

Article

# The relationship between innovation capability and profitability: The mediating role of enterprise risk management in Amman Stock Exchange (ASE)

Qais Yaser Saleh<sup>1,\*</sup>, Ebrahim Mansour<sup>2</sup>, Mohammad Yousef Altarawneh<sup>3</sup>, Esam Emad Ghassab<sup>3</sup><sup>1</sup> Department of Accounting and Information Systems, University of Canterbury, Christchurch 8011, New Zealand<sup>2</sup> Department of Accounting, Business School, The Hashemite University, Zarqa 13110, Jordan<sup>3</sup> Accounting Department, Business school, The World Islamic Sciences & Education University, Amman 11947, Jordan\* **Corresponding author:** Qais Yaser Saleh, [qais.saleh@pg.canterbury.ac.nz](mailto:qais.saleh@pg.canterbury.ac.nz)

## CITATION

Saleh QY, Mansour E, Altarawneh MF, Ghassab EE (2024). The relationship between innovation capability and profitability: The mediating role of enterprise risk management in Amman Stock Exchange (ASE), *Policy and Development*. 8(13): 7430. <https://doi.org/10.24294/jipd7430>

## ARTICLE INFO

Received: 25 June 2024

Accepted: 10 July 2024

Available online: 8 November 2024

## COPYRIGHT



Copyright © 2024 by author(s).

*Journal of Infrastructure, Policy and Development* is published by EnPress Publisher, LLC. This work is licensed under the Creative Commons Attribution (CC BY) license. <https://creativecommons.org/licenses/by/4.0/>

**Abstract:** In the face of growing competition, industrial and commercial firms need more effective strategies to gain competitive advantages. This study investigates the role of enterprise risk management (ERM) as a mediator in highlighting the significance of innovation capability on profitability in industrial and commercial firms listed on the Amman Stock Exchange (ASE). Data were collected from 244 respondents using a standardized questionnaire and analyzed with SPSS software. The results indicate that the innovation capability has an impact on profitability in industrial and commercial firms, as well as their ERM practices. Additionally, ERM mediates the relationship between innovation capability and profitability. Firms that adopt distinctive innovation strategies tend to maintain formal ERM strategies, which in turn enhance market superiority and profitability. This research offers some significant managerial ramifications that may be essential for business owners, executives, and decision-makers involved in the development of firms.

**Keywords:** innovation capability; enterprise risk management; profitability; sustainability; management innovation; financial performance; risk management strategies

## 1. Introduction

In the business environment, the nexus between innovation and financial success emerges as pivotal for organizational prosperity. In order to stay ahead, businesses are embracing innovation not only to set themselves apart but also to foster expansion and fortify their market standing (Saunila, 2020). Nevertheless, the quest for innovation carries inherent risks (Broadstock et al., 2020; Vargo et al., 2022), ushering in a spectrum of uncertainties spanning from market reception to technological viability, which could potentially undermine the financial robustness and equilibrium of the enterprise. Due to the diversity of opinions on innovation management, there is no universal method to examine innovation capability, which is often considered a multidimensional construct (Alblooshi et al., 2021; Shehzad et al., 2022; Tsou and Chen, 2021). There are various definitions for the word “Innovation Capability” Yodchai and Tran (2021), Zastempowski (2022) and Borah et al. (2022), defined as the ability to regularly transform knowledge and concepts into new products, processes, and systems for the benefit of the firm and its stakeholders. Nowadays, the capacity of firms to develop their ideas is receiving an increasing amount of attention. The majority of firms are predisposed toward enhancing their innovation capability in order to gain access to innovative combinations of products,

services, processes, manufacturing techniques, and individual roles (Goni and Van Looy, 2022; Troise et al., 2022).

In the fast-paced and ever-evolving landscape of modern business, two critical domains stand out as pillars of organizational success: innovation capability and enterprise risk management (ERM) (Al-Nimer et al., 2021). Innovation fuels progress, drives competitiveness, and propels businesses toward growth and sustainability. Meanwhile, effective risk management safeguards against potential threats, ensuring resilience and protecting against unforeseen disruptions (AlTaweel and Al-Hawary, 2021). In the same context, firms typically employ competitive techniques as a risk-reduction strategy to join a new market, and these strategies serve as an important precursor to ERM strategies (Ali et al., 2021; Khan, 2022). Additionally, the resource-based perspective considers ERM strategies as a resource that boosts profitability (Girangwa et al., 2019). This perspective defines ERM strategies as a firm's capacity to use its resources efficiently to obtain a competitive advantage and enhance profitability by minimizing losses (Troise et al., 2022). Thus, to reduce risk and increase profitability, top management must align ERM strategies with business strategy. ERM strategies are defined as a firm capability to use its resources wisely to achieve a competitive edge and enhance performance by limiting losses (Hanggraeni et al., 2019). Additionally, ERM strategies improve business performance by utilizing time and resources to create a competitive edge in addition to cost-effectively lowering risks (Ali et al., 2021; Ugoani, 2021). However, firms face the challenge of balancing the necessity of innovation with the necessity of protecting their bottom lines (Zameer et al., 2020). This delicate balance calls for a strategic approach that seamlessly integrates risk management into the innovation process. Here lies the pivotal role of ERM, which is a comprehensive framework designed to identify, assess and mitigate risks across an organization's operations.

This research aims to add to the body of knowledge on the performance of Jordanian firms. While previous studies have investigated the innovation capabilities of small and medium-sized firms, there remains a gap in the research concerning the relationship between innovation capability and profitability. To the best of our knowledge, this study is the first research to take into account the special relationship between innovation capability and profitability through the mediating effect of ERM in the Jordanian environment.

Industrial and commercial firms listed on the Amman Stock Exchange (ASE) play a pivotal role in driving economic growth and development. These sectors are instrumental in shaping the country's industrial and commercial prowess, making them vital components of the national economy. The selection of these two sectors for a study on the relationship between innovation capability and profitability, with a focus on the mediating role of enterprise risk management, is not only advantageous but also necessary for several reasons.

First, industrial firms are the backbone of Jordan's economic infrastructure, contributing significantly to the country's GDP and employment. These firms are often at the forefront of adopting innovative technologies and practices, which are essential for enhancing productivity and competitiveness in a global market. By focusing on the industrial sector, the study can uncover critical insights into how

innovation capabilities are harnessed to drive profitability and sustain long-term growth.

Second, the commercial sector encompasses a wide range of businesses that are integral to the daily economic activities in Jordan. These firms facilitate trade, support consumer needs, and provide essential services that keep the economy vibrant. The commercial sector's ability to innovate is crucial for adapting to changing market demands and improving service delivery. Understanding the interplay between innovation and profitability in this sector can provide valuable lessons for enhancing business performance and customer satisfaction.

Moreover, the necessity of choosing these sectors is underscored by the unique challenges and opportunities they face in the Jordanian context. The industrial sector often deals with issues such as resource scarcity, regulatory constraints, and the need for technological advancement. In contrast, the commercial sector must navigate market volatility, consumer behavior shifts, and competitive pressures. Examining how enterprise risk management mediates the relationship between innovation and profitability in these diverse sectors can offer a comprehensive view of the strategic approaches needed to mitigate risks and capitalize on growth opportunities.

Our research provides a number of important contributions. First, this research responds to call for further research and fills the gap in understanding the relationship between innovation capability and financial performance (e.g., profitability) (Andersson et al., 2020; Mendoza-Silva, 2021; Rajapathirana and Hui, 2018). Specifically, this research contributes to the existing literature on industrial and commercial firms by addressing the previously overlooked mediating role of ERM between innovation ability and profitability. Thus, this research offers a new perspective to fill this gap. Second, while numerous studies have examined the relationship between ERM and profitability (Makmor et al., 2023; Nama and Kanungo, 2023; Poon et al., 2022), few have focused specifically on industrial and commercial sectors. This research provides targeted insights for these sectors, enhancing the relevance and applicability of ERM strategies in these contexts. Third, the significance of this research extends beyond theoretical elucidation, resonating deeply with the practical realities faced by businesses operating within the ASE and similar contexts characterized by emerging markets and dynamic economic conditions. The ASE, as a pivotal hub of economic activity in the Middle East, encapsulates the challenges and opportunities inherent in transitioning economies, where innovation-driven growth is paramount for sustainable development. Moreover, amidst the evolving regulatory landscape and increasing scrutiny on corporate governance practices, the insights derived from this study hold particular relevance for stakeholders within the ASE community, including policymakers, executives, investors, and academics. Finally, by shedding light on the relationship between innovation, profitability, and ERM, this research equips stakeholders with the knowledge and tools necessary to enhance decision-making processes, optimize resource allocation, and foster a culture of innovation-driven risk management within firms.

## **2. Literature review**

This section includes subsections for the following contents, where subsection 2.1 presents the theoretical framework. Subsections from 2.2 to 2.5 present the hypothesis development.

### **2.1. Theoretical background**

This section explores the theoretical links between innovation capability, risk management, and profitability, setting the stage for subsequent discussions on how these elements interact to influence organizational success.

- **Risk management**

Risk, as defined by classical decision theory, is the probabilistic ambiguity of outcomes resulting from a choice (Rehman and Anwar, 2019). Enterprise risk management (ERM) plays a crucial role in mitigating these uncertainties. According to Rehman and Anwar (2019), ERM enhances a firm's ability to minimize losses, stabilize earnings fluctuations, and increase return on equity and shareholder values. Specifically, the volatility of profitability can be reduced by the appointment of chief risk officers (CROs) (Li et al., 2022).

Key components of ERM include the independence of the ERM function, the size of ERM resources, the determination of risk ownership, and the definition and communication of roles (Pecina et al., 2022). ERM strategies enable organizations to manage strategic, market, credit, and operational risks effectively (Shah et al., 2022). Additionally, ERM involves identifying and analyzing both upside risks (opportunities) and downside risks (unfavorable effects), with strategies for mitigation or avoidance (Faedfar et al., 2022). Effective ERM reduces costs, promotes optimal resource use, and supports sound investment decisions by accurately assessing and managing risks and opportunities (Tobisova et al., 2022). Consequently, ERM enhances resource efficiency and organizational competitiveness (Lima Rua et al., 2022).

- **Innovation capability**

Innovation is both an expression of human inventiveness and a response to the challenges posed by evolving economic and social contexts (Sharma et al., 2022). At the macroeconomic level, innovation drives economic development and growth, enhancing competitiveness and productivity (Mohamed et al., 2021). At the microeconomic level, it adds value, boosts earnings, and provides a competitive edge (Pan et al., 2021). The innovation process comprises ideation, development, and execution. The resource-based view (RBV) of the firm emphasizes the importance of internal resources and capabilities in driving innovation (Valaei et al., 2022). This theory asserts that firms that possess resources that are valuable, rare, and hard to imitate are in a strong position to innovate and develop sustainable competitive advantages. These unique resources enable them to differentiate their products and services, create efficiencies, and respond to market changes more effectively than their competitors who lack such assets. This strategic edge fosters innovation, allowing these firms to maintain a leadership position in their industries over the long term (AlNuaimi et al., 2021).

- **Profitability**

Profitability measures a firm's financial performance and is influenced by factors such as revenue growth rate, cost structure, pricing strategy, competition, and market conditions (Pervan et al., 2019). High profitability indicates financial health, boosts investor confidence, and improves access to capital (Chabachib et al., 2020). Common financial ratios used to evaluate profitability include gross profit margin, net profit margin, return on assets (ROA), and return on equity (ROE) (Choiriyah et al., 2020). These metrics help investors and analysts assess a firm's performance and growth potential (Putri and Rahyuda, 2020).

- Interconnections between innovation, risk management, and profitability

The interplay between innovation capability, risk management, and profitability is intricate and significant. Effective risk management, particularly through ERM, provides a stable foundation for innovation by minimizing uncertainties and potential losses. This stability allows firms to allocate resources efficiently towards innovative initiatives. In turn, successful innovation enhances profitability by creating new value, improving competitive positioning, and driving revenue growth. Therefore, a robust ERM framework supports continuous innovation, which ultimately leads to sustained profitability and organizational success.

## **2.2. The relationship between innovation capability and profitability**

This study expanded on earlier research by defining innovation capability as a firm capacity to successfully develop a new concept, procedure, or item. This means that firms need to innovate to achieve success. According to Heenkenda et al. (2022), a firm must be inventive to survive in a dynamic environment in order to attain profitability. Acciarini et al. (2022) emphasized that innovation is one of the key factors in long-term business success because it helps a firm deal with the disruption of the external environment. A firm with innovation capability will be better able to take advantage of new goods than a firm without this competence. According to Bahta et al. (2020), Xie et al. (2019), and Lestari et al. (2020), innovation capability has a significant impact on financial performance. When firms possess innovation capability, this ability enables them to develop a competitive advantage and achieve profitability. The result by Su et al. (2022) revealed that process innovation, rather than product innovation, has a bigger impact on organizational performance. Additionally, management innovation shows a direct relationship with firm management, organizational structure, and administrative procedures, and an indirect relationship with core business operations (Giotis and Papadionysiou, 2022). The innovation capability and profitability in Jordanian industrial firms are related (Saleh and Al-Nimer, 2022). The process of applying innovation capability in businesses begins with the stage of equipping staff members with the knowledge and skills that are essential to feeling accountable and capable of growth and innovation. Thus, launching a new product or service that distinguishes itself from the competition in terms of quality helps to increase sales and enhance profitability.

According to Chummee (2022), innovation capability and profitability are closely related, as innovation can drive profitability by creating new products, processes, or services that meet customer needs and generate revenue. Innovation capability involves creating a culture of innovation, investing in research and

development, and utilizing the latest technologies and methodologies to stay ahead of the competition (Konsti-Laakso et al., 2012). According to Isayas (2022), profitability is the ability of an organization to generate profits or financial gains. It is a critical aspect of business success and can be achieved through various means, including cost reduction, increased revenue, and improved efficiency. Bathelt and Li (2022) contend that rather than just focusing on value development to maximize corporate profits, small and medium-sized businesses would greatly benefit from strategically orienting themselves toward innovation. A firm innovation capability can be evaluated from several perspectives and at different levels (Kim and Jin, 2022). Innovations can potentially generate financial returns for firms. However, innovation frequently requires a firm to make substantial investments that may take considerable time to yield returns (Birch, 2022; Roberts and Schmid, 2022). While some studies have shown negative (Puspita et al., 2020), most previous studies (Maldonado-Guzmán et al., 2019) documented a positive relationship between innovation capabilities and business performance (i.e., profitability). Based on the above explanation, this research proposes the hypothesis as follows:

H1: There is a significant relationship (at  $\alpha \geq 5\%$ ) between innovation capability and profitability. The results showed that profitability is positively affected by its innovation capability.

### **2.3. The relationship between innovation capability and enterprise risk management**

Understanding how innovation capability enhances enterprise risk management is crucial in today's rapidly evolving business environment (Bogodistov and Wohlgemuth, 2017). Innovation capability, which encompasses a firm's ability to develop new ideas, processes, and products, plays a significant role in identifying and mitigating emerging risks (Kwak et al., 2018). Whereas, innovation capability enables firms to identify emerging risks early. By fostering a culture of continuous improvement and vigilance, organizations can spot potential threats before they materialize (Bogodistov and Wohlgemuth, 2017). This proactive approach allows for the development of strategies to mitigate risks effectively.

Moreover, the ability to respond swiftly to identified risks is greatly enhanced by innovation capability (Rajapathirana and Hui, 2018). Firms with strong innovation capabilities can quickly adapt their processes and strategies to address new challenges (Zahra et al., 2006). This agility is essential in minimizing the impact of unforeseen events and maintaining operational stability. In addition, promoting a culture of risk awareness is another key benefit of innovation capability (Tikas and Akhilesh, 2017). When innovation is embedded in a firm's culture, employees are more likely to be attuned to potential risks and take proactive steps to manage them (Wallace et al., 2016). This collective vigilance helps create a resilient organization capable of withstanding various threats.

Innovation, as described by Bunjak et al. (2022), is the introduction of novel ideas, practices, or phenomena. Innovation capability, according to Purwati et al. (2021) and Iranmanesh et al. (2021), refers to a firm's ability to leverage technology to develop new systems, policies, programs, goods, processes, devices, or services.

Lam et al. (2021) highlight that a crucial aspect of this capability is the acquisition and application of external knowledge to generate new insights. Raddats et al. (2022) note that manufacturers emphasize incremental improvements across products, processes, and services, reflecting the multidimensional nature of innovation. Vargo et al. (2022) add that innovation includes modifying products, processes, services, organizational systems, and marketing systems to add value for customers. Özdemir et al. (2022) emphasize that technical and managerial innovations form the core of innovation capability, with technical advances encompassing products, marketing, services, and the technologies used to create, sell, or deliver them (Elshaer and Marzouk, 2022; Su et al., 2022).

Williams et al. (2021) acknowledge that innovation inherently involves uncertainties and risks. Exploring new territories, experimenting with novel technologies, and pursuing disruptive ideas expose organizations to various potential pitfalls, including market volatility, regulatory challenges, technological obsolescence, and reputational damage (Saleh and Al-Nimer, 2022). Therefore, firms must balance the need for innovation with effective risk management. This balance underscores the interdependence between innovation capability and enterprise risk management (ERM), as innovation requires a robust risk management framework, and effective risk management fosters an environment conducive to innovation (Mizrak, 2023).

ERM plays a critical role in enhancing the effectiveness of new product innovations for business sustainability (Hanaysha et al., 2021; Le et al., 2020; Naruetharadhol et al., 2021). Strategies involving technology, organization, marketing, and commercialization are essential for successfully bringing new products to market and competing effectively. Kowalkowski et al. (2017) report that only 60% of new products are profitable, highlighting the importance of ERM in reducing negative impacts and maximizing positive outcomes. Product managers must consider acceptable risk levels when developing innovation strategies (Peykani et al., 2022). ERM also aims to prevent crises and predict outcomes (Membré and Boué, 2018). According to Pinem and Augustine (2019), integrating product innovation with ERM significantly enhances firm value. ERM identifies opportunities and risks that can impact a firm's growth potential, viewing risk as a source of commercial opportunity. Effective ERM supports strategic execution by improving new products, thereby increasing firm value. The primary goal of risk management is to mitigate negative impacts and enhance positive influences in product development (Landi et al., 2022). Empirical studies by Al-Nimer et al. (2021) and Monazzam and Crawford (2024) show a positive relationship between entrepreneurial risk management and innovation capability.

Based on the above discussion, this research proposes the hypothesis as follows:

H2: There is a significant relationship at ( $\alpha \leq 5\%$ ) between innovation capability and enterprise risk management. The results show that the innovation capability positively affects enterprise risk management.

## **2.4. The relationship between enterprise risk management and profitability**

ERM helps organizations reduce all forms of risk and helps firms obtain expected profits (Qin et al., 2022). Saeidi et al. (2021) described ERM as the process of managing risk associated with a firm's operations to maximize opportunities and minimize risks, rather than attempting to eliminate risk entirely. The effectiveness, profitability, and financial performance of the business organization are frequently significantly impacted by these risks (Gangi et al., 2020). Accordingly, the essence of the ERM framework in the organization is to recognize the interrelationships among risks and how these risks are treated across all business activities. ERM is being applied in order to increase shareholder value and strike a balance between firm performance and risk management. A business might be able to stick to its goals and business plan in the face of financial complexity if it can achieve the right balance. According to Makmor et al. (2023), ERM is the process of gathering and integrating all kinds of risks using risk-based tools to mitigate and manage those risks. This process includes communicating risk information to management, enabling them to make informed decisions. Achieving profitability in firms requires determining the effectiveness of resources allocated to tangible and intangible assets, such as ERM, to create sustainable future contracts (Nama and Kanungo, 2023).

The empirical evidence reported by many previous studies showed a positive relationship between ERM strategies and business performance. For instance, Qing et al. (2022) explored the relationship between business performance and ERM strategies by comparing businesses that implement ERM techniques with those that do not. Their findings indicated that organizations with more ERM strategies exhibit superior operational performance. Similarly, Poon et al. (2022) investigated the impact of ERM on Malaysian listed firms and concluded that ERM positively affects performance, thereby enhancing shareholder value and overall business success. Additionally, Siddiqui et al. (2022) focused on the impact of ERM strategies on the performance of small and medium-sized businesses, noting that ERM strategies significantly benefit business performance. Based on the above discussion, this research proposes the hypothesis as follows:

H3: There is a significant relationship at ( $\alpha \leq 5\%$ ) between enterprise risk management and profitability. The results show that ERM has positive effects on profitability.

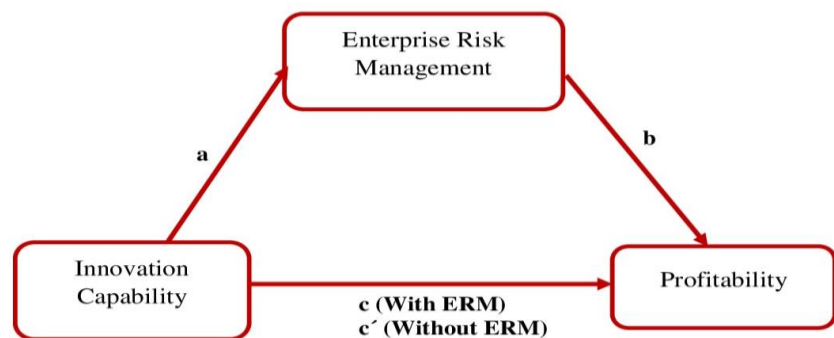
## **2.5. The mediating effect of the use of enterprise risk management on the relationship between innovation capability and profitability**

More efficient corporate strategies are needed to gain a competitive edge due to the increasing competition (Zameer et al., 2020). According to Ricardianto et al. (2023), ERM and corporate success are significantly impacted by innovation strategy. ERM also mediates the link between innovation capability and firm performance to some extent. According to Azeem et al. (2021), businesses with distinctive innovation strategies implement formal ERM practices, which in turn promote superior performance in the market. Innovation capability is crucial for enhancing organizational and financial performance, according to AlTaweel and Al-



Hawary (2021). As a result, senior managers received a set of recommendations on how to support organizational activities that foster the creation of unique products and services. These recommendations aim to align with creating customer desires and implementing contemporary business models that encourage teamwork and adoption of innovative ideas. Financial success is significantly impacted by ERM strategies, according to Al-Nimer et al. (2021).

ERM refers to the integrated approach taken by organizations to identify, assess, and mitigate risks across all aspects of their operations (Olaniyi et al., 2023). By systematically addressing risks, organizations can safeguard their assets, optimize resource allocation, and enhance decision-making processes (Mizrak, 2023). Moreover, ERM enables organizations to seize strategic opportunities while minimizing potential threats, thereby fostering a conducive environment for innovation (Do et al., 2022). On one hand, a robust ERM framework can facilitate the effective implementation of innovative initiatives by providing a structured approach to risk assessment and mitigation (Fatonah and Haryanto, 2022). By identifying and addressing potential barriers and uncertainties associated with innovation, ERM enhances organizational resilience and agility, thus enabling smoother execution of innovative strategies. Furthermore, ERM can directly impact profitability by mitigating the negative consequences of risks that may arise from innovation efforts (Shad et al., 2019). Innovation inherently involves uncertainty and risk, ranging from market acceptance of new products to technological disruptions and regulatory compliance challenges (Yaser Saleh et al., 2023). Effective risk management practices can help organizations navigate these uncertainties more effectively, minimizing the likelihood of costly failures and maximizing the returns on their innovation investments.



**Figure 1.** Research model of innovation capability, profitability and enterprise risk management.

The majority of previous studies have predominantly shown a positive impact of ERM on financial performance. For example, Henschel and Lantsch (2022) documented a robust relationship between the implementation of ERM and financial success indicators within the industrial sector. ERM significantly affects a firm ability to compete and its performance (Fatonah and Haryanto, 2022). Ghardallou (2022) asserts a connection between a firm financial performance and the level of financial risk disclosure. Recently, Alshurideh et al. (2022) provided evidence of the efficacy of ERM and its impact on business performance. ERM strategies serve as an

intangible resource that significantly improves a firm's performance (Bailey, 2022). Accordingly, **Figure 1** illustrates this relationship.

H4: There is a significant mediating role of enterprise risk management at ( $\alpha \leq 5\%$ ) on the relationship between innovation capability and profitability.

### **3. Research methodology**

#### **3.1. Research design**

The research uses a quantitative cross-sectional survey approach to examine the formulated hypotheses that are grounded in positivist philosophy and an ontological orientation of objectivism. This particular design was chosen since the research data may be objectively tested for validity and reliability.

#### **3.2. Sampling and data collection procedures**

One of the major stock exchanges in the Arab world where securities are exchanged is the ASE. Additionally, it offers the right setting for ensuring the interaction of the supply and demand for securities and laying the groundwork for open and honest trading. The ASE is responsible for developing the rules of professional conduct, creating reports that detail all exchange activities, and providing the systems required for executing and managing the exchange process. The questionnaire was designed to target all administrative managers within both the industrial and commercial sectors. To ensure comprehensive coverage, we utilized the official websites of firms listed on the ASE. These websites are a reliable source of contact information, including email addresses for administrative managers and other relevant personnel. This approach was chosen to maximize the response rate and ensure the reliability and relevance of the data collected. By directly contacting administrative managers through their listed email addresses, we aimed to gather valuable insights from key decision-makers within these organizations. In 2023, the ASE listed 41 industrial firms and 29 commercial firms. This information is part of the broader data on the number of listed firms across different sectors on the ASE. (ASE, 2023; Jordannnews, 2023). The questionnaire was sent to all administrative managers in all administrative departments, at a rate of 11 questionnaires for each firm.

An electronic self-report questionnaire created with Google Forms was used to collect the data from administrative staff systematically and randomly selected from a sampling frame of the industrial and commercial firms listed on the ASE. To ensure the protection of participants' rights and security, ethics approval was obtained. Specifically, this phase involved expert arbitrators, who provided feedback on the tool. Additionally, verbal consent was obtained from all participants. A total of 800 questionnaires were sent between 14 January and 23 March 2023, and (244) usable responses were returned with a response rate of (30.5%). This response rate was deemed sufficient given the nature of ASE and the often-poor response rates associated with mail surveys. After cleaning the data, (224) questionnaires were valid for statistical analysis. This sample was considered appropriate where

according to Siddiqui (2013), the sample size for multivariate statistical analysis should range from 200 to 500 samples.

### **3.3. Research instrument**

One of the most popular methods for gathering information for social and management studies is the questionnaire (Holtom et al., 2022; Ruslin et al., 2022). Three sections make up the questionnaire that was used for the current research. Age, educational background, years of experience in the respondents' present line of work, and administrative level were the personal characteristics of the respondents that were the focus of the first section's data collection.

The independent variable innovation capability was measured with (11) items based on early work by Lin (2010) and Saleh and Al-Nimer (2022). Employing the work of Rehman and Anwar (2019) and Saiedi et al. (2019), the mediating variable ERM was measured using (7) items. Finally, the dependent variable profitability was measured using (7) items based on early work by Abdoli Bidhandi and Valmohammadi (2017) and Saleh and Al-Nimer (2022). See Appendix (survey questionnaire) for more details.

The questionnaire included close-ended types of questions. Using closed-ended questions has the advantage of providing the researcher with filtered data. According to Etikan and Bala (2017), filtered data is preferred over other types of data because it avoids the researcher from having to remove unfavorable, undesired, or inaccurate responses from the data. Scales are used to express how significantly an individual participant deviates from the group in terms of the main research variable. On a five-point scale ranging from 1 = strongly disagree to 5 = strongly agree. In earlier research, five-point scales were employed, and it was demonstrated that their reliability was higher than that of other measures (Chyung et al., 2017).

### **3.4. Data analysis procedures**

First, using the analytical tool of the statistical package for social sciences (IBM-SPSS) version (26), a frequency analysis for the demographic variables and a descriptive analysis for the questionnaire items were conducted. The validity and reliability of the items were evaluated using the exploratory factor analysis. Multiple regression analyses were subsequently employed to investigate the causal relationships. When innovation capability is regressed on ERM, the initial linear regression occurs (a). When the ERM is regressed to profitability, a second linear regression occurs (b). The innovation capability is regressed on profitability to complete the third linear regression (c and c'). The research model is depicted in **Figure 1** above, which shows the theoretical associations between innovation capability as the independent variable, profitability as the dependent variable, and ERM as the mediating variable. All regressions must be significant for mediation to occur. The mediating impact of ERM was examined using Andrew F. Hayes' SPSS macros software (PROCESS v3.3) (Hayes and Rockwood, 2020). PROCESS was used over Structural Equation Modelling (SEM) because process offers flexibility, interpretability, specificity of analysis, and ease of use, it is favored for research that focusing on specific mediation or moderation effects within a more straightforward

model. For all two-tailed tests, a  $p$ -value of 0.05 was regarded as statistically significant.

## 4. Results

### 4.1. Sample characteristics

**Table 1.** Profile of respondents ( $n = 224$ ).

Variable	Std. Dev	Frequency	%
Age	0.735		
Less than 35 years		103	46.0
35–50 years		84	37.5
Over 50 years		37	16.5
Academic qualification	0.684		
Diploma		31	13.8
Bachelor’s degree		147	65.6
Master’s		36	16.1
PhD		10	4.5
Years of experience	0.720		
Less than 10 years		120	53.6
10–20 years		73	32.6
Over 20 years		31	13.8
Administrative level	1.297		
General manager		22	9.8
Financial manager		21	9.4
Chief accountant		53	23.7
Internal auditor		54	24.1
Accountant		74	33.0
Main business activity	0.500		
Industrial		118	52.7
Commercial		106	47.3
No. of employees	0.91011		
Less than 100		98	43.8
100–200		71	31.7
200–300		43	19.2
Over 300		12	5.4
Age of firm	1.064		
Less than 5 years		46	20.5
5–10 years		54	24.1
15–20 years		71	31.7
Over 20 years		53	23.7

The demographic distribution of respondents is shown in **Table 1**. In terms of age groupings, 46% of respondents were less than 35 years old. According to the

academic qualification, 16.1% of them have a master’s degree, while 65.6% have a bachelor. Of those polled, 53.6% had less than 10 years of experience which included 120 workers. Among them, 33% were accountants, 24.1% were internal auditors and 23.7 were chief accountants. The participants came from different business activities: 52.7% of the participants were from industrial firms and 47.3% were from commercial firms. Among these firms, 43.8% had less than 100 employees while only 5.4% had over 300 employees. Finally, for the age of these firms, 31.7% were from 15 to 20 years, which makes up a larger portion of the data.

#### 4.2. Reliability and validity

**Table 2.** Exploratory factor analysis results\*.

Item	Factors loadings	Eigenvalue	Cronbach’s alpha
INN1	0.731		
INN2	0.624		
INN3	0.674		
INN4	0.731		
INN5	0.698		
INN6	0.653	11.241	0.924
INN7	0.741		
INN8	0.713		
INN9	0.693		
INN10	0.584		
INN11	0.701		
ERM1	0.721		
ERM2	0.737		
ERM3	0.787		
ERM4	0.744	2.249	0.925
ERM5	0.630		
ERM6	0.795		
ERM7	0.738		
P1	0.501		
P2	0.719		
P3	0.703		
P4	0.567	1.964	0.875
P5	0.780		
P6	0.764		
P7	0.732		

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.820

Bartlett’s Test of Sphericity Approx. Chi-Square (Sig.): 5914.213 (0.000)

Total Variance Explained: 61.814

\*: INN: Innovation capability, ERM: Enterprise risk management, P: Profitability.

The instruments used in this research were created based on previous research and reliability testing. To make some of the used questions more applicable to the research goal, some of them were changed. Consequently, the validity and reliability tests were conducted. The research instrument's face validity was evaluated through pilot research with managers from the ASE and five academics from the accounting department in Jordan, who examined the questionnaire's relevance and suitability for achieving the research goals and provided face validity evidence. Exploratory factor analysis (EFA) was used to assess the components' validity. The variables were validated using principal component analysis (PCA) using Varimax and Kaiser Normalization Rotation technique. The data's acceptability was assessed using the Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy. Bartlett's Test of Sphericity must be significant and the KMO must be greater than 0.50 (Shrestha, 2021). The EFA results show that the research items were heavily influenced by three variables, which account for 61.8% of the total variation and offer empirical support for the literature on research constructs. The varimax rotated PCA applied has resulted in three constructs that explained 61.814% of the variance. High correlation exists between the variables inside a single component known as convergent validity. It is ideal to have loadings more than 0.5 and average variance extracted greater than 0.5 for each factor, regardless of sample size (Hair et al., 2010). All factor loadings were more than 0.5 and the calculated average variance extracted for each variable was almost above 0.5. Finally, and the index of KMO was 0.820,  $p = 0.000$ , and all factor loadings were more than 0.5 indicating that factor analysis is a suitable method for assessing the data. based on eigenvalues greater than 1 and as displayed in **Table 2**.

The Cronbach alpha coefficient was utilized in the reliability test (Cooper and Schindler, 2014). When an instrument is used frequently on various items, in various locations, and at various times, its reliability can be tested. The reliability level might be considered strong and good if the result was close to one, meaning that the Cronbach alpha value should be greater than 0.60. The research findings showed that all of the variables were included in the category of good reliability, with values of 0.924 for innovation capability, 0.925 for ERM, and 0.875 for profitability.

### **4.3. Descriptive statistic**

The statistical analysis results of mean, standard deviation, skewness, and kurtosis of the variables based on the respondent answer were demonstrated in **Table 3**. The average score of respondents' answers for the innovation capability variable was in the high category  $M = 3.88$ ,  $SD = 0.692$ . The firms used innovative order management and follow-up tools, along with imported cutting-edge pre- or post-sale support strategies, to raise client satisfaction to a high level 4.04. However, the firms used cutting-edge incentive programs at a moderate level 3.66. The mean value for the ERM was in the high category  $M = 3.98$ ,  $SD = 0.749$  and all items that measured it have their mean values above 3.92. The item that was agreed upon by the largest number of respondents was that the firm had a procedure in place for dealing with significant risks that might compromise the ability to accomplish the strategic goals 4.06. The average score of respondents' answers for the innovation capability

variable was in the high category  $M = 3.88$ ,  $SD = 0.692$ . The respondents' responses on the profitability variable had an average score that fell into the high range  $M = 3.96$ ,  $SD = 0.654$ . The highest mean value according to the results was for making cost reduction a priority right away helps the firm succeed and be profitable 4.07. While the least mean value was 3.86 the firm has an innovation strategy that contributes to the production of new competitive products in the market. The table also shows that data are normal as none of the items has skewness and kurtosis values greater than  $\pm 3$  as recommended by Cain et al. (2017).

**Table 3.** Descriptive statistics for research variables\*.

Item	Statements	Mean	Std. Dev	Skewness	Kurtosis
<b>Innovation capability</b>		<b>3.88</b>	<b>0.692</b>	<b>-0.925</b>	<b>1.834</b>
INN1	Your firm introduces novel products.	3.71	0.976	-0.401	-0.310
INN2	Numerous product categories are expanded by your firm.	3.79	0.895	-0.948	1.408
INN3	New product development is something that your firm does to get trademarks.	4.00	0.850	-1.115	2.330
INN4	Your firm employs innovative operational strategies.	3.83	0.946	-0.713	0.531
INN5	In your firm, innovation is shunned as risky and disregarded.	3.85	0.975	-0.812	0.722
INN6	Over the past five years, we have introduced more novel products.	3.90	0.925	-1.031	1.567
INN7	Modern real-time process control technology is used by your firm.	3.94	0.899	-0.894	1.275
INN8	Your firm uses cutting-edge incentive programs.	3.66	1.003	-0.462	-0.196
INN9	Your firm introduces cutting-edge marketing strategies to consumers.	3.95	0.882	-0.964	1.592
INN10	Innovative order management and follow-up tools are used by your firm.	4.04	0.846	-1.188	2.577
INN11	Your firm imports cutting-edge pre- or post-sale support strategies to raise client satisfaction.	4.04	0.870	-0.945	1.482
<b>Enterprise risk management</b>		<b>3.98</b>	<b>0.749</b>	<b>-0.961</b>	<b>1.234</b>
ERM1	Your firm has a procedure in place for dealing with significant risks that might compromise your ability to accomplish the strategic goals.	4.06	0.881	-1.075	1.687
ERM2	Major risks and possibilities are identified using established standards.	4.01	0.933	-1.089	1.397
ERM3	The analysis is used to determine how risks and opportunities should be handled.	3.97	0.908	-1.035	1.493
ERM4	For implementing risk-reduction measures, we have established standard processes.	3.96	0.841	-0.663	0.499
ERM5	For the board of directors and top management, we routinely produce risk reports.	4.00	0.906	-1.050	1.556
ERM6	For tracking the evolution of key risks and the implementation of risk-reducing measures, we have standard operating procedures in place.	3.92	0.960	-1.073	1.334
ERM7	Your organization's culture includes risk management.	3.92	0.890	-0.805	0.831
<b>Profitability</b>		<b>3.96</b>	<b>0.654</b>	<b>-1.221</b>	<b>2.498</b>
P1	To make a profit, the focus is on providing clients with proper and sufficient follow-up.	4.05	0.861	-0.826	0.848
P2	Making cost reduction a priority right away helps the company succeed and be profitable.	4.07	0.844	-1.356	3.083
P3	The ability of company management to choose a marketing strategy is improved through reliable information.	3.99	0.850	-0.860	1.297
P4	Your company does not have any funding for the training and retraining of salespeople.	3.97	0.825	-1.158	2.483
P5	A positive customer relationship can help your business increase its financial success and profitability.	3.96	0.872	-1.183	2.354
P6	Value-added strategies and customer benefits are essential to profit planning and financial success.	3.86	0.890	-0.956	1.406
P7	Your company has an innovation strategy that contributes to the production of new competitive products in the market.	3.84	0.907	-0.958	1.388

\*: INN: Innovation Capability, ERM: Enterprise risk management, P: Profitability.

#### 4.4. Hypotheses testing

Regression analysis was used to test the relationship between ERM and profitability (H1). The regression analysis result in **Table 4** indicates that ERM positively influences profitability in Jordanian firms at the 5% significance level. With  $F$  of 119.134 and  $R^2$  of 34.9%, implying that ERM explains 34.9% of the variation in the  $P$  in ASE. Accordingly, the regression equation is ( $P = 1.914 + 0.515$  (ERM)). This finding supports H3. The outcomes of the four steps of the mediation process are displayed in **Table 5**. Step 1 shows that  $R^2 = 0.402$ , indicating that innovation capability can account for 40.2% of the total variation in ERM, with a  $p$ -value less than 0.05. According to the coefficient of innovation capability, which is 0.6872, an increase in innovation capability by one unit is predicted to result in a 0.6872 unit increase in ERM. With  $t = 12.2162$ ,  $p = 0.000$ , innovation capability makes a significant contribution to the model. Accordingly, the regression equation is ( $ERM = 1.3103 + 0.6872$  (INN)). This finding supports H2. Step 2 shows that innovation capability has a positive significant effect on profitability ( $t = 10.2046$ ;  $p < 0.05$ ). These results indicate that the higher the level of innovation capability in ASE the higher the  $P$  of Jordanian firms. The value of the coefficient of determination of ( $R^2 = 0.3193$ ) shows that innovation capability can explain the variance of profitability by 31.93%. Accordingly, the regression equation is: ( $P = 1.8903 + 0.534$  (INN)). This finding supports H1. Step 3 demonstrates that ERM is highly correlated with profitability in context of innovative capabilities with a coefficient = 0.3393,  $t = 5.8228$ ,  $p < 0.05$ , and  $F = 76.7368$ . The regression equation here is: ( $P = 1.4457 + 0.3009$  (INN) + 0.3393 (ERM)). Step 4 illustrates how innovation capability affects profitability directly and indirectly through ERM. The total impact of innovation capability direct and indirect effects was measured as 0.534 on profitability. The direct effect of innovation capability on profitability was computed as 0.3009 when ERM was included in the model. The indirect effect was assessed in order to determine how much of the relationship between innovation capability and profitability had been mediated. The indirect mediation effect results of 0.2331 are significant because there is no zero value between the upper and lower boot values of the confidence interval. This finding supports H4. **Figure 2** represents these results.

**Table 4.** Regression analysis for the relationship between ERM and  $P^*$ .

Model	Unstandardized coefficients (B)	Std. Error	Standardized coefficients	T	Sig.
Constant	1.914	0.191		10.013	0.000
ERM	0.515	0.047	0.591	10.915	0.000

$F = 119.134$   
 Sig. = 0.000  
 $R = 0.591$   
 $R^2 = 0.349$

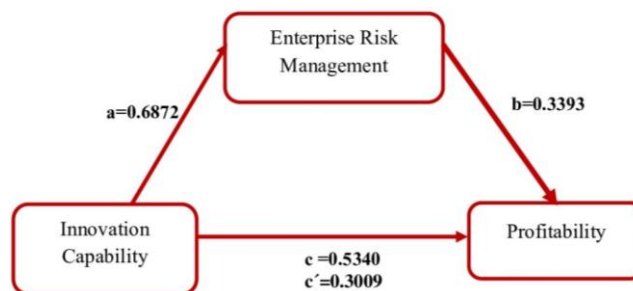
\* Dependent Variable:  $P$ , INN: Innovation Capability, ERM: Enterprise risk management,  $P$ : Profitability.



**Table 5.** Mediation analysis using Hayes process v3.3 macro (in SPSS)\*.

	<b>Model:4</b> <b>Y: P</b>	<b>X: INN</b> <b>M: ERM</b>		
	<b>Model summary</b>	<b>Outcome variable: ERM</b>		
	<b>R</b>	<b>R-sq</b>	<b>F</b>	<b>P</b>
	0.6340	0.4020	149.2349	0.0000
<b>Step 1</b>	<b>Model</b>	<b>Coeff</b>	<b>T</b>	<b>p</b>
	Constant	1.3103	5.9068	0.0000
	INN	0.6872	12.2162	0.0000
	<b>Model summary</b>	<b>Outcome variable: P</b>		
	<b>R</b>	<b>R-sq</b>	<b>F</b>	<b>P</b>
	0.5651	0.3193	104.1338	0.0000
<b>Step 2</b>	<b>Model</b>	<b>Coeff</b>	<b>T</b>	<b>p</b>
	Constant	1.8903	9.1599	0.0000
	INN	0.5340	10.2046	0.0000
	<b>Model summary</b>	<b>Outcome variable: P</b>		
	<b>R</b>	<b>R-sq</b>	<b>F</b>	<b>P</b>
	0.6402	0.4098	76.7368	0.0000
<b>Step 3</b>	<b>Model</b>	<b>Coeff</b>	<b>T</b>	<b>p</b>
	Constant	1.4457	6.9785	0.0000
	INN	0.3009	4.7641	0.0000
	ERM	0.3393	5.8228	0.0000
	<b>Total effect of X on Y</b>			
		<b>Effect</b>	<b>T</b>	<b>p</b>
		0.5340	10.2046	0.0000
	<b>Direct effect of X on Y</b>			
<b>Step 4</b>		<b>Effect</b>	<b>T</b>	<b>p</b>
		0.3009	4.7641	0.0000
	<b>Indirect effect(s) of X on Y:</b>			
		<b>Effect</b>	<b>BootLLCI</b>	<b>BootULCI</b>
	ERM	0.2331	0.1416	0.3413

\* 95.0000 percent confidence level for all output confidence intervals. 5000 bootstrap samples were used to calculate the percentile bootstrap confidence intervals. INN: Innovation Capability, ERM: Enterprise risk management, P: Profitability.



**Figure 2.** Path analysis results.

As well, **Table 6** summarized the correlation between the study variables to provide a comprehensive understanding of the relationships in the study. Where the magnitude of the correlation represents the strength of the relationship and the sign (+ or -) represents the direction of the relationship. The correlation between (INN ↔ ERM), (INN ↔ P), and (ERM ↔ P) was positive and strong with amount of 0.634, 0.565, and 0.591 respectively.

**Table 6.** Summary of correlation values.

		<b>ERM</b>	<b>P</b>
INN	Pearson correlation	0.634	0.565
	Sig. (2-tailed)	0.000	0.000
ERM	Pearson correlation		0.591
	Sig. (2-tailed)		0.000

## 5. Discussion

The aim of this study was to determine how ERM mediated the relationship between innovation capabilities and profitability in industrial and commercial firms listed on the ASE. The study uses a quantitative cross-sectional survey approach to examine the formulated hypotheses. And the administrative staff in the firms listed on the ASE represent the research population.

First, the findings showed that the profitability of industrial and commercial firms is significantly impacted by innovation capability. In line with prior studies, Rajapathirana and Hui (2018) demonstrated that innovation capability enables efficient use of resources, leading to higher profitability. Furthermore, Heenkenda et al. (2022) revealed that the innovation capability significantly affects profitability. Accordingly, we claim that firms with special innovation capabilities have high market profitability based on empirical evidence.

Second, we discovered that innovation capability significantly affects ERM. Similar findings were made by Pinem and Augustine (2019), who identified a strong correlation between innovation capability and ERM, as these two objectives are frequently the top priorities for businesses. According to Peykani et al. (2022), innovation capability and ERM are two critical components of firm success. Kowalkowski et al. (2017) found that innovation capability refers to an organization’s ability to create and develop new products, services, processes, or business models that meet the needs of its customers and drive growth. Subsequently, the relationship between innovation capability and ERM is bidirectional. firms with strong innovation capabilities need to be mindful of the risks associated with introducing new products or services, while firms with strong ERM strategies can foster an environment that promotes innovation and creativity while minimizing potential risks.

Third, the findings showed that ERM has positive effects on profitability, which is in line with those of Qin et al. (2022). ERM strategies are critical to achieving profitability, it is therefore highly recommended that organizations create original plans to put them into action. According to Siddiqui et al. (2022), effective ERM helps organizations make better-informed decisions. By having a more complete

understanding of the risks and opportunities that face the organization, decision-makers can make more strategic choices about where to allocate resources and how to pursue growth opportunities. This helps to increase profitability by focusing resources on areas with the highest return potential. According to Qing et al. (2022), effective ERM help in building trust with stakeholder which can contribute to improved profitability over the long term. Subsequently, ERM and profitability are closely related in the sense that effective ERM can help to improve profitability. ERM entails discovering, assessing, and controlling risks that may have an impact on an organization's capacity to meet its goals. Organizations can reduce the likelihood and impact of undesirable events while also seizing opportunities to create value.

Finally, our results found that ERM works as a mediator between innovation capability and profitability in industrial and commercial firms. According to AlTaweel and Al-Hawary (2021), there is no doubt that both ERM and innovation capability significantly influence the profitability of commercial and industrial firms. They also implied that the link is mediated by ERM. As a result, we were able to demonstrate that, although ERM serves as a mediator, innovation capability has an impact on profitability in both industrial and commercial firms. ERM strategies must be innovation capability rather than rely on general practice to take into account new ideas, as was previously noted. For instance, the empirical data from Fatonah and Haryanto (2022) demonstrates a substantial positive association between ERM strategies and a firm innovation capability and profitability. According to our opinion, formal and efficient ERM strategies, which can ultimately result in higher profitability, depend on deliberate action by top management.

## **6. Contributions and implications**

This research contributes to the existing literature in the field of industrial and commercial firms, innovation capability, risk management, and profitability. For example, this research examined the mediating role of ERM between innovation capability and profitability in industrial and commercial firms, which was ignored in previous studies. Furthermore, a number of studies have examined the connection between ERM and profitability (Makmor et al., 2023; Nama and Kanungo, 2023; Poon et al., 2022), few have focused on industrial and commercial enterprises in these nations. This research can help top management to set up internal procedures to lessen the anxiety brought on by risk-related failure fears. Undoubtedly, small businesses have more difficulty acquiring resources than large businesses (Sen et al., 2023). Small businesses can therefore improve internal and departmental processes (using an innovative and risk-taking strategy) to generate high profit. The findings specifically highlight the importance of internal business characteristics, such as ERM and innovation potential, in influencing profitability. Additionally, this research made the case that the ERM and profitability of industrial and commercial firms listed on the ASE are significantly impacted by innovation capability. The results of this research are equally applicable to other middle eastern economies because Jordan has many characteristics in common with other nations. Furthermore, our conclusions are supported by fresh empirical data that can increase the likelihood that newly founded businesses will survive.

## 7. Limitations and future research

Data were gathered from administrative staff members who might not be objective using self-reported Likert scales. Further studies could explore the relationship between each risk and innovation since this research did not cover every type of risk (risk identification, risk measurement, risk mitigation, risk monitoring, and risk reporting). Additionally, this research included firms that are listed on the ASE. By doing comparison research between developed and emerging economies, it can be strengthened. The research highlights the significance of having robust ERM practices in place within firms. Policy makers can emphasize the importance of implementing effective risk management frameworks to mitigate potential risks associated with innovation endeavors. Moreover, firms need to recognize the interconnectedness between innovation and risk management. Policy makers can encourage firms to integrate risk management strategies into their innovation processes to ensure that risks are identified, assessed, and managed effectively throughout the innovation lifecycle. Also, the research implies that effective risk management can contribute to enhanced profitability. Firms should invest in developing comprehensive risk management strategies that not only mitigate potential risks but also facilitate and support innovation initiatives, ultimately leading to improved financial performance.

## 8. Conclusion

This research examined the impact of innovation capability on profitability in industrial and commercial firms listed on the ASE with an intermediary role for ERM. Data were collected through self-reported questionnaires using a sample of 244. The results indicate that the innovation capability contributes positively to the profitability of the industrial and commercial firms listed on the ASE. Likewise, the innovation capability has a significant impact on ERM. Additionally, ERM mediates the link between industrial and commercial firms listed on the ASE innovation capability and profitability. In order to increase profitability and financial performance, owners and managers are encouraged to pay particular attention to innovation and ERM strategies.

**Author contributions:** Conceptualization, QYS and EM; methodology, EEG; software, EEG; validation, MYA, QYS and EM; formal analysis, MYA; investigation, QYS; resources, EM; data curation, QYS; writing—original draft preparation, EEG; writing—review and editing, QYS; visualization, EM; supervision, QYS; project administration, QYS; funding acquisition, EM, MYA, EEG. All authors have read and agreed to the published version of the manuscript.

**Acknowledgments:** We appreciate anonymous reviewers who leave constructive comments. The authors are solely responsible for the questionnaire data and sections in this paper.

**Ethical approval:** Survey participants were ensured confidentiality of their information upon providing consent, and they will have access to the published research results. I am pleased to inform you that the above referenced request for

Ethical Approval of Research has been approved by the IRB on Sunday the 6 June 2023 (No.28/1/2022/2023). Any changes in the procedures affecting interaction with subjects/participants should be reported to the IRB. Significant changes will require submission of a revised version of your request.

**Conflict of interest:** The authors declare no conflict of interest.

## References

- Abdoli Bidhandi, R., & Valmohammadi, C. (2017). Effects of supply chain agility on profitability. *Business Process Management Journal*, 23(5), 1064–1082. <https://doi.org/10.1108/bpmj-05-2016-0089>
- Acciarini, C., Borelli, F., Capo, F., et al. (2022). Can digitalization favour the emergence of innovative and sustainable business models? A qualitative exploration in the automotive sector. *Journal of Strategy and Management*, 15(3), 335–352. <https://doi.org/10.1108/jsma-02-2021-0033>
- Alblooshi, M., Shamsuzzaman, M., & Haridy, S. (2021). The relationship between leadership styles and organisational innovation: A systematic literature review and narrative synthesis. *European Journal of Innovation Management*, 24(2), 338–370. <https://doi.org/10.1108/ejim-11-2019-0339>
- Ali, W., Ibrahim Alasan, I., Hussain Khan, M., et al. (2021). Competitive strategies-performance nexus and the mediating role of enterprise risk management practices: a multi-group analysis for fully fledged Islamic banks and conventional banks with Islamic window in Pakistan. *International Journal of Islamic and Middle Eastern Finance and Management*, 15(1), 125–145. <https://doi.org/10.1108/imefm-06-2020-0310>
- Aljuboori, Z. M., Singh, H., Haddad, H., et al. (2021). Intellectual Capital and Firm Performance Correlation: The Mediation Role of Innovation Capability in Malaysian Manufacturing SMEs Perspective. *Sustainability*, 14(1), 154. <https://doi.org/10.3390/su14010154>
- Al-Nimer, M., Abbadi, S. S., Al-Omush, A., et al. (2021). Risk management practices and firm performance with a mediating role of business model innovation observations from Jordan. *Journal of Risk and Financial Management*, 14(3), 113. <https://doi.org/10.3390/jrfm14030113>
- AlNuaimi, B. K., Singh, S. K., & Harney, B. (2021). Unpacking the role of innovation capability: Exploring the impact of leadership style on green procurement via a natural resource-based perspective. *Journal of Business Research*, 134, 78–88. <https://doi.org/10.1016/j.jbusres.2021.05.026>
- Alshurideh, M. T., Kurdi, B. A., Alzoubi, H. M., et al. (2022). The influence of supply chain partners' integrations on organizational performance: The moderating role of trust. *Uncertain Supply Chain Management*, 10(4), 1191–1202. <https://doi.org/10.5267/j.uscm.2022.8.009>
- AlTaweel, I. R., & Al-Hawary, S. I. (2021). The mediating role of innovation capability on the relationship between strategic agility and organizational performance. *Sustainability*, 13(14), 7564. <https://doi.org/10.3390/su13147564>
- Andersson, M., Moen, O., & Brett, P. O. (2020). The organizational climate for psychological safety: Associations with SMEs' innovation capabilities and innovation performance. *Journal of Engineering and Technology Management*, 55, 101554. <https://doi.org/10.1016/j.jengtecman.2020.101554>
- ASE. (2023). Amman Stock Exchange. Available online: <https://www.ase.com.jo/en> (accessed on 12 June 2012).
- Azeem, M., Ahmed, M., Haider, S., et al. (2021). Expanding competitive advantage through organizational culture, knowledge sharing and organizational innovation. *Technology in Society*, 66, 101635. <https://doi.org/10.1016/j.techsoc.2021.101635>
- Bahta, D., Yun, J., Islam, M. R., et al. (2020). Corporate social responsibility, innovation capability and firm performance: evidence from SME. *Social Responsibility Journal*, 17(6), 840–860. <https://doi.org/10.1108/srj-12-2019-0401>
- Bailey, C. (2022). The relationship between chief risk officer expertise, ERM quality, and firm performance. *Journal of Accounting, Auditing & Finance*, 37(1), 205–228. <https://doi.org/10.1177/0148558x19850424>
- Bathelt, H., & Li, P. (2022). The interplay between location and strategy in a turbulent age. *Global Strategy Journal*, 12(3), 451–471. <https://doi.org/10.1002/gsj.1432>
- Birch, K. (2022). Reflexive expectations in innovation financing: An analysis of venture capital as a mode of valuation. *Social Studies of Science*, 53(1), 29–48. <https://doi.org/10.1177/03063127221118372>
- Bogodistov, Y., & Wohlgemuth, V. (2017). Enterprise risk management: a capability-based perspective. *Journal of Risk Finance*, 8(3), 234–251. <https://doi.org/10.1108/jrf-10-2016-0131>

- Borah, P. S., Iqbal, S., & Akhtar, S. (2022). Linking social media usage and SME's sustainable performance: The role of digital leadership and innovation capabilities. *Technology in Society*, 68, 101900. <https://doi.org/10.1016/j.techsoc.2022.101900>
- Broadstock, D. C., Matousek, R., Meyer, M., et al. (2020). Does corporate social responsibility impact firms' innovation capacity? The indirect link between environmental and social governance implementation and innovation performance. *Journal of Business Research*, 119, 99–110. <https://doi.org/10.1016/j.jbusres.2019.07.014>
- Bunjak, A., Bruch, H., & Černe, M. (2022). Context is key: The joint roles of transformational and shared leadership and management innovation in predicting employee IT innovation adoption. *International Journal of Information Management*, 66, 102516. <https://doi.org/10.1016/j.ijinfomgt.2022.102516>
- Cain, M. K., Zhang, Z., & Yuan, K. H. (2017). Univariate and multivariate skewness and kurtosis for measuring nonnormality: Prevalence, influence and estimation. *Behavior Research Methods*, 49(5), 1716–1735. <https://doi.org/10.3758/s13428-016-0814-1>
- Chabachib, M., Hersugondo, H., Ardiana, E., et al. (2020). Analysis of company characteristics of firm values: Profitability as intervening variables. *International Journal of Financial Research*, 11(1), 60. <https://doi.org/10.5430/ijfr.v11n1p60>
- Chairani, C., & Siregar, S. V. (2021). The effect of enterprise risk management on financial performance and firm value: the role of environmental, social and governance performance. *Meditari Accountancy Research*, 29(3), 647–670. <https://doi.org/10.1108/medar-09-2019-0549>
- Choiriyah, C., Fatimah, F., Agustina, S., et al. (2020). The effect of return on assets, return on equity, net profit margin, earning per share, and operating profit margin on stock prices of banking companies in Indonesia Stock Exchange. *International Journal of Finance Research*, 1(2), 103–123. <https://doi.org/10.47747/ijfr.v1i2.280>
- Chummee, P. (2022). The determinants of product innovation and marketing innovation effecting to the innovation performance. *Turkish Journal of Computer and Mathematics Education*, 13(2), 1–6.
- Chyung, S. Y. Y., Roberts, K., Swanson, I., et al. (2017). Evidence-based survey design: The use of a midpoint on the Likert scale. *Performance Improvement*, 56(10), 15–23. <https://doi.org/10.1002/pfi.21727>
- Cooper, D. R., & Schindler, P. S. (2010). *Business Research Methods*, 11th ed. McGraw Hill.
- Do, H., Budhwar, P., Shipton, H., et al. (2022). Building organizational resilience, innovation through resource-based management initiatives, organizational learning and environmental dynamism. *Journal of Business Research*, 141, 808–821. <https://doi.org/10.1016/j.jbusres.2021.11.090>
- Elshaer, A. M., & Marzouk, A. M. (2022). Memorable tourist experiences: the role of smart tourism technologies and hotel innovations. *Tourism Recreation Research*, 49(3), 445–457. <https://doi.org/10.1080/02508281.2022.2027203>
- Etikan, I., & Bala, K. (2017). Developing questionnaire base on selection and designing. *Biometrics & Biostatistics International Journal*, 5(6). <https://doi.org/10.15406/bbij.2017.05.00150>
- Faedfar, S., Özyeşil, M., Çıkrıkçı, M., et al. (2022). Effective Risk Management and Sustainable Corporate Performance Integrating Innovation and Intellectual Capital: An Application on Istanbul Exchange Market. *Sustainability*, 14(18), 11532. <https://doi.org/10.3390/su141811532>
- Fatonah, S., & Haryanto, A. T. (2022). Exploring market orientation, product innovation and competitive advantage to enhance the performance of SMEs under uncertain events. Available online: [https://www.growing-science.com/uscm/Vol10/uscm\\_2021\\_95.pdf](https://www.growing-science.com/uscm/Vol10/uscm_2021_95.pdf) (accessed on 13 June 2014).
- Gangi, F., Daniele, L. M., & Varrone, N. (2020). How do corporate environmental policy and corporate reputation affect risk-adjusted financial performance? *Business Strategy and the Environment*, 29(5), 1975–1991. <https://doi.org/10.1002/bse.2482>
- Ghardallou, W. (2022). Corporate sustainability and firm performance: the moderating role of CEO education and tenure. *Sustainability*, 14(6), 3513. <https://doi.org/10.3390/su14063513>
- Giotis, G., & Papadionysiou, E. (2022). The Role of Managerial and Technological Innovations in the Tourism Industry: A Review of the Empirical Literature. *Sustainability*, 14(9), 5182. <https://doi.org/10.3390/su14095182>
- Girangwa, K. G., Mose, J., & Lucy, R. (2019). Enterprise Risk Management Practices and Organizational Performance. Does Intellectual Capital Make a Difference? *Expert Journal of Finance*, 7(1), 39–48.
- Goni, J. I. C., and Van Looy, A. (2022). Process innovation capability in less-structured business processes: a systematic literature review. *Business Process Management Journal*, 28(3), 557–584. <https://doi.org/10.1108/bpmj-07-2021-0487>
- Hamzah, N., Maelah, R., & Saleh, O. M. (2022). The Moderating Effect of Human Capital on the Relationship between Enterprise Risk Management and Organization Performance. *International Journal of Business and Society*, 23(1), 614–632. <https://doi.org/10.33736/ijbs.4633.2022>

- Hanaysha, J. R., Al-Shaikh, M. E., Joghee, S., et al. (2021). Impact of Innovation Capabilities on Business Sustainability in Small and Medium Enterprises. *FIIB Business Review*, 11(1), 67–78. <https://doi.org/10.1177/23197145211042232>
- Hanggraeni, D., Ślusarczyk, B., Sulung, L. A. K., et al. (2019). The Impact of Internal, External and Enterprise Risk Management on the Performance of Micro, Small and Medium Enterprises. *Sustainability*, 11(7), 2172. <https://doi.org/10.3390/su11072172>
- Hayes, A. F., & Rockwood, N. J. (2020). Conditional process analysis: Concepts, computation, and advances in the modeling of the contingencies of mechanisms. *American Behavioral Scientist*, 64(1), 19–54. <https://doi.org/10.1177/0002764219859633>
- Heenkenda, H., Xu, F., Kulathunga, K., et al. (2022). The Role of Innovation Capability in Enhancing Sustainability in SMEs: An Emerging Economy Perspective. *Sustainability*, 14(17), 10832. <https://doi.org/10.3390/su141710832>
- Henschel, T., & Lantzsch, A. D. (2022). The relationship between ERM and performance revisited: Empirical evidence from SMEs. *Springer Link*, 95–113. [https://doi.org/10.1007/978-3-030-88374-4\\_5](https://doi.org/10.1007/978-3-030-88374-4_5)
- Holtom, B., Baruch, Y., Aguinis, H., et al. (2022). Survey response rates: Trends and a validity assessment framework. *Human Relations*, 75(8), 1560–1584. <https://doi.org/10.1177/00187267211070769>
- Iranmanesh, M., Kumar, K. M., Foroughi, B., et al. (2021). The impacts of organizational structure on operational performance through innovation capability: innovative culture as moderator. *Review of Managerial Science*, 15(7), 1885–1911. <https://doi.org/10.1007/s11846-020-00407-y>
- Isayas, Y. N. (2022). Determinants of banks' profitability: Empirical evidence from banks in Ethiopia. *Cogent Economics and Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2031433>
- Jordannews. (2023). Amman Stock Exchange companies made 'historical' JD2.4b profits in 2022. Available online: <https://www.jordannews.jo/Section-113/All/Amman-Stock-Exchange-companies-made-historical-JD2-4b-profits-in-2022-27902> (accessed on 10 June 2024).
- Khan, H. (2022). Composite collaboration and the differentiation strategies adopted by emerging market firms in advanced markets during the COVID-19 pandemic. *International Marketing Review*, 40(5), 1035–1053. <https://doi.org/10.1108/imr-11-2021-0328>
- Kim, D., & Jin, S. (2022). Innovation Capabilities and Business Performance in the Smart Farm Sector of South Korea. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(4), 204. <https://doi.org/10.3390/joitmc8040204>
- Konsti-Laakso, S., Pihkala, T., & Kraus, S. (2012). Facilitating SME innovation capability through business networking. *Creativity and Innovation management*, 21(1), 93–105. <https://doi.org/10.1111/j.1467-8691.2011.00623.x>
- Kowalkowski, C., Gebauer, H., & Oliva, R. (2017). Service growth in product firms: Past, present, and future. *Industrial Marketing Management*, 60, 82–88. <https://doi.org/10.1016/j.indmarman.2016.10.015>
- Kwak, D. W., Seo, Y. J., & Mason, R. (2018). Investigating the relationship between supply chain innovation, risk management capabilities and competitive advantage in global supply chains. *International Journal of Operations and Production Management*, 8(1), 2–21. <https://doi.org/10.1108/ijopm-06-2015-0390>
- Lam, L., Nguyen, P., Le, N., et al. (2021). The Relation among Organizational Culture, Knowledge Management, and Innovation Capability: Its Implication for Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 66. <https://doi.org/10.3390/joitmc7010066>
- Landi, G. C., Iandolo, F., Renzi, A., et al. (2022). Embedding sustainability in risk management: The impact of environmental, social, and governance ratings on corporate financial risk. *Corporate Social Responsibility and Environmental Management*, 29(4), 1096–1107. <https://doi.org/10.1002/csr.2256>
- Le, H. M., Nguyen, T. T., & Hoang, T. C. (2020). Organizational culture, management accounting information, innovation capability and firm performance. *Cogent Business & Management*, 7(1), 1857594. <https://doi.org/10.1080/23311975.2020.1857594>
- Lestari, S. D., Leon, F. M., Widyastuti, S., et al. (2020). Antecedents and consequences of innovation and business strategy on performance and competitive advantage of SMEs. *The Journal of Asian Finance, Economics and Business*, 7(6), 365–78. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO6.365>
- Li, H., Lam, H. K. S., Ho, W., et al. (2022). The impact of chief risk officer appointments on firm risk and operational efficiency. *Journal of Operations Management*, 68(3), 241–269. <https://doi.org/10.1002/joom.1175>
- Lima Rua, O., Musiello-Neto, F., & Arias-Oliva, M. (2022). Linking open innovation and competitive advantage: the roles of corporate risk management and organisational strategy. *Baltic Journal of Management*, 18(1), 104–121. <https://doi.org/10.1108/bjm-08-2021-0309>

- Lin, R., Chen, R., & Kuan-Shun Chiu, K. (2010). Customer relationship management and innovation capability: an empirical study. *Industrial Management & Data Systems*, 110(1), 111–133. <https://doi.org/10.1108/02635571011008434>
- Makmor, A., Razak, N. S. A., Kamaluding, M., et al. (2023). *The Influence of Enterprise Risk Management Framework Towards Company Performance at Conglomerate Group of Companies*. Springer International Publishing. [https://doi.org/10.1007/978-3-031-12382-5\\_66](https://doi.org/10.1007/978-3-031-12382-5_66)
- Maldonado-Guzmán, G., Garza-Reyes, J. A., Pinzón-Castro, S. Y., et al. (2019). Innovation capabilities and performance: are they truly linked in SMEs? *International Journal of Innovation Science*, 11(1), 48–62. <https://doi.org/10.1108/ijis-12-2017-0139>
- Membré, J. M., & Boué, G. (2018). Quantitative microbiological risk assessment in food industry: Theory and practical application. *Food Research International*, 106, 1132–1139. <https://doi.org/10.1016/j.foodres.2017.11.025>
- Mendoza-Silva, A. (2021). Innovation capability: a systematic literature review. *European Journal of Innovation Management*, 24(3), 707–734. <https://doi.org/10.1108/ejim-09-2019-0263>
- Mizrak, F. (2023). Enhancing Organizational Competitiveness through Entrepreneurial Education, Human Resources Management, and Innovation Strategies: A Vikor and Fuzzy AHP Approach. *International Journal of Social and Humanities Sciences Research*, 10(100), 2525–2545. <https://doi.org/10.5281/ZENODO.10028678>
- Mizrak, F. (2023). Integrating cybersecurity risk management into strategic management: a comprehensive literature review. Available online: <http://www.pressacademia.org/archives/tjbm/v10/i3/3.pdf> (accessed on 13 June 2022).
- Mohamed, M. M. A., Liu, P., & Nie, G. (2021). Are Technological Innovation and Foreign Direct Investment a Way to Boost Economic Growth? An Egyptian Case Study Using the Autoregressive Distributed Lag (ARDL) Model. *Sustainability*, 13(6), 3265. <https://doi.org/10.3390/su13063265>
- Monazzam, A., & Crawford, J. (2024). The role of enterprise risk management in enabling organisational resilience: a case study of the Swedish mining industry. *Journal of Management Control*. <https://doi.org/10.1007/s00187-024-00370-9>
- Nama, D. K., & Kanungo, R. (2023). Intellectual Capital: A New Process of Sustainable Value Creation for the Corporation. In: *In Intellectual Capital as a Precursor to Sustainable Corporate Social Responsibility*. IGI Global.
- Naruetharadhol, P., Srisathan, W. A., Gebombut, N., et al. (2021). Towards the open eco-innovation mode: A model of open innovation and green management practices. *Cogent Business and Management*, 8(1). <https://doi.org/10.1080/23311975.2021.1945425>
- Olaniyi, O., Olabanji, S. O., & Abalaka, A. (2023). Navigating risk in the modern business landscape: Strategies and insights for enterprise risk management implementation. *Journal of Scientific Research and Reports*, 29(9), 103–109. <https://doi.org/10.9734/jsrr/2023/v29i91789>
- Olayinka, E., Emoarehi, E., Jonah, A., et al. (2017). Enterprise risk management and financial performance: Evidence from emerging market. *International Journal of Management, Accounting and Economics*, 4(9), 937–952. <https://doi.org/10.1001/1.23832126.2017.4.9.4.1>
- Özdemir, S., Sonmez Cakir, F., & Adiguzel, Z. (2022). Examination of customer relations management in banks in terms of strategic, technological and innovation capability. *Journal of Contemporary Marketing Science*, 5(2), 176–195. <https://doi.org/10.1108/jcmars-12-2021-0044>
- Pan, C., Jiang, Y., Wang, M., et al. (2021). How can agricultural corporate build sustainable competitive advantage through green intellectual capital? A new environmental management approach to green agriculture. *International Journal of Environmental Research and Public Health*, 18(15), 7900. <https://doi.org/10.3390/ijerph18157900>
- Pecina, E., Miloš Sprčić, D., & Dvorski Lacković, I. (2022). Qualitative Analysis of Enterprise Risk Management Systems in the Largest European Electric Power Companies. *Energies*, 15(15), 5328. <https://doi.org/10.3390/en15155328>
- Pervan, M., Pervan, I., & Ćurak, M. (2019). Determinants of firm profitability in the Croatian manufacturing industry: evidence from dynamic panel analysis. *Economic Research-Ekonomska Istraživanja*, 32(1), 968–981. <https://doi.org/10.1080/1331677x.2019.1583587>
- Peykani, P., Namazi, M., & Mohammadi, E. (2022). Bridging the knowledge gap between technology and business: An innovation strategy perspective. *PLOS ONE*, 17(4), e0266843. <https://doi.org/10.1371/journal.pone.0266843>
- Pinem, M. M. S., & Augustine, Y. (2019). The Influence of Product Innovation and Enterprise Risk Management to Increase Firm Value with Culture as a Moderation Variable. *Journal of Economics and Sustainable Development*. 10 (14), 145–151. <https://doi.org/10.7176/JESD>



- Poon, A. E., Roslan, N. H., Othman, J., et al. (2022). The Effect of Enterprise Risk Management (ERM) Implementation on SMEs Performance in Malaysia. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 7(4), e001460. <https://doi.org/10.47405/mjssh.v7i4.1460>
- Purwati, A., Budiyanto, B., Suhermin, S., et al. (2021). The effect of innovation capability on business performance: The role of social capital and entrepreneurial leadership on SMEs in Indonesia. *Accounting*, 7(2), 323–330. <https://doi.org/10.5267/j.ac.2020.11.021>
- Puspita, L. E., Christiananta, B., & Ellitan, L., (2020). The effect of strategic orientation, supply chain capability, innovation capability on competitive advantage and performance of furniture retails. *International Journal of Scientific and Technology Research*, 9(03), 4521–4529.
- Putri, I. G. A. P. T., & Rahyuda, H. (2020). Effect of capital structure and sales growth on firm value with profitability as mediation. *International Research Journal of Management, IT and Social Sciences*, 7(1), 145–155. <https://doi.org/10.21744/irjmis.v7n1.833>
- Qin, X., Huang, G., Shen, H., et al. (2020). COVID-19 Pandemic and Firm-level Cash Holding—Moderating Effect of Goodwill and Goodwill Impairment. *Emerging Markets Finance and Trade*, 56(10), 2243–2258. <https://doi.org/10.1080/1540496x.2020.1785864>
- Qing, L., Chun, D., Dagestani, A. A., et al. (2022). Does Proactive Green Technology Innovation Improve Financial Performance? Evidence from Listed Companies with Semiconductor Concepts Stock in China. *Sustainability*, 14(8), 4600. <https://doi.org/10.3390/su14084600>
- Raddats, C., Naik, P., & Ziaee Bigdeli, A. (2022). Creating value in servitization through digital service innovations. *Industrial Marketing Management*, 104, 1–13. <https://doi.org/10.1016/j.indmarman.2022.04.002>
- Rajapathirana, R. P. J., & Hui, Y. (2018). Relationship between innovation capability, innovation type, and firm performance. *Journal of Innovation & Knowledge*, 3(1), 44–55. <https://doi.org/10.1016/j.jik.2017.06.002>
- Rehman, A. U., & Anwar, M. (2019). Mediating role of enterprise risk management practices between business strategy and SME performance. *Small Enterprise Research*, 26(2), 207–227. <https://doi.org/10.1080/13215906.2019.1624385>
- Ricardianto, P., Lembang, A. T., Tatiana, Y., et al. (2023). Enterprise risk management and business strategy on firm performance: The role of mediating competitive advantage. *Uncertain Supply Chain Management*, 11(1), 249–260. <https://doi.org/10.5267/j.uscm.2022.10.002>
- Roberts, P. S., & Schmid, J. (2022). Government-led innovation acceleration: Case studies of US federal government innovation and technology acceleration organizations. *Review of Policy Research*, 39(3), 353–378. <https://doi.org/10.1111/ropr.12474>
- Ruslin, R., Mashuri, S., Rasak, M. S. A., et al. (2022). Semi-structured Interview: A methodological reflection on the development of a qualitative research instrument in educational studies. *IOSR Journal of Research and Method in Education*, 12(1), 22–29. <https://doi.org/10.9790/7388-1201052229>
- Saeidi, P., Saeidi, S. P., Gutierrez, L., et al. (2021). The influence of enterprise risk management on firm performance with the moderating effect of intellectual capital dimensions. *Economic Research-Ekonomska Istraživanja*, 34(1), 122–151. <https://doi.org/10.1080/1331677x.2020.1776140>
- Saeidi, P., Saeidi, S. P., Sofian, S., et al. (2019). The impact of enterprise risk management on competitive advantage by moderating role of information technology. *Computer Standards & Interfaces*, 63, 67–82. <https://doi.org/10.1016/j.csi.2018.11.009>
- Saleh, Q. Y., & Al-Nimer, M. B. (2022). The mediating role of the management accounting information system in the relationship between innovation strategy and financial performance in the Jordanian industrial companies. *Cogent Business & Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2135206>
- Saunila, M. (2020). Innovation capability in SMEs: A systematic review of the literature. *Journal of Innovation & Knowledge*, 5(4), 260–265. <https://doi.org/10.1016/j.jik.2019.11.002>
- Sen, S., Savitskie, K., Mahto, R. V., et al. (2023). Strategic flexibility in small firms. *Journal of Strategic Marketing*, 31(5), 1053–1070. <https://doi.org/10.1080/0965254x.2022.2036223>
- Shad, M. K., Lai, F. W., Fatt, C. L., et al. (2019). Integrating sustainability reporting into enterprise risk management and its relationship with business performance: A conceptual framework. *Journal of Cleaner Production*, 208, 415–425. <https://doi.org/10.1016/j.jclepro.2018.10.120>
- Shah, S. Q. A., Lai, F. W., Shad, M. K., et al. (2022). Developing a Green Governance Framework for the Performance Enhancement of the Oil and Gas Industry. *Sustainability*, 14(7), 3735. <https://doi.org/10.3390/su14073735>

- Sharma, G. D., Kraus, S., Srivastava, M., et al. (2022). The changing role of innovation for crisis management in times of COVID-19: An integrative literature review. *Journal of Innovation & Knowledge*, 7(4), 100281. <https://doi.org/10.1016/j.jik.2022.100281>
- Shehzad, M. U., Zhang, J., Alam, S., et al. (2022). Determining the role of sources of knowledge and IT resources for stimulating firm innovation capability: a PLS-SEM approach. *Business Process Management Journal*, 28(4), 905–935. <https://doi.org/10.1108/bpmj-09-2021-0574>
- Shrestha, N. (2021). Factor Analysis as a Tool for Survey Analysis. *American Journal of Applied Mathematics and Statistics*, 9(1), 4–11. <https://doi.org/10.12691/ajams-9-1-2>
- Siddiqui, K. (2013). Heuristics for sample size determination in multivariate statistical techniques. *World Applied Sciences Journal*, 27(2), 285–287. <https://doi.org/10.5829/idosi.wasj.2013.27.02.889>
- Siddiqui, M. B., Shaikh, N., Keerio, N. N., et al. (2022). Modeling The Impact of Operative Risk Management Factors on SMEs Development: A Case Study of Kotri Site Area. *International Research Journal of Management and Social Sciences*, 3(2), 72–81. [https://doi.org/10.53575/irjmss.v3.2.7\(22\)72-81](https://doi.org/10.53575/irjmss.v3.2.7(22)72-81)
- Su, X., Zeng, W., Zheng, M., et al. (2022). Big data analytics capabilities and organizational performance: the mediating effect of dual innovations. *European Journal of Innovation Management*, 25(4), 1142–1160. <https://doi.org/10.1108/ejim-10-2020-0431>
- Tikas, G. D., & Akhilesh, K. B. (2017). Towards enhancing innovation capability of teams: a conceptual perspective. *Team Performance Management: An International Journal*, 23(7/8), 352–363. <https://doi.org/10.1108/tpm-04-2016-0011>
- Tobisova, A., Senova, A., Izarikova, G., et al. (2022). Proposal of a Methodology for Assessing Financial Risks and Investment Development for Sustainability of Enterprises in Slovakia. *Sustainability*, 14(9), 5068. <https://doi.org/10.3390/su14095068>
- Troise, C., Corvello, V., Ghobadian, A., et al. (2022). How can SMEs successfully navigate VUCA environment: The role of agility in the digital transformation era. *Technological Forecasting and Social Change*, 174, 121227. <https://doi.org/10.1016/j.techfore.2021.121227>
- Tsou, H. T., & Chen, J.-S. (2021). How does digital technology usage benefit firm performance? Digital transformation strategy and organisational innovation as mediators. *Technology Analysis & Strategic Management*, 35(9), 1114–1127. <https://doi.org/10.1080/09537325.2021.1991575>
- Ugoani, J. N. N. (2021). Corporate governance perspective on enterprise risk management and organizational sustainability. *Independent Journal of Management & Production*, 12(5), 1496–1517. <https://doi.org/10.14807/ijmp.v12i5.1403>
- Valaei, N., Rezaei, S., Bressolles, G., et al. (2022). Indispensable components of creativity, innovation, and FMCG companies' competitive performance: a resource-based view (RBV) of the firm. *Asia-Pacific Journal of Business Administration*, 14(1), 1–26. <https://doi.org/10.1108/apjba-11-2020-0420>
- Vargo, S. L., Peters, L., Kjellberg, H., et al. (2022). Emergence in marketing: an institutional and ecosystem framework. *Journal of the Academy of Marketing Science*, 51(1), 2–22. <https://doi.org/10.1007/s11747-022-00849-8>
- Wallace, J. C., Butts, M. M., Johnson, P. D., et al. (2016). A multilevel model of employee innovation: Understanding the effects of regulatory focus, thriving, and employee involvement climate. *Journal of Management*, 42(4), 982–1004. <https://doi.org/10.1177/0149206313506462>
- Williams, A. M., Rodríguez Sánchez, I., & Škokić, V. (2020). Innovation, Risk, and Uncertainty: A Study of Tourism Entrepreneurs. *Journal of Travel Research*, 60(2), 293–311. <https://doi.org/10.1177/0047287519896012>
- Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of Business Research*, 101, 697–706. <https://doi.org/10.1016/j.jbusres.2019.01.010>
- Yaser Saleh, Q., Barakat AL-Nimer, M., & Abbadi, S. S. (2023). The quality of cost accounting systems in manufacturing firms: A literature review. *Cogent Business & Management*, 10(1). <https://doi.org/10.1080/23311975.2023.2209980>
- Yodchai, N., Ly, P. T. M., & Tran, L. T. T. (2021). How the creative mindset affects entrepreneurial success in the tourism sector: the mediating role of innovation capability. *International Journal of Contemporary Hospitality Management*, 34(1), 279–298. <https://doi.org/10.1108/ijchm-06-2021-0695>
- Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and Dynamic Capabilities: A Review, Model and Research Agenda\*. *Journal of Management Studies*, 43(4), 917–955. <https://doi.org/10.1111/j.1467-6486.2006.00616.x>
- Zameer, H., Wang, Y., Yasmeen, H., et al. (2022). Green innovation as a mediator in the impact of business analytics and environmental orientation on green competitive advantage. *Management Decision*, 60(2), 488–507. <https://doi.org/10.1108/md-01-2020-0065>

- Zastempowski, M. (2022). What Shapes Innovation Capability in Micro-Enterprises? New-to-the-Market Product and Process Perspective. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(1), 59. <https://doi.org/10.3390/joitmc8010059>
- Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, 31(7), 3371–3387. <https://doi.org/10.1002/bse.3089>

## Appendix

Survey questionnaire:

The relationship between innovation capability and profitability: the mediating role of enterprise risk management in Amman Stock Exchange (ASE).

- Part One—Information about the person who will answer this questionnaire.

1) Age:

- Less than 35 years old
- 35–50 years old
- Over 50 years old

2) Academic qualification:

- Diploma
- Bachelor's degree
- Master's
- PhD

3) years of experience in the current field of work:

- Less than 10 years
- 10–20 years
- More than 20 years

4) Administrative level:

- General Manager
- Financial Manager
- Chief Accountant
- Internal auditor
- Accountant

- Part Two—Company Profile.

1) What is the main business activity of the company?

- Industrial
- Commercial

2) How many employees does the company have?

- Less than 150
- Between 151 and 299
- Between 300 and 499
- Between 500 and 749
- Between 750 and 849
- Between 850 and 1000
- Over 1000

3) How old is the company?

- Less than 5 years
- Between 6 and 12 years
- Between 13 and 20 years
- Over 20 years

- The Three Parts—questions related to research variables.

The following statements are related to the innovation capability in the Jordanian industrial and commercial firms on the Amman Stock Exchange. Please mark (X) in front of the answer that you deem appropriate. Developed by Lin et al. (2010) and Saleh and Al-Nimer (2022).

**Table A1.** Independent variable questions.

No	Innovation capability	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Your firm introduces novel products.					
2	Numerous product categories are expanded by your firm.					
3	New product development is something that your firm does to get trademarks.					
4	Your firm employs innovative operational strategies.					
5	In your firm, innovation is shunned as risky and disregarded.					
6	Over the past five years, we have introduced more novel products.					
7	Modern real-time process control technology is used by your firm.					
8	Your firm uses cutting-edge incentive programs.					
9	Your firm introduces cutting-edge marketing strategies to consumers.					
10	Innovative order management and follow-up tools are used by your firm.					
11	Your firm imports cutting-edge pre- or post-sale support strategies to raise client satisfaction.					

The following data is related to enterprise risk management in the Jordanian industrial and commercial firms on the Amman Stock Exchange. Please mark (X) in front of the answer that you deem appropriate. Developed by Saeidi et al. (2019) and Rehman and Anwar (2019).

**Table A2.** Mediating variable questions.

No	Enterprise risk management	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Your firm has a procedure in place for dealing with significant risks that might compromise our ability to accomplish our strategy goals.					
2	Major risks and possibilities are identified using established standards.					
3	Analysis is used to determine how risks and opportunities should be handled.					
4	For implementing risk-reduction measures, we have established standards processes.					
5	For the board of directors and top management, we routinely produce risk reports.					
6	For tracking the evolution of key risks and the implementation of risk-reducing measures, we have standard operating procedures in place.					
7	Risk management is embedded in your organization's culture.					

The following statements are related to the Profitability of the Jordanian industrial and commercial firms on the Amman Stock Exchange. Please mark (X) in front of the answer that you deem appropriate. Developed by Abdoli Bidhandi and Valmohammadi (2017) and Saleh and Al-Nimer (2022).

**Table A3.** Dependent variable questions.

No	Profitability	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	To make a profit, the focus is on providing clients with proper and sufficient follow-up.					
2	Making cost reduction a priority right away helps the company succeed and be profitable.					
3	The ability of company management to choose marketing strategy is improved through reliable information.					
4	Your company does not have any funding for training and retraining of salespeople.					
5	A positive customer relationship can help your business increase its financial success and profitability.					
6	Value added strategies and customer benefits are essential to profit planning and financial success.					
7	Your company has an innovation strategy that contributes to the production of new competitive products in the market.					

- Would you like to receive a copy of the research results?

- Yes
- No

- If yes, please write your address below:

-----

The questionnaire is over.