses

Test Results of the First Hypothesis

Table 3 presents the results of the first Iranian company hypothesis test. The results showed that ERM significantly improved the return on assets of Iranian businesses (coefficient = 0.002 and SD = 0.001). These results suggested a positive correlation between risk management and business performance as measured by the return on assets index for firms implementing ERM through rational risk management methods and risk activities. However, asset turnover and ERM had a strong inverse association (coefficient = −0.025 and SD = 0.012). These results contradicted the prior performance metric and showed that firms managed risk and risky activities to reduce asset turnover to measure firm success. Lastly, ERM in Iranian enterprises had no discernible impact on other performance indicators (sales growth and profit margin).

Table 3. The regression result for specified hypothesis 1 (Iran).

Variable	SG	ROA	CR	GAS
ERM	0.004	0.002 *	−0.000	−0.025 **
	(0.015)	(0.001)	(0.001)	(0.012)
ROE	0.563 ***	0.125 ***	0.105 ***	0.354 ***
	(0.045)	(0.010)	(0.005)	(0.033)
LnAsset	0.109 ***	0.008 ***	0.016 ***	−0.094 ***
	(0.018)	(0.003)	(0.002)	(0.014)
LnIncome	0.019 ***	0.014 ***	0.012 ***	0.012 ***
	(0.003)	(0.001)	(0.000)	(0.002)
CEODual	0.035	0.000	0.004	0.032
	(0.026)	(0.006)	(0.004)	(0.022)
BINDEP	−0.180 *	−0.024	−0.016	−0.195 **
	(0.105)	(0.029)	(0.013)	(0.086)
CEOTenure	−0.003	−0.001 ***	−0.001 **	0.002
	(0.003)	(0.005)	(0.000)	(0.002)
Adjusted R-squared	0.214	0.859	0.919	0.797
F-statistics	3.100 ***	48.014 ***	82.122 ***	31.340 ***
Durbin Watson	1.975	1.691	1.565	1.661
F-Limmer	1.334 ***	6.655 ***	45.993 ***	29.385 ***
Human test	116.347 ***	51.322 ***	51.905 ***	17.617 ***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

The findings of the initial hypothesis test for Saudi Arabian businesses are tabulated in Table 4. Results showed that ERM significantly hampered the growth of Saudi firms' sales (coefficient = −0.222 and SD = 0.052). Saudi Arabian businesses suffered significantly worse performance due to reduced sales to manage the firm's risk. Although ERM slowed down sales growth, it could significantly raise the company's profit margin, which helped the businesses control their costs and sell their products at a higher profit, demonstrating the differentiation strategy's underlying principle. However, the results demonstrate that risk management in Saudi Arabian firms had a negligible impact on other performance indicators.

Table 4. The regression result for specified hypothesis 1 (KSA).

Variable	SG	ROA	CR	GAS
ERM	−0.223 ***	−0.007	0.039 *	−0.005
	(0.052)	(0.005)	(0.018)	(0.004)
ROE	0.186	0.297 ***	−0.167	0.199 ***
	(0.197)	(0.024)	(0.204)	(0.032)
LnAsset	0.065	−0.035 ***	0.047	−0.018 ***
	(0.045)	(0.005)	(0.029)	(0.002)
LnIncome	0.004	0.000	0.018 ***	0.004 ***
	(0.004)	(0.000)	(0.001)	(0.000)
CEODual	0.012	0.008	0.013	0.016 **
	(0.038)	(0.006)	(0.032)	(0.005)
BINDEP	0.013	0.014	0.034	0.019
	(0.255)	(0.028)	(0.090)	(0.012)
CEOTenure	−0.013	0.000	0.001	0.001
	(0.018)	(0.002)	(0.009)	(0.001)
Adjusted R-squared	0.257	0.826	0.714	0.933
F-statistics	4.433 ***	34.848 ***	18.814 ***	100.949 ***
Durbin Watson	2.316	1.657	1.591	1.675
F-Limmer	0.914	24.187 ***	16.357 ***	30.059 ***
Human test	-	18.391 ***	6.761 ***	17.433 ***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 5 lists the results of the first hypothesis test for Iraqi businesses. According to the results, ERM significantly improved the asset turnover ratio in Iraqi enterprises (coeffi-

cient = 0.035 and SD = 0.018). ERM, however, has little impact on the firm performance measures of Iraqi enterprises. This suggests that businesses that employ risk management techniques favor using their assets to boost sales, enhancing their own sales by controlling other risky actions.

Table 5. The regression result for specified hypothesis 1 (Iraq).

Variable	SG	ROA	CR	GAS
ERM	0.118	−0.004	0.173	0.035 *
	(0.063)	(0.003)	(0.109)	(0.018)
ROE	2.311 ***	0.781 ***	4.230 ***	1.104 ***
	(0.380)	(0.043)	(0.689)	(0.145)
LnAsset	−0.092	−0.001	0.020	−0.129 **
	(0.056)	(0.005)	(0.090)	(0.038)
LnIncome	−0.000	0.002 ***	0.033 ***	0.005 **
	(0.003)	(0.000)	(0.006)	(0.001)
CEODual	−0.058	−0.007 *	0.008	−0.021
	(0.097)	(0.003)	(0.121)	(0.028)
BINDEP	0.081	0.001	−0.050	−0.003
	(0.089)	(0.004)	(0.113)	(0.037)
CEOTenure	−0.018	0.009 **	0.083	0.008
	(0.029)	(0.003)	(0.058)	(0.013)
Adjusted R-squared	0.138	0.932	0.665	0.713
F-statistics	2.092 ***	94.691 ***	14.534 ***	17.911 ***
Durbin Watson	2.172	1.552	1.684	1.654
F-Limmer	1.829 ***	11.882 ***	2.089 ***	16.931 ***
Human test	6.340	15.889 ***	13.935 ***	17.114 ***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

The Second Hypothesis

The second hypothesis test results for Iranian enterprises are shown in Table 6. The results show that ERM in fraudulent Iranian enterprises (which faked earnings) had a favorable impact on return on assets. However, it had little effect on other performance indicators. These results showed that Iranian enterprises' intense risk management, which aimed to manipulate earnings, compelled them to report larger operating profits. One of their goals was to raise their value because they could draw the market's attention with good news about their profits. This is particularly true when managers own stock in the company. In this situation, they control the risk of raising operating profit for the company or manipulate it to further their objectives.

Table 6. The regression results for specified hypothesis 2 (Iran).

Variable	SG	ROA	CR	GAS
ERM	0.013	0.011 ***	0.007	0.022
	(0.014)	(0.004)	(0.005)	(0.018)
ROE	0.229 ***	0.098 ***	0.032 **	0.417 ***
	(0.038)	(0.011)	(0.015)	(0.049)
LnAsset	−0.006	−0.017 ***	−0.014 ***	−0.050
	(0.006)	(0.020)	(0.002)	(0.008)
LnIncome	0.012 ***	0.025 ***	0.034 ***	0.000
	(0.003)	(0.000)	(0.001)	(0.004)
CEODual	0.012	−0.000	−0.019 **	0.096 ***
	(0.020)	(0.006)	(0.008)	(0.027)
BINDEP	−0.002	0.016	0.002	0.005
	(0.042)	(0.012)	(0.016)	(0.054)
CEOTenure	−0.002	0.000	0.000	−0.004
	(0.002)	(0.000)	(0.001)	(0.003)
Adjusted R-squared	0.197	0.522	0.383	0.197
F-statistics	14.276 ***	192.435 ***	100.449 ***	18.875 ***
Durbin Watson	1.834	1.685	1.769	1.536

*** $p < 0.01$, ** $p < 0.05$.

The results of the second hypothesis test for fraudulent Saudi Arabian businesses that misrepresented their earnings are shown in Table 7. As a result of ERM's sizable beneficial impact on these companies' sales growth, these businesses raised their sales growth to

manage their risk. The results showed that ERM had no statistically significant effect on other performance indicators of Saudi Arabian fraudulent enterprises. These businesses, despite manipulating results, improved their sales by prudently controlling their risk. It is also possible that these companies adjusted their sales to make them appear more realistic.

Table 7. The regression result for specified hypothesis 2 (KSA).

Variable	SG	ROA	CR	GAS
ERM	0.066 ***	−0.003	−0.016	0.005
	(0.024)	(0.004)	(0.023)	(0.004)
ROE	0.276	0.327 ***	−0.383 **	0.357 ***
	(0.194)	(0.032)	(0.187)	(0.034)
LnAsset	0.011	−0.014 ***	−0.042 ***	−0.028 ***
	(0.011)	(0.019)	(0.011)	(0.002)
LnIncome	−0.001	0.002 ***	0.031 ***	0.007 ***
	(0.004)	(0.000)	(0.004)	(0.000)
CEODual	−0.011	0.018 **	0.013	−0.005 ***
	(0.042)	(0.007)	(0.041)	(0.007)
BINDEP	−0.102	0.096 **	0.385	−0.004
	(0.251)	(0.041)	(0.242)	(0.044)
CEOTenure	0.012	0.003	0.013	−0.004
	(0.019)	(0.003)	(0.018)	(0.003)
Adjusted R-squared	0.211	0.317	0.140	0.511
F-statistics	3.690 ***	28.740 ***	10.756 ***	63.422 ***
Durbin Watson	2.116	1.538	1.964	1.736

*** $p < 0.01$, ** $p < 0.05$.

The findings of the second hypothesis for fraudulent Iraqi enterprises are shown in Table 8. As shown, fraudulent Iraqi firms' sales growth reduced as they handled their risk, in contrast to Iranian and Saudi companies. This indicates that Iraqi companies' ERM, viewed poorly because of earnings manipulation, had a detrimental impact on their sales growth. However, the findings showed that ERM had no discernible impact on other firm performance indicators of fraudulent Iraqi enterprises.

Table 8. The regression result for specified hypothesis 2 (Iraq).

Variable	SG	ROA	CR	GAS
ERM	−0.252 *	0.007	−0.139	−0.055
	(0.145)	(0.013)	(0.087)	(0.043)
ROE	1.181 **	0.856 ***	3.131 **	0.189
	(0.590)	(0.055)	(0.352)	(0.177)
LnAsset	0.167 ***	−0.004	−0.063 ***	−0.019
	(0.048)	(0.004)	(0.029)	(0.014)
LnIncome	0.008	0.004 ***	0.048 ***	0.007 ***
	(0.008)	(0.000)	(0.005)	(0.002)
CEODual	−0.029	−0.019	−0.105	−0.111 **
	(0.155)	(0.014)	(0.093)	(0.046)
BINDEP	0.591	−0.015	−0.205	0.121
	(0.800)	(0.075)	(0.478)	(0.241)
CEOTenure	−0.107	0.010	−0.055	0.000
	(0.073)	(0.006)	(0.043)	(0.022)
Adjusted R-squared	0.196	0.750	0.140	0.189
F-statistics	4.728 ***	105.612 ***	10.756 ***	4.430 ***
Durbin Watson	1.645	1.986	1.964	1.675

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Test Results of the Third Hypothesis

Regarding the third hypothesis, Table 9 presents the results of Iranian non-fraudulent enterprises. The findings showed that ERM in these organizations significantly improved

asset turnover. Other performance metrics, however, did not experience a material change as a result. The results showed that while ERM does not have an impact on the performance of Iranian non-fraudulent enterprises, it might have an impact on asset turnover. As a result, these businesses used their assets to control their risk, logically increasing their sales.

Table 9. The regression result for specified hypothesis 3 (Iran).

Variable	SG	ROA	CR	GAS
ERM	0.054	0.002	−0.021	0.209 ***
	(0.040)	(0.010)	(0.014)	(0.075)
ROE	0.047	−0.032	−0.004 **	0.232
	(0.107)	(0.027)	(0.039)	(0.201)
LnAsset	−0.027	0.001	−0.001 ***	−0.078 *
	(0.024)	(0.006)	(0.007)	(0.045)
LnIncome	0.025 ***	0.023 ***	0.018 ***	−0.021
	(0.008)	(0.002)	(0.002)	(0.016)
CEODual	−0.012	−0.054 **	0.061 **	−0.363 **
	(0.084)	(0.021)	(0.029)	(0.157)
BINDEP	0.147	0.040	0.087	−0.003
	(0.196)	(0.049)	(0.058)	(0.366)
CEOTenure	−0.025 *	−0.003	−0.003	0.009
	(0.013)	(0.003)	(0.004)	(0.025)
Adjusted R-squared	0.147	0.635	0.567	0.269
F-statistics	2.871 **	19.911 ***	11.120 ***	2.201 **
Durbin Watson	1.832	1.689	1.810	1.731

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 10 presents the findings of the third research hypothesis for legitimate Saudi Arabian businesses. According to this theory, ERM and firm performance in non-fraudulent firms have a substantial relationship. The results, however, indicated that ERM had little impact on business performance in Saudi Arabian non-fraudulent firms. As a result, firms tried to seek ERM through the market and the firm's financial status and paid less attention to their financial performance.

Table 10. The regression result for specified hypothesis 3 (KSA).

Variable	SG	ROA	CR	GAS
ERM	−0.071	−0.048	−0.287	0.003
	(0.244)	(0.028)	(0.284)	(0.033)
ROE	0.790	0.427 **	−0.847	0.578 **
	(1.412)	(0.166)	(1.643)	(0.196)
LnAsset	−0.075	−0.020	−0.058	−0.028
	(0.133)	(0.016)	(0.155)	(0.018)
LnIncome	−0.021	−0.003	−0.015	0.003
	(0.022)	(0.002)	(0.026)	(0.003)
CEODual	0.140	0.023	0.049	0.049
	(0.331)	(0.039)	(0.385)	(0.046)
BINDEP	3.859	0.560 *	−1.312	−0.365
	(2.425)	(0.286)	(2.823)	(0.337)
CEOTenure	0.193	0.011	0.173	0.014
	(0.138)	(0.016)	(0.160)	(0.019)
Adjusted R-squared	0.141	0.380	0.149	0.566
F-statistics	3.093 ***	3.315 ***	3.720 ***	3.799 ***
Durbin Watson	1.889	1.513	1.511	1.550

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 11 provides the third theory for Iraqi non-fraudulent enterprises. The collected data showed that ERM in Iraqi non-fraudulent enterprises had no significant impact on other indicators of firm performance and only had a negative and significant effect on asset

flow. These results showed that these companies reduced their asset use to control their risk, logically affecting their sales.

Table 11. The regression result for specified hypothesis 3 (Iraq).

Variable	SG	ROA	CR	GAS
ERM	−0.274	−0.006	−0.222	−0.198 **
	(0.327)	(0.018)	(0.163)	(0.089)
ROE	3.789	0.864 ***	1.124	−0.102
	(3.173)	(0.180)	(1.583)	(0.870)
LnAsset	−0.085	0.016	0.070	−0.069
	(0.211)	(0.012)	(0.105)	(0.058)
LnIncome	0.052 **	0.004	0.021 *	0.008
	(0.025)	(0.001)	(0.012)	(0.006)
CEODual	0.523	0.000	0.169	−0.031
	(0.544)	(0.031)	(0.271)	(0.149)
BINDEP	−4.662	−0.084	0.815	−0.412
	(3.060)	(0.174)	(1.527)	(0.839)
CEOTenure	−0.238	−0.011	−0.092	−0.066
	(0.237)	(0.013)	(0.118)	(0.065)
Adjusted R-squared	0.223	0.673	0.165	0.170
F-statistics	3.683 ***	11.029 ***	3.963 ***	3.001 **
Durbin Watson	1.617	1.570	2.178	1.618

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

5. Discussion and Conclusions

Performance is a quantifiable outcome of an organization's decisions and actions showing its success rate and accomplishments. Numerous aspects influence the performance of a company. In most economic environments, these characteristics have been more or less extensively studied in financial and accounting empirical research. Due to the general economic volatility and the businesses functioning in these economies, these elements have always evidenced differences in developing nations. Research on the contributing factors is still ongoing in this area. The effect of ERM on various business performance indicators, which is crucial for less developed countries, is one of the less-discussed themes. In order to better understand how ERM affects firm performance measures (such as sales growth, return on assets, profit margin, and asset turnover), which all reflect a company's financial performance, the current study looked into this question. The study also aimed to investigate the effect of financial performance on the financial health of firms.

Organizations can control risks and exploit opportunities compatible with their strategic goals through risk management techniques and procedures. The firm can determine whether the risks can be identified and assessed with risk management. According to research, successful ERM enhances board decision-making, strategy use, efficient operations, positive cash flows, and cost reduction. The main benefit of ERM is that it aids businesses in managing potential risks, which lowers stock price swings, lowers expenses, and boosts productivity, all of which lead to better performance and value for the company. This indicates that ERM can enhance business performance. It should also be noted that managers may use ERM operations to manage and manipulate sales and earnings to accomplish their objectives. The current investigation showed that three emerging nations corroborated the abovementioned problems.

The first hypothesis showed that ERM in Iranian enterprises resulted in higher asset returns and lower turnover. The results indicated that companies managed their risks using various techniques and tactics to maximize their assets and had the maximum efficiency with the lowest sales. In other words, ERM favourably affected Iranian businesses' present return on assets. Furthermore, the results of the descriptive data showed that Iranian businesses had the highest return on assets. However, banning some riskier operations caused Iranian businesses to spend fewer resources and generate fewer revenues, which reduced total assets. According to Saudi companies' research, ERM decreased sales growth

while increasing profit margins. In other words, even while ERM decreased sales growth, it boosted the firm's profit margin by keeping expenses under control and selling the items for a higher profit, demonstrating the differentiation strategy's basic tenets. It was discovered that the ERM increased the number of assets, indicating that Iraqi businesses utilized assets to boost sales and accomplish their risk management objectives. As ERM reduced the total assets in Iran and the growth in sales in Saudi Arabian corporations, the outcomes of Iraqi businesses were almost the opposite of those of the Iranian and Saudi economies.

Since each effect has a set of factors that can produce it, fraud is a predictable occurrence that can happen in both macro and micro contexts. Therefore, the public's confidence in financial information and reporting is gravely threatened by fraud as a significant factor in the financial sector. High costs and repercussions result in a variety of organizations. Recently, professional associations developed strategies to look into and find financial statement fraud. Fraud should be regarded as a crucial aspect of the relationship between ERM and effective company performance, given the significance of fraud in the circumstances and efficient firm performance. As a result, this study's conclusions focused on how ERM affected both fraudulent and non-fraudulent enterprises in the emerging nations of Iran, Saudi Arabia, and Iraq (1999). The model shows whether corporations can manipulate their earnings or not. The majority of businesses functioning in these three economic contexts, according to descriptive data, distorted their earnings and were consequently seen as fraudulent. The study's second hypothesis, which looked at how ERM affected the performance of fraudulent enterprises, showed that ERM in Iran and Saudi Arabia's economic environments improved some performance measures. As a result, it was demonstrated by the research pertaining to Iran's economic climate that prudent risk management practices boosted asset returns. ERM had the potential to boost sales growth for fraudulent Saudi Arabian businesses; however, it had the opposite effect on Iraqi companies.

According to research on the Iranian economy, Iranian businesses with a high level of ERM, which was used to manipulate earnings, had higher operating profits. One of the company's goals is to raise its operating profit because doing so will help it attract more customers. This is particularly true when managers own stock in the company. In this situation, they either manage risk to increase operating profit for the company or manipulate earnings to further their objectives. It was shown that although Saudi Arabian businesses falsified their profitability, they raised sales to manage their risks sensibly. In order to make their sales seem more realistic, it's also likely that these companies modified them. However, their sales growth decreased when fraudulent Iraqi businesses handled their risk. In order to achieve their goals of manipulating profitability, Iraqi businesses displayed lower sales.

It was discovered that non-fraudulent Iranian organizations had no intention of manipulating earnings concerning the third hypothesis, which was focused on non-fraudulent businesses. However, they were less prevalent than fraudulent businesses. Although ERM did not impact the performance of non-fraudulent Iranian enterprises, it might impact asset turnover. As a result, these businesses managed their risk to make the most of their resources and logically raised their sales. A minor portion of the sample of Saudi corporations also consists of non-fraudulent Saudi Arabian businesses that did not falsify their earnings. The findings showed that ERM has little impact on business performance in non-fraudulent Saudi Arabian firms. These results suggest that organizations have attempted to manage risk by focusing less on their financial performance and more on the market and overall financial health. ERM in non-fraudulent Iraqi enterprises also resulted in a decrease in asset turnover. These results showed that Iraqi businesses reduced their sales by prudently managing their risk with fewer assets. Iran and Iraq had different economic environments, according to the research.

The results of the current study offered compelling data regarding the financial situation and productivity of businesses operating in developing nations. The prevalence of several fraudulent companies, which suggests that most businesses have manipulated their earnings, was one of the significant observations made in these three growing economic

contexts. As a result, national laws and regulations must be passed to limit the number of businesses that can manipulate earnings and spread false information. One of the leading causes of these nations' underdevelopment, particularly in corporate governance and reporting, is fraud in financial reporting, the provision of false information, and the absence of effective controls on this practice. A model that can display the ideal ratios associated with company performance in ERM can also be suggested for future experimental research. Before making a choice, stakeholders in the firms should be cautious enough to consider these ratios. Additionally, the impact of ERM on macroeconomic indicators such as unemployment change (Salehi et al. 2021) and GDP growth dispersion (Daemigah 2020b) might be in the interest of accounting, economic, and environmental researchers.

Author Contributions: Conceptualization, H.A., M.R.A. and F.N.Z.; methodology, H.A.; software, H.A.; validation, M.R.A. and F.N.Z.; H.A.; investigation, M.R.A.; resources, H.A.; data curation, H.A. writing—original draft preparation, H.A.; writing—review and editing, H.A.; visual-ization, F.N.Z.; supervision, F.N.Z.; project administration, M.R.A.; funding acquisition, H.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The data will be available at request.

Conflicts of Interest: The authors declare no conflict of interest.

References

Abbas, Nawal H. 2012. Environmental factors influencing financial reporting practices and development in Sudan. *Gezira Journal of Economic and Social Sciences* 3: 1858–6023.

Ak, Ömer Faruk, and Sevilay Sahin. 2021. Analysis of Manager and Teacher Opinions on the Management of School Risks in the Framework of the Internal Control Risk Management Model. *Educational Policy Analysis and Strategic Research* 16: 208–45. [CrossRef]

Akın Ateş, Melek, Robert Suurmond, Davide Luzzini, and Daniel Krause. 2022. Order from chaos: A meta-analysis of supply chain complexity and firm performance. *Journal of Supply Chain Management* 58: 3–30. [CrossRef]

Alawattegama, Kingsley Karunaratne. 2018. The impact of enterprise risk management on firm performance: Evidence from Sri Lankan banking and finance industry. *International Journal of Business and Management* 13: 225–37. [CrossRef]

Almasri, Bisan. 2021. The role of enterprise risk management on disclosure transparency in the international financial reporting standards period. *Accounting* 7: 1241–50. [CrossRef]

Alqahtani, Abdullah, Elie Bouri, and Xuan Vinh Vo. 2020. Predictability of GCC stock returns: The role of geopolitical risk and crude oil returns. *Economic Analysis and Policy* 68: 239–49. [CrossRef]

Amiram, Dan, Zahn Bozanic, James D. Cox, Quentin Dupont, Jonathan M. Karpoff, and Richard Sloan. 2018. Financial reporting fraud and other forms of misconduct: A multidisciplinary review of the literature. *Review of Accounting Studies* 23: 732–83. [CrossRef]

Anton, Sorin Gabriel. 2018. The impact of enterprise risk management on firm value: Empirical evidence from Romanian non-financial firms. *Engineering Economics* 29: 151–57. [CrossRef]

Arena, Marika, Michela Arnaboldi, and Giovanni Azzone. 2010. The organizational dynamics of enterprise risk management. *Accounting, Organizations and Society* 35: 659–75. [CrossRef]

Aven, Terje, and Ortwin Renn. 2010. *Risk Management and Governance*. Berlin: Springer Science & Business Media.

Aydiner, Arafat Salih, Ekrem Tatoglu, Erkan Bayraktar, and Selim Zaim. 2019. Information system capabilities and firm performance: Opening the black box through decision-making performance and business-process performance. *International Journal of Information Management* 47: 168–82. [CrossRef]

Baxter, Ryan, Jean C. Bedard, Rani Hoitash, and Ari Yezegel. 2013. Enterprise risk management program quality: Determinants, value relevance, and the financial crisis. *Contemporary Accounting Research* 30: 1264–95. [CrossRef]

Beasley, Mark, Don Pagach, and Richard Warr. 2008. Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes. *Journal of Accounting, Auditing & Finance* 23: 311–32. [CrossRef]

Behzadi, Golnar, Michael Justin O'Sullivan, Tava Lennon Olsen, and Abraham Zhang. 2018. Agribusiness supply chain risk management: A review of quantitative decision models. *Omega* 79: 21–42. [CrossRef]

Beneish, Messod D. 1999. Incentives and penalties related to earnings overstatements that violate GAAP. *The Accounting Review* 74: 425–57. [CrossRef]

Beneish, Messod D., and Patrick Vorst. 2022. The cost of fraud prediction errors. *The Accounting Review* 97: 91–121. [CrossRef]

Bennett, Benjamin, J. Carr Bettis, Radhakrishnan Gopalan, and Todd Milbourn. 2017. Compensation goals and firm performance. *Journal of Financial Economics* 124: 307–30. [CrossRef]

Bertinetti, Giorgio Stefano, Elisa Cavezzali, and Gloria Gardenal. 2013. The Effect of the Enterprise Risk Management Implementation on the Firm Value of European Companies. Working Paper n. 10/2013. Universita Ca' Foscari Venezia, Department of Management. Available online: http://ssrn.com/abstract\protect$\relax\protect{\begingroup1\endgroup\@@over4}$2326195 (accessed on 10 June 2014). [CrossRef]
Borovkova, Viktoriya, Valeriya Borovkova, Uliya Boikova, and Yana Testina. 2019. Improving efficiency of company risk management system monitoring. *IOP Conference Series Materials Science and Engineering* 497: 012055. [CrossRef]
Borsa Italiana. 2011. Codice di Autodisciplina. Available online: http://www.borsaitaliana.it/comitato-corporate-governance/codice/2011.pdf (accessed on 15 February 2012).
Brown, Ian, Adam Steen, and Julie Foreman. 2009. Risk management in corporate governance: A review and proposal. *Corporate Governance: An International Review* 17: 546–58. [CrossRef]
Castellani, Valentina, and Serenella Sala. 2010. Sustainable performance index for tourism policy development. *Tourism Management* 31: 871–80. [CrossRef]
Chen, Jidong, Ye Tao, Haoran Wang, and Tao Chen. 2015. Big data based fraud risk management at Alibaba. *The Journal of Finance and Data Science* 1: 1–10. [CrossRef]
Chen, Ken Y., and Randal J. Elder. 2007. *Fraud Risk Factors and the Likelihood of Fraudulent Financial Reporting: Evidence from Statement on Auditing Standards No. 43 in Taiwan*. Working paper. Syracuse: Syracuse University.
Chinman, Matthew, Walid F. Gellad, Sharon McCarthy, Adam J. Gordon, Shari Rogal, Maria K. Mor, and Leslie RM Hausmann. 2019. Protocol for evaluating the nationwide implementation of the VA Stratification Tool for Opioid Risk Management (STORM). *Implementation Science* 14: 1–11. [CrossRef]
Clauss, Pierre, Thierry Roncalli, and Guillaume Weisang. 2009. *Risk Management Lessons from Madoff fraud, in Credit, Currency, or Derivatives: Instruments of Global Financial Stability or crisis? Papaioannou*. Bingley: International Finance Review Emerald Group Publishing Limited, pp. 505–43. [CrossRef]
Cohen, Jeffrey R., Ganesh Krishnamoorthy, and Arnold Wright. 2004. The Corporate Governance Mosaic and Financial Reporting Quality. *Journal of Accounting Literature*, 87–152.
COSO. 2004. *Enterprise Risk Management-Integrated Framework*. Cary: COSO.
COSO. 2012. Risk Assessment in Practice. Available online: http://www.coso.org (accessed on 15 April 2014).
Dabbicco, Giovanna, and Giorgia Mattei. 2021. The reconciliation of budgeting with financial reporting: A comparative study of Italy and the UK. *Public Money & Management* 41: 127–37. [CrossRef]
Daemigah, Ali. 2020a. A Meta-Analysis of Audit Fees Determinants: Evidence from an Emerging Market. *Iranian Journal of Accounting, Auditing and Finance* 4: 1–17. [CrossRef]
Daemigah, Ali. 2020b. Does Financial Statements Information Contribute to Macroeconomic Indicators? *Iranian Journal of Accounting, Auditing and Finance* 4: 61–79. [CrossRef]
Danoshana, Sooriyakumar, and T. Ravivathani. 2019. The impact of the corporate governance on firm performance: A study on financial institutions in Sri Lanka. *SAARJ Journal on Banking & Insurance Research* 8: 62–67. [CrossRef]
Ellul, Andrew, and Vijay Yerramilli. 2013. Stronger risk controls, lower risk: Evidence from U.S. bank holding companies. *The Journal of Finance* 68: 1757–803. [CrossRef]
Ezu, Gideon. 2020. Electronic Fraud and Performance of Deposit Money Banks in Nigeria: 2008–18. *International Journal of Business and Management* 15: 126–36.
Farrell, Mark, and Ronan Gallagher. 2015. The valuation implications of enterprise risk management maturity. *Journal of Risk and Insurance* 82: 625–57. [CrossRef]
Florio, Cristina, and Giulia Leoni. 2017. Enterprise risk management and firm performance: The Italian case. *The British Accounting Review* 49: 56–74. [CrossRef]
Glancy, Fletcher H., and Surya B. Yadav. 2011. A computational model for financial reporting fraud detection. *Decision Support Systems* 50: 595–601. [CrossRef]
Gordon, Lawrence A., Martin P. Loeb, and Chih-Yang Tseng. 2009. Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy* 28: 301–27. [CrossRef]
Grace, Martin F., J. Tyler Leverty, Richard D. Phillips, and Prakash Shimpi. 2015. The value of investing in enterprise risk management. *Journal of Risk and Insurance* 82: 289–316. [CrossRef]
Guerrero-Villegas, Jaime, Laura Sierra-García, and Beatriz Palacios-Florencio. 2018. The role of sustainable development and innovation on firm performance. *Corporate Social Responsibility and Environmental Management* 25: 1350–62. [CrossRef]
Haka, Susan F., Lawrence A. Gordon, and George E. Pinches. 1985. Sophisticated capital budgeting selection techniques and firm performance. In *Readings in Accounting for Management Control*. Boston: Springer, pp. 521–45. [CrossRef]
Hand, David J., Christopher Whitrow, Niall M. Adams, Piotr Juszczak, and Dave Weston. 2008. Performance criteria for plastic card fraud detection tools. *Journal of the Operational Research Society* 59: 956–62. [CrossRef]
Hess, Megan F., and James H. Cottrell Jr. 2016. Fraud risk management: A small business perspective. *Business Horizons* 59: 13–18. [CrossRef]
Homer, Emily M. 2019. Testing the fraud triangle: A systematic review. *Journal of Financial Crime* 27: 172–87. [CrossRef]
Hoyt, Robert E., and Andre P. Liebenberg. 2011. The value of enterprise risk management. *Journal of Risk and Insurance* 78: 795–822. [CrossRef]

Iqbal, Umer, Christopher Gan, and Muhammad Nadeem. 2020. Economic policy uncertainty and firm performance. *Applied Economics Letters* 27: 765–70. [CrossRef]
Jeppesen, Kim K. 2019. The role of auditing in the fight against corruption. *The British Accounting Review* 51: 100798. [CrossRef]
Johnson, Van E., Inder K. Khurana, and J. Kenneth Reynolds. 2002. Audit-firm tenure and the quality of financial reports. *Contemporary Accounting Research* 19: 637–60. [CrossRef]
Jones, Jennifer J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29: 193–228. [CrossRef]
Kaufman, Michael J., and John M. Wunderlich. 2009. Regressing: The troubling dispositive role of event studies in securities fraud litigation. *Stanford Journal of Law, Business & Finance* 15: 183.
Keefe, Terrence B. O., Raymond D. King, and Kenneth M. Gaver. 1994. Audit fees, industry specialization, and compliance with GAAS reporting standards. *Auditing* 13: 41.
Khaksar, Jalil, Mahdi Salehi, and Mahmoud Lari DashtBayaz. 2022. The relationship between auditor characteristics and fraud detection. *Journal of Facilities Management* 20: 79–101.
Khurana, Inder K., and Hoyoun Kyung. 2021. Internal control material weakness and CEO recruitment. *Journal of Business Finance & Accounting* 48: 1940–87. [CrossRef]
Kommunuri, John, Anil Narayan, Mark Wheaton, and Lilibeth Jandug. 2015. *Enterprise Risk Management and Firm Performance Empirical Evidence from Vietnam*; Working paper. Auckland: University of Auckland. Available online: https://cdn.auckland.ac.nz/assets/business/about/our-departments/od-accounting-finance/NZMAS%20Symposium%202016/Enterprise%20Risk%20Management%20and%20Firm%20Performance_John%20Kommunuri.pdf (accessed on 15 February 2012).
Koolivand, Abbas, Mahdi Salehi, Meysam Arabzadeh, and Hassan Ghodrati. 2021. The relationship between knowledge-based economy and fraudulent financial reporting. *Journal of Facilities Management*. *ahead-of-print*. [CrossRef]
Koufteros, Xenophon, Anto John Verghese, and Lorenzo Lucianetti. 2014. The effect of performance measurement systems on firm performance: A cross-sectional and a longitudinal study. *Journal of operations Management* 32: 313–36. [CrossRef]
Lam, James. 2003. Ten predictions for risk management. *RMA Journal* 85: 84–87.
Lawrence, Paul R., and Jay W. Lorsch. 1967. *Organization and Environment*. Boston: Harvard University Press.
Lechner, Philipp, and Nadine Gatzert. 2018. Determinants and value of enterprise risk management: Empirical evidence from Germany. *The European Journal of Finance* 24: 867–87. [CrossRef]
Liebenberg, Andre P., and Robert E. Hoyt. 2003. The determinants of enterprise risk management: Evidence from the appointment of chief risk officers. *Risk Management and Insurance Review* 6: 37–52. [CrossRef]
Lotfi, Afsaneh, Mahdi Salehi, and Mahmoud Lari Dashtbayaz. 2022. The effect of intellectual capital on fraud in financial statements. *The TQM Journal* 34: 651–74. [CrossRef]
Lundqvist, Sara A. 2014. An exploratory study of enterprise risk management: Pillars of ERM. *Journal of Accounting, Auditing and Finance* 29: 393–429. [CrossRef]
Lundqvist, Sara A. 2015. Why firms implement risk governance e Stepping beyond traditional risk management to enterprise risk management. *Journal of Accounting and Public Policy* 34: 441–66. [CrossRef]
Malik, Muhammad Farhan, Mahbub Zaman, and Sherrena Buckby. 2020. Enterprise risk management and firm performance: Role of the risk committee. *Journal of Contemporary Accounting & Economics* 16: 100178. [CrossRef]
Mawutor, John K. M., Augustine Enofe, Kemebradikemor Embele, Anayochukwu R. Ndu, and Oluwaseyi E. Awodola. 2019. Fraud and Performance of Deposit Money Banks. *Accounting and Financial Research* 8: 202–13. [CrossRef]
McGuire, Jean B., Thomas Schneeweis, and Ben Branch. 1990. Perceptions of firm quality: A cause or result of firm performance. *Journal of Management* 16: 167–80. [CrossRef]
McShane, Michael K., Anil Nair, and Elzotbek Rustambekov. 2011. Does enterprise risk management increase firm value? *Journal of Accounting, Auditing & Finance* 26: 641–58. [CrossRef]
Mikes, Anette, and Robert S. Kaplan. 2015. When one size doesn't fit all: Evolving directions in the research and practice of enterprise risk management. *Journal of Applied Corporate Finance* 27: 37–40. [CrossRef]
Morgan, Rachel Elizabeth. 2021. *Financial Fraud in the United States, 2017*; Bureau of Justice Statistics. London: BJS Bulletins.
Myers, Mary D., Lawrence A. Gordon, and Michelle M. Hamer. 1991. Postauditing capital assets and firm performance: An empirical investigation. *Managerial and Decision Economics* 12: 317–27. [CrossRef]
Nasr, Arash Khalili, Saideh Alaei, Fateme Bakhshi, Farzin Rasoulyan, Hojat Tayaran, and Mohammad Farahi. 2019. How enterprise risk management (erm) can affect on short-term and long-term firm performance: Evidence from the Iranian banking system. *Entrepreneurship and Sustainability Issues* 7: 1387–403. [CrossRef] [PubMed]
Noreen, Uzma. 2020. The Estimation of Risk Management Efficiency and its Determinants. *Jurnal Ekonomi Malaysia* 54: 69–79. [CrossRef]
Pagach, Don, and Richard Warr. 2015. The effects of enterprise risk management on firm performance. In *The Routledge Companion to Strategic Risk Management*. London: Routledge, pp. 381–93.
Perols, Johan L., Robert M. Bowen, Carsten Zimmermann, and Basamba Samba. 2017. Finding needles in a haystack: Using data analytics to improve fraud prediction. *The Accounting Review* 92: 221–45. [CrossRef]

Pouraghajan, Abbasali, Esfandiar Malekian, Milad Emamgholipour, Vida Lotfollahpour, and Mohammad Mohammadpour Bagheri. 2012. The relationship between capital structure and firm performance evaluation measures: Evidence from the Tehran Stock Exchange. *International Journal of Business and Commerce* 1: 166–81.

Power, Michael. 2009. The Risk Management of Nothing. *Accounting, Organizations and Society* 34: 849–55. [CrossRef]

Quon, Tony K., Daniel Zeghal, and Michael Maingot. 2012. Enterprise risk management and firm performance. *Procedia e Social and Behavioral Sciences* 6: 263–67. [CrossRef]

Saeidi, Parvaneh, Sayyedeh Parisa Saeidi, Leonardo Gutierrez, Dalia Streimikiene, Melfi Alrasheedi, Sayedeh Parastoo Saeidi, and Abbas Mardani. 2021. The influence of enterprise risk management on firm performance with the moderating effect of intellectual capital dimensions. *Economic Research-Ekonomska Istraživanja* 34: 122–51. [CrossRef]

Salah, Wafaa. 2020. The international financial reporting standards and firm performance: A systematic review. *Applied Finance and Accounting* 6: 1–10. [CrossRef]

Salehi, Mahdi, Ali Daemi, and Farzana Akbari. 2020. The effect of managerial ability on product market competition and corporate investment decisions: Evidence from Iran. *Journal of Islamic Accounting and Business Research* 11: 49–69. [CrossRef]

Salehi, Mahdi, Ali Daemi Gah, Farzana Akbari, and Nader Naghshbandi. 2021. Does accounting details play an allocative role in predicting macroeconomic indicators? Evidence of Bayesian and classical econometrics in Iran. *International Journal of Organizational Analysis* 29: 194–219. [CrossRef]

Salehi, Mahdi, and Arash Arianpoor. 2022. The relationship between business strategy and management entrenchment. *International Journal of Productivity and Performance Management* 71: 1625–41. [CrossRef]

Salehi, Mahdi, and Fatemeh Norouzi. 2022. The effect of corporate lobbying on fraud and money laundering. *Journal of Money Laundering Control. ahead-of-print*. [CrossRef]

Salehi, Mahdi, and Samaneh Mohammadi Moghadam. 2019. The relationship between management characteristics and firm performance. *Competitiveness Review* 29: 440–61. [CrossRef]

Salehi, Mahdi, Farzaneh Komeili, and Ali Daemi Gah. 2019a. The impact of financial crisis on audit quality and audit fee stickiness: Evidence from Iran. *Journal of Financial Reporting and Accounting* 17: 201–21. [CrossRef]

Salehi, Mahdi, Hasanain Ali Mohammed Al-Msafir, Saeid Homayoun, and Grzegorz Zimon. 2022. The effect of social and intellectual capital on fraud and money laundering in Iraq. *Journal of Money Laundering Control. ahead-of-print*. [CrossRef]

Salehi, Mahdi, Mahbubeh Mahmoudabadi, and Mohammad Sadegh Adibian. 2018b. The relationship between managerial entrenchment, earnings management and firm innovation. *International Journal of Productivity and Performance Management* 67: 2089–107. [CrossRef]

Salehi, Mahdi, Mohamad Reza Fakhri Mahmoudi, and Ali Daemi Gah. 2019b. A meta-analysis approach for determinants of effective factors on audit quality: Evidence from emerging market. *Journal of Accounting in Emerging Economies* 9: 287–312. [CrossRef]

Salehi, Mahdi, Nasrin Ziba, and Ali Daemi Gah. 2018a. The relationship between cost stickiness and financial reporting quality in Tehran Stock Exchange. *International Journal of Productivity and Performance Management* 67: 1550–65. [CrossRef]

Samimi, Amir, and Marzieh Samimi. 2021. Investigating the Strategic Concept of Risk Management in the Stock Market and Investing. *Journal of Engineering in Industrial Research* 2: 1–6. [CrossRef]

Shad, Muhammad Kashif, and Fong-Woon Lai. 2019. Enterprise risk management implementation and firm performance: Evidence from the Malaysian oil and gas industry. *International Journal of Business and Management* 14: 47–53. [CrossRef]

Shields, Michael D. 1995. An empirical analysis of firms' implementation experiences with activity-based costing. *Journal of Management Accounting Research* 7: 148–65.

Shou, Yongyi, Wenjin Hu, Mingu Kang, Ying Li, and Young Won Park. 2018. Risk management and firm performance: The moderating role of supplier integration. *Industrial Management & Data Systems* 118: 1327–44. [CrossRef]

Silva, Juliano Rodrigues, Aldy Fernandes da Silva, and Betty Lilian Chan. 2019. Enterprise risk management and firm value: Evidence from Brazil. *Emerging Markets Finance and Trade* 55: 687–703. [CrossRef]

Simeunović, Nataša, Gojko Grubor, and Nenad Ristić. 2016. Forensic accounting in the fraud auditing case. *The European Journal of Applied Economics* 13: 45–56. [CrossRef]

Singleton, Tommie W., and Aaron J. Singleton. 2010. *Fraud Auditing and Forensic Accounting*. Hoboken: John Wiley & Sons.

Sinha, Abhishek. 2021. Fraud Risk Management in Banks: An Overview of Failures and Best Practices. In *Money Laundering and Terrorism Financing in Global Financial Systems*. Working Paper. Washington, DC: IGI-global. [CrossRef]

Škare, Marinko, and Tea Hasić. 2016. Corporate governance, firm performance, and economic growth–theoretical analysis. *Journal of Business Economics and Management* 17: 35–51. [CrossRef]

Sobel, Paul J., and Kurt F. Reding. 2004. Aligning corporate governance with enterprise risk management. *Management Accounting Quarterly* 5: 29–37.

Soliman, Alaa, and Adam Mukhtar. 2017. Enterprise Risk Management and firm performance: An integrated model for the banking sector. *Banks and Bank Systems* 12: 116–23. [CrossRef]

Standard & Poor's. 2007. Request for Comment: Enterprise Risk Management Analysis for Credit Ratings of Nonfinancial Companies. 15. New York. Available online: https://www.logicmanager.com/pdf/ERM_for_corporate_ratings.pdf (accessed on 7 May 2008).

Taouab, Omar, and Zineb Issor. 2019. Firm performance: Definition and measurement models. *European Scientific Journal* 15: 93–106. [CrossRef]

Teeratansirikool, Luliya, Sununta Siengthai, Yuosre Badir, and Chotchai Charoenngam. 2013. Competitive strategies and firm performance: The mediating role of performance measurement. *International Journal of Productivity and Performance Management* 63: 168–84. [CrossRef]

Tourish, Dennis. 2019. *Management Studies in Crisis: Fraud, Deception and Meaningless Research*. New York: Cambridge University Press.

Varshney, Pankaj, Vijay Kumar Kaul, and V. K. Vasal. 2012. *Corporate Governance Index and Firm Performance: Empirical Evidence from India*. Working Paper. Delhi: University of Delhi South Campus.

Williams, Colin C., and Abbi M. Kedir. 2017. Evaluating the impacts of starting up unregistered on firm performance in Africa. *Journal of Developmental Entrepreneurship* 22: 1750017. [CrossRef]

Wilmarth, Arthur E., Jr. 2010. The Dodd-Frank Act: A flawed and inadequate response to the too-big-to-fail problem. *Oregon Law Review* 89: 951.

Yang, Songling, Muhammad Ishtiaq, and Muhammad Anwar. 2018. Enterprise risk management practices and firm performance, the mediating role of competitive advantage and the moderating role of financial literacy. *Journal of Risk and Financial Management* 11: 35. [CrossRef]

Yatim, Puan. 2010. Board structures and the establishment of a risk management committee by Malaysian listed firms. *Journal of Management and Governance* 14: 17–36. [CrossRef]