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The Effect of Enterprise Risk Management Implementation on Non-Financial Performance in Jordan Manufacturing Firms: A Review

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Abstract: Previous business crises have highlighted the shortcomings in the methodologies employed for risk management within organizations. In response to these problems, organizational risk management has gained importance recently for the oversight of corporate risk. Unlike solo-based risk management, Enterprise Risk Management (ERM) analyses the organization's whole risk exposure in an integrated and complete manner. The execution of such an integrated approach is essential for all organizations of size and types. Therefore, this study aims to investigate how the COSO ERM framework is considered a crucial framework that provides precise direction and guidance in enterprise risk management among manufacturing enterprises in Jordan and its impact on non-financial performance to enable organizations to mitigate risks and losses and exploit the opportunities. Furthermore, it highlights the prominent role of risk governance including boards of directors, risk committees, chief risk officers, and IT systems as moderators of this relation.

Keywords: *Risk Governance, Enterprise Risk Management, Manufacturing Industry, Jordan.*

1. Introduction and Background

In today's world, businesses are exposed to a broad range of challenges that come from several sources such as globalization, environmental uncertainty, advances in technology and complex financial models, as well as changes in corporate governance (Gatzert & Martin, 2015). The continual changes in business in the global market necessitate a proactive strategy in identifying and managing both company performance and risks (Hamdan & Alheet, 2020). Organizations that have an effective control system and strong integrated risk management are prepared to handle such complexities and risks of today's world and gain better performance over their competitors (Saeidi *et al.*, 2019). Risk management was initially referred to as typical risk management and designed to manage hazards that occur in financial institutions and insurance firms. Later, it transformed into ERM and has been applied throughout all organization types over time (Schiller & Prpich, 2014; Kwateng *et al.*, 2022).

According to Kiew and Yap (2018), ERM is a method that helps in the identification of potential incidents that could influence the organization's objectives. Moreover, it guarantees that risks are within the organization's risk appetite and that the organization fulfil its goal and maintains competitiveness. Furthermore, Lundqvist (2015) concluded that to manage a large range of risks in an integrated manner, a well-governed system is required where the implementation of risk governance is the major step that exceeds traditional risk management in ERM. Thus, the top management gets risk information from all levels of the corporation and integrates it into the decision-making process (Stein *et al.*, 2019).

According to research, risk governance has an essential role in risk management processes (Abid *et al.*, 2021; Nguyen & Dang, 2022). The gap between corporate governance and risk management is being closed by risk governance (Lundqvist, 2015), where a proper risk governance framework would ensure that the risks inherent in the operations of the company are accommodated within the risk appetite (Abid *et al.*, 2021). In addition, the risks are identified, measured, and monitored at appropriate time (Maheshwari *et al.*, 2022). Meanwhile, the board of directors, boards subcommittees and executive level have clearly defined duties in managing enterprise risks (Hassan *et al.*, 2021). Based on previous literature, risk governance determinants are CRO, board of directors, risk committee, and IT systems. CRO plays an essential role in facilitating the formulation of ERM policies and frameworks (Shivaani, 2018). Additionally, it collaborates with managers to ensure a comprehensive monitoring of the organization's risk management processes (Najwa *et al.*, 2019). In most firms, CRO has a direct connection to the BoDs, while others may employ a specialized RMC (Salaudeen *et al.*, 2018).

In Jordan particularly, the industrial sector is not mandated to hire CROs. Still, it has to establish a framework of risk management where the BoDs should supervise the implementation of this framework and conduct an annual evaluation of the risk management plan. In contrast, internal audit conducts risk monitoring and reports directly to the BoDs or associated committees (Ministry of Industry and Trade-Jordan, 2022). It is worth noting that the industrial sector is significantly impacting various sectors like insurance and transport. Furthermore, it contributes approximately 40% to the GDP and supports the stability of the Jordanian dinar exchange rate (Ministry of Investment-Jordan, 2018).

Problem Statement: The standards outlined by ISO 31000 (2018) emphasize that industrial enterprises encounter a diverse range of both external and internal risks that can affect the achievement of their objectives. These risks include operational, strategic, competitive, financial, reputational, and compliance risks (Jalal-Karim, 2013). In addition, the coronavirus pandemic has further underscored the necessity for businesses to implement new strategies and scenarios to manage the uncertainty (Mahdi & Nassar, 2021).

Jordan is a country considered a developing country in the Middle East, which faces numerous challenges regarding competitive advantages in its manufacturing sector. Jordan's economic growth plan (2018-2022) indicates that the manufacturing sector has encountered obstacles, including increased pricing and decreased demand, caused by intense competition from countries such as Turkey and the Gulf states. Consequently, it adopts strategies that assist firms in overcoming such challenges and enhancing competitive advantage, customer satisfaction, and reputation (Alshourah, 2021). One approach is ERM, which promotes organizational risk considerations, and how well its implementation can yield long-term competitive advantages (Altanashat *et al.*, 2019).

In addition, effective ERM strategies assist in managing unforeseen challenges, guaranteeing adaptability, and maximizing opportunities, allowing organizations to achieve superior performance (Armeanu *et al.*, 2017). However, businesses are recognizing the major risk management in manufacturing firms (Shad *et al.*, 2019). The majority of research was conducted in the financial industry, including banks and insurance companies (Harvey *et al.*, 2020). In addition, previous studies rarely investigated the impact of ERM deployment on non-financial performance metrics (Pérez-Cornejo *et al.*, 2019). In Jordan particularly, the adoption of risk management is still in its infancy (Silva *et al.*, 2018). Furthermore, the ERM is still a slightly new concept (Silva et al., 2018). Lastly, most previous research has employed a dummy variable for measuring the ERM implementation (Ojeka *et al.*, 2019). However, risk governance generates a culture that promotes risk awareness within an organization and delineates responsibilities, authority, and responsibility for supporting the risk management process (Erin *et al.*, 2020b). The empirical studies that measure risk governance are limited (Zhang, 2021).

According to Frazier *et al.* (2004), moderators can be offered when previous studies show weak or inconsistent results related to the association between an independent and a dependent construct. In the current study, it is noticed that ERM performance shows mixed results (Jaber *et al.*, 2024). Previous studies have assessed various risk governance factors such as moderators, including the board of directors, the risk management committee, and IT systems across various industries (Saeidi *et al.*, 2019; Malik *et al.*, 2020). The existence determinants of RG in different types of industries have shown that RG is accepted in improving risk management effectiveness within all organization types. However, based on the researcher's investigation, the potential moderating role of the RG has not been thoroughly examined, especially determinants like BoDs, RC, CRO, and IT systems. Moreover, most of the studies were conducted in financial institutions. Consequently, this study aims to contribute by analyzing the impact of the RG as a moderator. In other words, the impact of ERM deployment on non-financial performance is based on CRO, Risk committee, Board of directors and IT system. A suitable fit between ERM and RG is required to improve non-financial performance. In addition, to the study of Hassan *et al.* (2021), it is proposed that additional studies should consider how moderator variables affect ERM-performance relation. The prospect of moderating variables between ERM and value creation has produced limited research from scholars (Farrell & Gallagher, 2019). Thus, the current study intends to investigate the ERM implementation using the COSO framework and its effect on non-financial performance moderated by risk governance including BoDs, RC, CRO and IT systems.

2. Literature Review

ERM is increasingly gaining acceptance among businesses and institutions globally, as it facilitates the identification, control, exploitation, and monitoring of risks from various sources to boost the long-range and short-range values of the interested parties (Saeidi *et al.*, 2019). Furthermore, it helps mitigate both direct and indirect expenses related to financial distress faced by a company, particularly during a financial crisis (Adhariani, 2022). Based on previous investigations, firms employing ERM demonstrate high levels of revenue and expense efficiency (Grace *et al.*, 2015). A study conducted by Nasr *et al.* (2019) showed a positive and significant correlation between the implementation of ERM and Tobin's Q ratio. However, no such significant association was found between ERM implementation and ROE. For instance, the ERM strategy affects a firm's long-term performance and not its short-term success. Similarly, Iswajuni *et al.* (2018) examined the impact of ERM on the firm value in manufacturing firms that are listed on the Indonesian Stock Exchange, as proxied by Tobin's Q. The results indicated that ERM has a substantial beneficial impact on company value. Conversely, Nasr *et al.* (2019) found that ERM influences ROA but does not impact Tobin's Q.

On the other hand, based on previous studies, some determinants strengthen RG's effectiveness in organization. Those main RG determinants include CRO, RMC, Board of Directors, and IT system. Studies varied since some examined the relationship between BoD size, CRO appointment, and risk-taking (Najwa *et al.*, 2019), while other studies investigated the CRO member of RC, CRO presence, CRO financial experience, RC existence, and its effect on bank performance. Besides that, previous studies were conducted in different types of industries including non-financial (Shivaani, 2018) and financial organizations (Abid *et al.*, 2021). However, most RG studies were conducted in the financial sector and this gap is supported by Shivaani (2018). In addition, based on the researcher's review, it was found that most studies investigated the impact of RG on performance or risk-taking behavior by improving and enhancing the risk management process. However, a limited number of studies have investigated the moderating effect of risk governance on the relationship between ERM implementation and performance in the industrial sector.

COSO framework: In 2004, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed the ERM Integrated Framework. ERM is defined as "a strategic process that engages an entity's board of directors, management, and various stakeholders, implemented throughout the entire organization." This process enables the detection and handling of potential events that could influence the organization's objectives. Furthermore, it connects risk management with the organization's risk appetite to guarantee the reasonable achievement of its objectives. Moreover, the most recent COSO ERM Framework was published in 2017 after the 2004 edition (COSO, 2017). This approach presents a unique perspective, highlighting that ERM is no longer primarily concerned with mitigating risk to an acceptable level. Rather, it is considered an important factor in formulating strategies and recognizing opportunities to attain value (COSO, 2017). COSO frameworks of 2004 and 2017 can be traced back to the COSO Internal Control Framework which is subsequently utilized by numerous large firms globally for internal control systems to effectively manage the organization (Alijoyo & Norimarna, 2021).

Furthermore, the COSO standard states that risk management is not an ordered procedure in which each component is after another one. In contrast, it is a wide-ranging and cyclical process in which any element has an immediate and direct influence on others (COSO, 2004). The following ERM stages are derived from COSO, 2004: (1) *Internal environment* which consists of subcomponents including risk appetite, risk management philosophy, and risk culture; (2) *Objective setting* where an organization must clearly define its objectives before analysis of risks, which includes strategic, operations and reporting objectives where those objectives should be compatible with risk appetite; (3) *Event identification* that identifies the events resulting from an internal or external component that may have a good or bad effect on the organization; (4) *Risk assessment* which is the process that evaluates the likelihood and impact of the event if it does occur; (5) *Risk response* which depends on the level of risk appetite that the organizations can implement based on one of the four risks treatments strategy (Susilo & Kaho, 2018) which are Avoidance, Mitigation, Transfer or Acceptance; (6) *Control activities* which are also referred to as internal or management controls that enhance the effectiveness of risk response actions by adopting mainly two components of policies and procedures; (7) *Information and communication* which means that related information must be identified, captured and communicated to staff in order to help them fulfil their role and responsibility regarding ERM; and (8) *Monitoring and evaluation*

which is the process in monitoring the control mechanisms, reviewing indicators, and periodically measuring the progress and deviations from the risk management plan (Mukhlis & Damayanti, 2021).

Risks Type: Risks, described as uncertainty affecting an organization's achievement of objectives, have potential consequences that may be either favorable or unfavorable (Saranza *et al.*, 2024). A thorough understanding of the various risks impacts the institution by evaluating the severity of risks and selecting the appropriate risk management strategy. Thus, firms effectively manage enterprise-wide risk and attain the desired performance (Perera *et al.*, 2022). Furthermore, risks must extend beyond the assessment of regulatory, legal, and financial risks to examine internal risks (documentation, business processes support, and information technology,) and external risks (social, political, governmental, economic, and environmental).

Based on COSO (2004), different kinds of risks are encountered by businesses including operational, strategic, financial, reputational, and compliance risks. The strategic risk impacts the capability of attaining the objectives of the organization, while operational risk impacts the ongoing processes. Similarly, according to Wikipedia (2024), operational risks are defined as the risk of loss that results from insufficient processes, systems, and people or from outside events. Meanwhile, compliance risk happens because of inconsistency in the rules and regulations of the government and the partner organizations. Furthermore, financial risk happens when assets are lost from natural disasters and thefts. Lastly, reputational risk arises when generally the perceptions of the institution name, the qualifications given, and its operations are considered negative (Burnaby & Hass, 2009).

Risk Governance as Moderator: According to Stein *et al.* (2019), RG is defined as a framework that enables management and the board of directors to oversee a company's risks and manage them within the established risk limits. Part of the previous literature on risk governance showed the need to appoint a risk committee. RC is defined as a subcommittee of the board, mainly concerned with risk management (Nguyen, 2022). Another crucial factor of risk governance is the invention of the CRO. CRO is referred to as a specialized managerial position, whose responsibility is risk management coordination (Erin *et al.*, 2020a). In addition, it evaluates the progress of risk management efforts and assists other managers in reporting relevant risk information throughout the entire organization for both upward and downward directions, as well as across other departments, to ensure effective implementation of ERM (Erin *et al.,* 2020a). Lastly, according to Erin *et al.* (2020a), IT systems considered RG as a determinant that promotes risk information transparency. For instance, an effective computerized risk management system that performs independent risk evaluations within the organization has become a must.

In addition, based on previous research that studied RG as a moderator, like those done by Malik *et al.* (2020) and Rustiarini and Suryandari (2021), the significance of the risk committee as a moderator has been investigated. In contrast, more research has concentrated on the role of the board of directors (Ping & Muthuveloo, 2015). Meanwhile, Saeidi *et al.* (2019) examined IT as a moderating variable. However, Malik *et al.* (2020) urged further research to investigate the significance of CRO reporting as a moderator in ERM performance relations.

Risk Committee presence: The board risk committee is a subcommittee of the board that concentrates only on risk management (Nguyen *et al.*, 2019). Also, RC indicates a board's dedication to proficiently managing risks (Abid *et al.*, 2021). In addition, RC plays a role in mitigating compliance risk by adhering to codes, regulations, or shareholder demands (Nguyen & Dang, 2022). According to previous studies (Jia & Bradbury, 2020; Kacem & El Harbi, 2022), firms with an RC perform better than other firms. Moreover, board committee affects the taking risks in banks. Besides, it improves bank-level risk governance by integrating an ERM approach and making recommendations on risk strategy, appetite, and tolerance level; thus, promoting an organizational risk awareness culture (Malik *et al.*, 2020). Furthermore, the study done by Aljughaiman and Salama (2019) indicated that a more robust independent RMC can enhance the risk management process. In addition, Bhuiyan *et al.* (2020) found that risk committees can minimize bank risk. Abdullah and Shukor (2017) concluded that an independent risk committee helps mitigate financial fraud, particularly in large corporations. Similarly, Amoozegar *et al.* (2017) found that the existence of a specialized risk committee influences a bank's operational and stock price performance both during the crisis and in non-crisis times. Furthermore, de Villiers *et al.* (2022) concluded that dedicated RMCs oversee environmental risks and enhance sustainability performance.

Chief Risk Officer Presence: According to COSO (2004), the purpose of CRO's role is to work closely with other managers to carry out successful risk management practices by facilitating the sharing of key risk information throughout the organization. Furthermore, the existence of CRO on the executive committee indicates that risk management is prioritized within the organization (Magee *et al.*, 2017). Additionally, it ensures that the board remains consistently informed about the latest changes (Agnese & Capuano, 2020). The study done by Erin *et al.* (2020a) claimed that the monitoring provided by a CRO guarantees a robust risk governance framework. Similarly, Beasley *et al.* (2005) believed that the CRO can act as a key element in the formulation of risk management frameworks, analyses, and policies. Likewise, Agnese and Capuano (2020) showed that the presence of a CRO can mitigate bank risk. Conversely, institutions where the CRO possesses limited authority result in higher risks and reduced performance (Amoozegar *et al.*, 2017).

Board of Director Gender Diversity: According to agency theory, the board of directors refers to one of the internal monitoring mechanisms that protect the interests of shareholders (Meckling & Jensen, 1976). It is considered the highest decision-making body that plays a crucial role in overseeing effective governance (Latif *et al.*, 2022). For instance, the board of directors has the responsibility to define the firm's goals, tactics, strategies, and levels of risk, establishing company policies (Bussoli *et al.*, 2022). Furthermore, Pierce and Goldstein (2018) and Nguyen and Dang (2022) concluded that the board's primary responsibilities include managing enterprise risks, creating the firm's risk policies, articulating the risk appetite, defining the limits for risk-taking, and evaluating the efficacy of the overall risk management techniques and assisted by RMC through frequent reporting of various risks, risk profiles, risk levels, and patterns to the BOD (Karyani *et al.*, 2019). Based on a previous study, Nirino *et al.* (2022) revealed that the company's BoDs play a pivotal role in performing sustainable practices to stakeholder demands and legal requirements. In addition, Al-Jaifi (2020) investigated the relationship between board gender diversity and banks' non-financial performance in the ASEAN industry. The study concluded that board gender diversity positively affects corporate governance performance, but it has no impact on the bank's environmental and social performance. Similarly, Shakil *et al.* (2020) and Disli *et al.* (2022) found a significant positive relationship between Body diversity and non-financial performance.

Risk Technology: Data, on its own, is not inherently valuable; it requires tools to transform it into knowledge and support decision-making (Dubey *et al.,* 2020). This is especially true in the digital age, where data are considered a key asset for modern enterprises. Technological advancements have significantly enhanced the ability to collect data, process information, and generate knowledge beyond human limitations (Al Shraah *et al*., 2021). According to COSO (2004), to achieve ERM objectives within the scope of risk management, the appropriate data must be "determined, gathered, and communicated in a form and time frame that enables individuals to fulfill their responsibilities" while eliminating existing redundancies in risk management activities through the implementation of an integrated framework as supported by an IT platform. In organizational risk management, information must be available throughout the organization as well as presented in the requested format and timeframe (Vitolla & Rubino, 2014). Furthermore, it must be integrated across both strategic and operational tiers of the organization to aid managers in comprehending and evaluating the current wide variety of internal and external threats (Secretariat, 2001). Furthermore, the information must be appropriate, consistent, reliable, and updated (Mitterbaur *et al.,* 2016). Consequently, technologies are considered essential to the success of risk management initiatives (Oliveira et al., 2018), where decentralized risk management cannot be handled without IT support (Gleißner *et al.,* 2022).

ERM and Organizational Performance: A previous study investigated the effect of ERM and firm performance within financial and non-financial listed firms on the Ghana Stock Exchange and also considered the size of the firm as a moderator variable (Horvey *et al.*, 2020). The study found that ERM has a positive relationship with firm performance for both financial and non-financial firms. In contrast, Otero González *et al.* (2020) showed that ERM is not associated with a change in the financial performance of Spanish companies. Similarly, Glowka *et al.* (2020) took into consideration the size of the firm (small and medium size firms) and the author found that ERM does not directly influence financial performance indicators. Traditionally, researchers have focused on financial performance as a return on investment or net earnings (Hussain & Hoque, 2002). However, with increasing competition in the business environment, other aspects of performance should also be considered (Kaplan & Norton, 2005) such as reliability, quality, time-to-market, new production introduction, order/shipment information, increased customer service, efficient capital deployment, delivery dependability,

flexibility, customer satisfaction, and business efficiency (Tracey *et al.*, 1999). Previous studies also showed that ERM implementation has a substantial impact on competitive advantage, particularly when moderated by information technology (Saeidi *et al.*, 2019). In addition, Pérez-Cornejo *et al.* (2019) found that ERM positively influences corporate reputation. Furthermore, ERM is considered a major factor in attaining organizational goals and wealth creation based on a study done by Kwateng *et al.* (2022).

3. Significance and Contribution of Research

This research intends to conduct further study on ERM specifically by selecting manufacturing firms in Jordan. The researchers expect that the developed framework of this study can assist and facilitate the ERM adoption process for the manufacturing sector by helping to identify the gaps between their current practices and their weaknesses. The need for an effective ERM implementation in the Jordan manufacturing sector is important to survive and strive in the international competitive uncertain and risky market. Furthermore, manufacturing firms pay more attention to risk governance that affects ERM non-financial performance relation. In particular, investing in risk technology affects the effectiveness of ERM and improves the non-financial performance of the organization.

The current research's conceptual model combines RG which includes Bod, RC, CRO, and risk technology as moderators that modify the relationship between ERM and non-financial performance. This notes the role that ERM contributes to non-financial performance, as well as RG as a moderator that supports ERM implementation to improve non-financial performance. Previous studies have shown mixed results about the effect of ERM on firm performance. Thus, to make a theoretical and practical contribution to the body of knowledge that is already in existence, this study looks into the theoretical contribution by analyzing the relationship between ERM and its impact on non-financial performance in particular. It also looks into the role of RG as a moderator.

The current investigation expands upon the research conducted by Saeidi *et al.,* (2019) which recommended studying other intangible factors as moderators in the relationship between ERM performance. Moreover, that study only considered competitive advantage while this study suggests including images, reputation, and customer satisfaction besides competitive advantages. Secondly, it extends the investigation done by Malik *et al.,* (2020) which suggested future studies to investigate the importance of other factors that moderate ERM and performance besides risk committee. Third, this study uses all eight COSO components of ERM in the implementation; however, previous studies only considered its adoption as a dummy variable or its implementation by a simple question (Anton, 2018; Eastman & Xu, 2021). Next, it expanded Pérez-Cornejo *et al.'s* (2019) study which recommended examining other non-financial performance indicators. Fifth, the majority of previous studies were conducted among developed countries, while the present study extends the generalizability of such research into the context of Jordan. Lastly, most ERM and risk governance studies were conducted on financial institutions while few studies were done in manufacturing firms. This study then addresses the gaps in previous research that have not adequately been explored.

4. Conclusion and Recommendations

The prior studies on ERM show many weaknesses and limitations, particularly in the study objectives and population. Consequently, additional research that explicitly focuses on the Jordanian industrial context remains necessary. The study is conducted to examine the opportunities and risks faced by manufacturing organizations in the context of uncertainty and competitive business environments. Moreover, the article also highlighted several benefits that effective ERM implementation may provide to manufacturing companies. These advantages encompass improved threat mitigation and greater opportunity exploitation, resulting in increased customer satisfaction, and a strengthened image and reputation, which subsequently ensures competitive advantages. Secondly, it improves risk awareness and risk culture while integrating risk planning with strategic planning. Third, it enhances non-financial performance in Jordanian manufacturing by improving the effectiveness and efficiency of resource use in achieving objectives. Fourth, it enables firms to accept greater risk, capitalize on diversification, and mitigate inefficiencies by the distribution of risks across other departments or sectors. Lastly, the improvement of internal communication and the minimization of information asymmetries are achieved, which enables a more precise decision-making process.

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