

Migration Impact Of Risk Management Functions On The Enterprise Risk Management In The UAE

Mohamed Matar Saleh Sulaiman Alkaabi¹, Tuan Pah Rokiah binti Syed Hussain², Abd Rahim Romle³

Abstract

Background: The critical role of effective risk management functions within organizations has garnered significant attention, particularly within public sector entities where the implications of risk have broad societal impacts. The United Arab Emirates (UAE) Ministry of Interior represents a pivotal institution where the integration of comprehensive risk management strategies is paramount to national security and operational efficiency.

Objective: This research aims to explore the direct impact of risk management functions namely risk identification, risk assessment, risk response, and risk monitoring and reporting on enterprise risk management (ERM) within the UAE Ministry of Interior. By grounding the investigation in risk management theory, the study seeks to validate a conceptual framework that posits these four functions as critical determinants of ERM efficacy.

Method: Utilizing a quantitative research methodology, the study evaluates the proposed hypotheses through statistical analysis of primary data collected from 358 full-time employees in leadership positions at the UAE Ministry of Interior. This approach allows for a rigorous examination of the relationship between the risk management functions and ERM effectiveness.

Results & Conclusion: The findings underscore a significant influence of the risk management functions on enterprise risk management within the UAE Ministry of Interior, affirming the hypothesized relationships within the proposed conceptual framework. Each function of risk management identification, assessment, response, and monitoring and reporting demonstrated a statistically significant impact on ERM, highlighting the importance of these activities in enhancing organizational risk management capabilities. In light of these findings, the research advocates for further comparative studies between the public and private sectors to deepen the understanding of ERM practices. Additionally, it suggests the exploration of other variables that may influence ERM and the examination of potential moderating factors. This study contributes to the body of knowledge by providing empirical evidence on the ¹significance of risk management functions in public sector organizations, specifically within the context of the UAE Ministry of Interior, and sets a foundation for future research in this vital area.

Keywords: Risk Identification, Risk Assessment, Risk Response, Risk Monitoring Enterprise Risk Management.

¹College of Law, Universiti Utara Malaysia, Kedah, Malaysia.

²College of Law, Universiti Utara Malaysia, Kedah, Malaysia.

³College of Law, Universiti Utara Malaysia, Kedah, Malaysia.

1 Introduction

Risk management is important for public organizations because it helps them to identify and mitigate potential risks that could negatively impact their ability to achieve their goals and fulfil their mandate (Alblooshi, 2020). By identifying and managing risks, public organizations can improve their ability to deliver services, maintain public trust, and use resources effectively. Additionally, it also helps public organizations to comply with laws and regulations, avoid potential financial losses, and protect their reputation. It's an essential process for ensuring the long-term sustainability and effectiveness of public organisations (Boniface, 2016; Coetzee & Lubbe, 2013).

In current years, the dynamism and complexity of service environment of risk management issue to be the major issue of stakeholders (Elamer, Ntim & Abdou, 2020). However, the concept, objectives and issues of risk management the practical and useful implementation, vary and based upon different sectors (DuHadway, Carnovale, & Hazen, 2019). The efficient risk management intended at providing sensible guarantee to accomplish the organization's purposes and aids the organization in attaining its financial targets (Yang, Ishtiaq, & Anwar, 2018). The reliable risk management continually examined and recognized the dangers and minimizes uncertainty that impact the organization (Joshi & Sing, 2017). The organization ability to handle the risk, identifying dangers which are to be thought or to be mitigated and making calculated and concrete decisions in this regard, lift-up not just the toughness of the organization but also the entire economic system of the country (Mohammed & Knapkova, 2016).

Risk management is an essential function for any organization, and it involves four key steps: identification, assessment, response, and monitoring (Kopia et al., 2017; Pritchard & PMP, 2014). The first step, identification, involves identifying potential risks that could impact the organization's operations and objectives. This step requires a thorough understanding of the organization's operations, as well as its external environment (Hardy, 2010). The second step, assessment, involves evaluating the likelihood and impact of identified risks. This step requires a systematic and objective approach to determining the likelihood and impact of each risk, based on the available data and evidence (Kopia et al., 2017). The third step, response, involves developing and implementing strategies to mitigate, transfer, or accept identified risks. This step requires careful consideration of the available options and the potential impact of each strategy on the organization's operations and objectives (Pritchard & PMP, 2014). The fourth and final step, monitoring, involves ongoing monitoring of identified risks and the effectiveness of the implemented strategies. This step requires regular reporting and analysis of risk data, as well as continuous improvement of the risk management processes. By following these four steps, organizations can effectively identify, assess, respond, and monitor risks, which helps in maintaining the continuity of their operations and achieving their objectives (Hardy, 2010; Kopia et al., 2017).

The context of the current research is United Arab Emirates, is a business cantered region (Alghizzawi et al., 2019). The local government is not only focused on performance of the organizations but also continuity of the performances in future. To achieve the desired level of performance at employees and organizational level; there is also need to manage the risk that is associated with the public sector (Alshamsi et al., 2024). For this reason, government has established various organizations that are serving every state effectively. Today, all the states of United Arab Emirates are rich with risk management opportunities and the focus towards common goal of employees performance and continuous development of organizational performance (Padinhare & Kayakalil, 2020).

The intended objective of this study is to provide a sophisticated comprehension of the intricate interrelationship among risk management functions and enterprise risk management (ERM). The aim of this research is to investigate the direct influences of risk

management functions on the enterprise risk management within the UAE Ministry of Interior.

2 Literature Review

This study is to examine the influence of the four functions of risk management of the enterprise risk management. The relationships support by the risk management theory. The following literature review illustrates the underpinning theory and the relationships.

2.1 Risk Management Theory as Underpinning Theory

Risk management theory is a systematic approach to identifying, assessing, and mitigating potential risks that may affect an organization. The goal of risk management is to protect an organization's assets, achieve its objectives, and minimize the negative impact of potential risks (Posner & Stanton, 2014). The modern risk management science is backed to the late 1950s, but the main boundaries of the term enterprise risk management came in the 1980s (Alzahrani, 2023). The "Enterprise Risk Management" (ERM) framework proposed by Tillinghast-Towers Perrin, in which he emphasised the importance of a comprehensive approach to risk management, rather than a siloed approach (Dionne, 2013). The theory of risk management is based on a number of assumptions and principles, including the following (Dionne, 2013; Pritchard & PMP, 2014):

- Risk is an inherent part of organizational activity.
- Risk management is an ongoing process.
- Risk management involves multiple stakeholders.
- Risk management should be aligned with organizational goals.
- Risk management should be proportionate to the risk.
- Risk management should be continuously improved.

2.2 Risk Identification and Enterprise Risk Management

Risk identification is the method of finding out risks that can potentially avoid the course, enterprise, or assets from achieving its own purposes. It includes connecting the worry and documenting (Bellini & Di Bernardino, 2017). Or as described through Cvitanić et al., (2017), Risk identification entails recognizing and identifying sources of a threat to recognize what have to be handled in a building and construction job. Risk identification is the initial step in Risk management process, as the prospective complications need to be actually identified just before evaluation, respond and control of the danger can easily take place (Agca et al., 2017).

While Risk study and risk management is a process that enables private danger celebrations and total risk to become recognized and taken care of proactively, enhancing success through lessening risks and making the most of chances and outcomes (Carver & Wolsey, 2018). So, the more the risks at the organization well identified and assigned the easier the management of risk will be and will allow a better understanding of core risks. Based on that the researcher is expecting significant positive direct effect of Risk Identification on Risk Management in the in UAE Public Sector. As this hypothesis is compatible with other hypothesis in others studies, such as Bodnar et al., (2019) and Carver & Wolsey (2018).

2.3 Risk Assessment and Enterprise Risk Management

Risk assessment is the cooperation of: recognizing and evaluating prospective events that may adversely influence individuals, properties, and/or the atmosphere; and creating opinions "on the tolerability of the threat on the basis of a threat evaluation" while taking into consideration determining factors (Cole et al., 2017; Mustapha et al., 2023). Or as described through Bodnar et al., (2019) and Zou et al., (2017) Risk assessment is a phrase used to describe the total process or method where you: Identify hazards and danger factors

that possess the potential to lead to harm (Sweeting, 2017). While Risk management is the identification, analysis, and prioritization of threats adhered to by worked with and affordable application of information to minimize, check, and regulate the probability or effect of unlucky events or even to optimize the awareness of chances (Behzadi et al., 2018; Tupa et al., 2017). So, the more the risks at the organisations been so well assessed and analysed the easier the management of risk will be and will allow a better handling of core risks. And based on that the researcher is expecting significant positive direct effect of Risk Assessment on Risk Management in the in UAE Public Sector. As this hypothesis is compatible with other hypotheses in others studies, such Behzadi et al. (2018).

2.4 Risk response and Enterprise Risk Management

Risk response is the on-going process of dealing with danger. Risk management usually possesses an initial period that entails determining danger, accepting to therapies and creating managements (Friday et al., 2018). Risk response is the process of tracking risk management execution and remaining to determine and manage brand-new dangers. Risk management is a procedure that enables individual risk occasions and overall risk to be recognised and taken care of proactively, enhancing results through reducing hazards and making the most of chances and end results (Friday et al., 2018; Sweeting, 2017). So, the better the risks at the organisations been so controlled and monitored the easier the management of risk will be and will allow a better handling of core risks. And based on that the researcher is expecting significant positive direct effect of Risk response on Risk Management in the in UAE Public Sector. As this hypothesis is compatible with other hypotheses in others studies such as Almeida et al. (2017) and Rampini et al. (2020).

2.5 Risk Monitoring and Reporting and Enterprise Risk Management

Risk reports are a technique of connecting project and service risks to the people who require to recognize. There are some sorts of dangers like: Project Risk monitoring and reporting, Program Risk monitoring and reporting, Portfolio Risk monitoring and reporting and Business Risk monitoring and reporting (Almeida et al., 2017). While Risk management describes the practice of recognizing possible dangers in advance, analysing all of them and taking preventative steps to reduce/curb the threat (Aven, 2016). Like The danger of price improvements for vital materials, the risk of sources not being on call to perform operate at the called for opportunity and the threat of suppliers certainly not having the ability to complete their employed work etc (Aven, 2016; Glendon et al., 2016). So, the faster and accurate the risks at the organisations been reported the easier the management of risk will be, and will allow a better handling of core risks. And based on that the researcher is expecting significant positive direct effect of Risk monitoring and reporting on Risk Management in the in UAE Public Sector. As this hypothesis is compatible with other hypotheses in others studies, such as Hopkin (2018) and Hubbard (2020).

2.6 Conceptual Framework and Hypotheses

The proposed conceptual framework of this research includes the four functions of risk management (risk identification, risk assessment, risk response, and risk monitoring and reporting) as independent variables that have a significant influence on the sole dependent variable, enterprise risk management. Figure 1 shows the conceptual framework along with the four hypotheses.

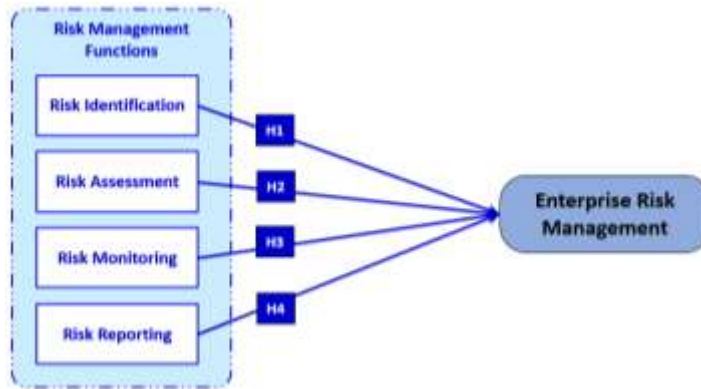


Figure 1 – Conceptual Framework

- Hypothesis 1: Risk Identification has a significant positive direct effect on Enterprise risk management in the in the UAE ministry of interior.
- Hypothesis 2: Risk Assessment has a significant positive direct effect on Enterprise risk management in the in the UAE ministry of interior.
- Hypothesis 3: Risk response has a significant positive direct effect on Enterprise risk management in the in the UAE ministry of interior.
- Hypothesis 4: Risk monitoring and reporting has a significant positive direct effect on Enterprise risk management in the in the UAE ministry of interior.

3 Research Methods

The study used quantitative methods to evaluate the proposed hypotheses based on the results of the statistical analysis of the primary data that collected for this research. Therefore, this research is allocated as positivism philosophy, deductive approach, and quantitative methods (Gupta & Gupta, 2022).

Population of the study are full-time employees occupying leadership positions within the Ministry of Interior in the UAE. The estimated population size for this study is about 3,000 individuals, which represents the upper echelons of the workforce where risk management responsibilities lie. The study adopts a stratified random sampling technique, to collect the sample of 358 participants from different departments of the ministry.

The tool use for data collection is the questionnaire, which employed in this research is designed on a five-point Likert scale, extending from 'strongly agree' to 'strongly disagree', and consists of two primary sections: demographic profiles and risk management-related items. The 6-items scale of risk identification was adapted from the studies of Babaheidari and De Geer (2017), and Saeidi et al. (2019). The 4-items scale of risk assessment was adapted from the study of Saeidi et al. (2019). The 4-items scale of risk response was adapted from the study of Saeidi et al. (2019). The 4-items scale of risk monitoring and reporting was adapted from the study of Saeidi et al. (2019). Finally, Sax and Torp (2015) was the source for the 6-items scale of enterprise risk management.

4 Findings

4.1 Demographic Analysis

The overall data collected for this study was 477, but the final valid dataset includes 358 respondents. The process of data cleaning includes the deletion of some answers due to none suitability, none completed answers, univariate outliers, and multivariate outliers. The demographic information for the respondents of the survey revealed that males represent the majority gender, making up 59.8 percent of the total responses. The age category is dominated by respondents aged 36-45 years, who make up 42.5 percent of the total. In

terms of educational qualifications, the bachelor's degree holders were the most prevalent, accounting for 68.2 percent. When looking at the experience levels, the highest percentage (34.4 percent) falls in the 8-11 years category. A significant majority of the respondents hold middle management roles (76 percent). As for geographical distribution across different Emirates, the city of Dubai has the highest representation with 43.6 percent.

4.2 Descriptive Analysis

Table 1 presents the descriptive statistics of the research variables. The mean scores, expressed as percentages, indicate the overall satisfaction levels with each variable. The mean values range from 3.54 (70.71 percent) for risk monitoring reporting to 3.74 (74.79 percent) for enterprise risk management. This range indicates a general satisfaction level across all variables, falling within the "Satisfied" category. Skewness and kurtosis are two important moments in statistics that provide insights into the distribution of scores in a dataset. Skewness is a measure of the asymmetry of the probability distribution and kurtosis measures the "tailedness" of the probability distribution, and acceptable level of between +1 and -1 (Gupta & Gupta, 2022). All values are within the acceptable range; thus, the dataset appears to be reliable and robust for further statistical analysis.

Table 1 - Descriptive Statistics of Research Variables

	Min	Max	Mean	Percent	SD	Skewness	Kurtosis
Risk Identification	1.33	5.00	3.56	71.25%	0.98	-0.45	-0.88
Risk Assessment	1.75	5.00	3.61	72.16%	0.88	-0.11	-0.95
Risk Response	1.50	5.00	3.61	72.12%	0.89	-0.26	-0.98
Risk Monitoring Reporting	1.00	5.00	3.54	70.71%	0.92	-0.27	-0.71
Enterprise Risk Management	1.83	5.00	3.74	74.79%	0.78	-0.26	-0.60

4.3 Reliability and Validity Analysis

The first examination is the indicator reliability, in which the reliability of each item within its construct is examined for the proper loading. In the realm of structural equation modelling, the 'rule of thumb' typically advocates for the indicator reliability of an item to be considered satisfactory when the outer loading is 0.708 or higher (Hair et al., 2021a) the items have proper loading and all the items passed the indicator reliability test. For the evaluation of internal consistency in the research variables, Table 2 provides Cronbach's Alpha and Composite Reliability (CR) indices generated using the Partial Least Squares (PLS) algorithm. As delineated by Hair Jr. et al. (2019), the values should typically exceed 0.7 to affirm a good level of internal consistency among the items of a given construct. As the table indicates, all constructs exceed the acceptable threshold for both Cronbach's Alpha and Composite Reliability. In addition, the convergent validity is the test that measures the positively correlation between the items in the same variable (Jr Hair et al., 2019). As a rule of thumb, a satisfactory level of convergent validity is indicated when AVE values exceed 0.5, as this implies that, on average, the construct explains over 50 percent of the variance of its indicators (Hair et al., 2021a). All the AVE values are above 0.5 indicating the proper convergent validity of the proposed model design.

Table 2 - PLS Algorithm for Convergent Validity Results of Research Variables

	Average Variance Extracted (AVE)	Cronbach's Alpha	Composite Reliability
Risk Identification	0.67	0.90	0.92
Risk Assessment	0.62	0.80	0.87
Risk Response	0.72	0.87	0.91
Risk Monitoring and Reporting	0.65	0.82	0.88
Enterprise Risk Management	0.71	0.92	0.94

Table 3 shows the results of the discriminant validity. Discriminant validity is the test that used to assure that the different variables within the model is different from each other and not measuring the same thing. One of the test is the Fornell-Larcker criterion in which the value in diagonal cell is the square root of the AVE values and must be greater than any other crossed values within the same column and raw (Hair et al., 2021a). The results in the table shows that all values are within to the rule of thumb and the proposed conceptual model have proper level of discriminant validity.

Table 3 - Fornell-Larcker Criterion

	ERM	RA	RI	RMR	RR
Enterprise Risk Management	0.840				
Risk Assessment	0.429	0.786			
Risk Identification	0.405	0.204	0.819		
Risk Monitoring and Reporting	0.273	0.131	0.134	0.807	
Risk Response	0.337	0.139	0.146	0.149	0.847

4.4 Relationships Analysis

The analysis of the data presented in Table 4, which summarizes the bootstrapping results for the relationships within the conceptual framework of enterprise risk management (ERM), indicates significant findings across all tested hypotheses. Each relationship examined exhibits a path coefficient with a corresponding P value below the 0.05 threshold, denoting statistical significance and reinforcing the hypothesized associations within the ERM framework. For Hypothesis 1, the investigation into the effect of risk identification on enterprise risk management efficiency yielded a path coefficient of 0.286. This suggests a positive relationship, and with a T statistic of 6.811 and a P value of 0.000, the relationship is statistically significant. Such a result underscores the critical role that identifying risks plays in the broader scope of managing them effectively within enterprises. Similarly, Hypothesis 2 explored the relationship between risk assessment and ERM, revealing a path coefficient of 0.318. This indicates an even stronger relationship compared to Hypothesis 1, supported by a T statistic of 7.746 and a P value of 0.000. This highlights the paramount importance of assessing risks accurately for the successful implementation of enterprise risk management strategies.

Hypothesis 3 examined two facets, the first concerning the impact of risk response on ERM, which showed a path coefficient of 0.227. The significance of this relationship is confirmed by a T statistic of 5.338 and a P value of 0.000. The second part of Hypothesis 3, albeit mistakenly labeled but intended to address the influence of risk monitoring and reporting,

displayed a path coefficient of 0.160, with a T statistic of 3.659 and a P value also at 0.000. These results collectively emphasize the significance of not only responding to risks appropriately but also the continuous monitoring and reporting as essential components of an effective enterprise risk management framework. In conclusion, the empirical evidence presented through these analyses vividly illustrates the foundational elements of an effective ERM system. The statistically significant relationships between risk identification, assessment, response, and monitoring, and reporting with ERM efficacy underscore the necessity of a comprehensive and integrated approach to managing risks in an enterprise setting. This substantiates the theoretical underpinnings of the conceptual framework, highlighting the interconnectedness and importance of each component in enhancing the overall risk management performance of organizations.

Table 4 - Bootstrapping Results for the Relationships in the Conceptual Framework

Paths	Path Coef.	SD	T	P Values
Risk Identification -> Enterprise Risk Management	0.286	0.042	6.811	0.000
Risk Assessment -> Enterprise Risk Management	0.318	0.041	7.746	0.000
Risk Response -> Enterprise Risk Management	0.227	0.043	5.338	0.000
Risk Monitoring and Reporting -> Enterprise Risk Management	0.160	0.044	3.659	0.000

5 Discussion, Conclusion, and Recommendation

the study aims to investigate the impact of different risk management factors - namely, risk identification, risk assessment, risk response, and risk monitoring and reporting - on enterprise risk management within the UAE's Ministry of Interior. The significance of this objective lies in its potential to offer valuable insights for strengthening risk management strategies within the Ministry, thereby ensuring the safety and security of the UAE. It also contributes to the theoretical development within the realm of strategic management by offering empirical evidence from a unique context. The relationship (Risk Assessment -> Enterprise Risk Management) is significant and has the highest impact with path coefficient 0.318. Reflecting on the UAE Ministry of Interior, it is vital to have efficient risk assessment mechanisms in place. Given the nature of its operations revolving around security, public safety, and order, an accurate and comprehensive risk assessment contributes significantly to the enterprise risk management strategy. The assessment process ensures that the organisation is prepared to tackle potential threats, upholding its operations and strategic objectives. The results align well with previous studies, providing supporting evidence. For instance, Leitch and Sheremeta (2016) argued that comprehensive risk assessment helps identify the vulnerabilities and potential impact of risks, informing the organisation's strategic response. Another study by DeLoach and Lam (2017) found that risk assessment was a key factor driving enterprise risk management in corporations, reinforcing the importance of a methodical approach to understanding and evaluating risks.

The relationship (Risk Identification -> Enterprise Risk Management) is significant and has the second effect with path coefficient of 0.286). As a security-oriented organisation, the UAE Ministry of Interior proactive identification of potential risks, threats and

vulnerabilities is central to its operations. It's noteworthy that this identification process is intrinsically tied to enterprise risk management, as a comprehensive understanding of potential risks facilitates the development of strategic plans and responses. The obtained results are in line with previous research. For instance, a study conducted by Mensah and Gottwald (2016) argued that without proper identification of risks, it would be difficult for organisations to manage these risks effectively. Similarly, a study by Tarantino (2018) further reinforced this, asserting that risk identification was a critical determinant of enterprise risk management outcomes in various industries, including security and public administration.

The relationship (Risk Response -> Enterprise Risk Management) is significant and has the third effect with a path coefficient of 0.227. The Ministry has the responsibility of ensuring public safety, requiring an efficient risk response mechanism that addresses potential threats swiftly and effectively, underlining its crucial role in shaping the organisation's enterprise risk management. The outcome of this research is supported by previous studies. For instance, Beasley, Pagach, and Warr (2016) discovered in their research on enterprise risk management that risk response played a decisive role in influencing the effectiveness of the overall strategy. Moreover, Baxter, Bedard, Hoitash, and Yezegel (2016) found a positive correlation between effective risk response and improved enterprise risk management, thereby accentuating the value of a strategic response to risk.

The relationship (Risk Monitoring and Reporting -> Enterprise Risk Management) is significant and has the fourth effect with a path coefficient of 0.160. The theoretical rationale behind this relationship can be rooted in strategic management theory, which emphasises the importance of monitoring and reporting in guiding strategic decision-making. The finding resonates with previous research. Kaplan and Mikes (2016) study highlighted that constant risk monitoring and timely reporting were key to effective enterprise risk management. Furthermore, a study by Arena, Arnaboldi, and Azzone (2017) found that rigorous risk monitoring and reporting enhance the overall risk management capabilities of organisations. The results are evidence that risk management factors significantly influence the effectiveness of enterprise risk management. Organisational leaders should continually review and update risk identification protocols to ensure that potential risks are promptly recognised and addressed. Simultaneously, risk assessment mechanisms should be robust and flexible enough to adapt to the constantly changing risk landscape. The process of risk response should be efficient and effective, incorporating both proactive and reactive measures. Moreover, risk monitoring and reporting mechanisms should be upgraded, ensuring timely identification and communication of risks.

The study's findings open several avenues for further investigation. First, conducting similar research in different countries could examine the effects of cultural, regulatory, and operational variations on the findings. Second, including variables like organisational culture, leadership style, technology adoption, and the regulatory environment could enhance the understanding of the dynamics of risk management in organisations. Third, future research could consider using alternative or supplementary data collection methods, such as interviews, observations, or archival data to ensure a more diverse and potentially more accurate data set.

References

- Alshamsi, S. A. S. A., Hussain, T. P. R. S., & Ali, S. S. S. (2024). The Role of Artificial Intelligence on the Public Energy Sector Performance in the United Arab Emirates: The Mediation Role of Organizational Agility. *Journal of Law and Sustainable Development*, 12(1), e2808-e2808.
- Abduraheem Padinhare Kayakalil. (2020). *The UAE Regulatory Framework On Corporate Governance - Corporate/Commercial Law - United Arab Emirates*.

- Agca, R., Heslinga, S. C., Rollefstad, S., Heslinga, M., McInnes, I. B., Peters, M. J. L., Kvien, T. K., Dougados, M., Radner, H., & Atzeni, F. (2017). EULAR recommendations for cardiovascular disease risk management in patients with rheumatoid arthritis and other forms of inflammatory joint disorders: 2015/2016 update. *Annals of the Rheumatic Diseases*, 76(1), 17–28.
- Alblooshi, A. J. (2020). *The Implementation of Risk Management in The Government*. The British University in Dubai (BUiD).
- Alghizzawi, M., Habes, M., Salloum, S. A., Ghani, M. A., Mhamdi, C., & Shaalan, K. (2019). The effect of social media usage on students' e-learning acceptance in higher education: A case study from the United Arab Emirates. *International Journal of Information Technology and Language Studies (IJITLS)*, 3(3), 13–26.
- Almeida, H., Hankins, K. W., & Williams, R. (2017). Risk management with supply contracts. *The Review of Financial Studies*, 30(12), 4179–4215.
- Alzahrani, O. (2023). International Law and the Crisis of COVID-19 on the International Security: A Case Study of Saudi Arabia. *Journal of Law and Sustainable Development*, 11(12), e1968-e1968.
- Arena, M., Arnaboldi, M., & Azzone, G. (2017). The dynamics of disaster planning: Which plan, who plans and do they use them? *Public Money & Management*, 37(6), 409-416.
- Aven, T. (2016). Risk assessment and risk management: Review of recent advances on their foundation. *European Journal of Operational Research*, 253(1), 1–13.
- Babaheidari, P., & De Geer, H. (2017). Corporate foresight in Sweden: A quantitative comparison between Swedish and European companies.
- Baxter, R., Bedard, J. C., Hoitash, R., & Yezegel, A. (2016). Enterprise risk management program quality: Determinants, value relevance, and the financial crisis. *Contemporary Accounting Research*, 33(4), 1413-1447.
- Beasley, M. S., Frigo, M. L., Fraser, J., & Simkins, B. J. (2016). What is Enterprise risk management? Enterprise Risk Management Initiative.
- Behzadi, G., O'Sullivan, M. J., Olsen, T. L., & Zhang, A. (2018). Agribusiness supply chain risk management: A review of quantitative decision models. *Omega*, 79, 21–42.
- Bellini, F., & Di Bernardino, E. (2017). Risk management with expectiles. *The European Journal of Finance*, 23(6), 487–506.
- Bodnar, G. M., Giambona, E., Graham, J. R., & Harvey, C. R. (2019). A view inside corporate risk management. *Management Science*, 65(11), 5001–5026.
- Boniface, O. (2016). Financial risks management in public sector organisations. *Res J Finance Account*, 7(1), 94–106.
- Carver, C. J., & Wolsey, K. (2018). Assessing asynchronous authenticated data sources for use in driver risk management. Google Patents.
- Coetzee, G. P., & Lubbe, D. (2013). The risk maturity of South African private and public sector organisations. *Southern African Journal of Accountability and Auditing Research*, 14(1), 45–56.
- Cole, S., Giné, X., & Vickery, J. (2017). How does risk management influence production decisions? Evidence from a field experiment. *The Review of Financial Studies*, 30(6), 1935–1970.
- Cvitanić, J., Possamai, D., & Touzi, N. (2017). Moral hazard in dynamic risk management. *Management Science*, 63(10), 3328–3346.
- DeLoach, J., & Lam, J. (2017). *Enterprise risk management: From incentives to controls*. Wiley.
- Dionne, G. (2013). Risk management: History, definition, and critique. *Risk Management and Insurance Review*, 16(2), 147–166.
- DuHadway, S., Carnovale, S., & Hazen, B. (2019). Understanding risk management for intentional supply chain disruptions: Risk detection, risk mitigation, and risk recovery. *Annals of Operations Research*, 283(1), 179-198.
- Elamer, A. A., Ntim, C. G., & Abdou, H. A. (2020). Islamic governance, national governance, and bank risk management and disclosure in MENA countries. *Business & Society*, 59(5), 914-955.

- Friday, D., Ryan, S., Sridharan, R., & Collins, D. (2018). Collaborative risk management: a systematic literature review. *International Journal of Physical Distribution & Logistics Management*.
- Glendon, A. I., Clarke, S., & McKenna, E. (2016). *Human safety and risk management*. Crc Press.
- Gupta, A., & Gupta, N. (2022). *Research methodology*. SBPD Publications.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021a). Evaluation of reflective measurement models. In *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R* (pp. 75–90). Springer, Cham.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021b). Evaluation of the Structural Model. In *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R* (pp. 115–138). Springer.
- Hardy, K. (2010). *Managing risk in government: An introduction to enterprise risk management*. IBM Center for the Business of Government Washington, DC.
- Hopkin, P. (2018). *Fundamentals of risk management: understanding, evaluating and implementing effective risk management*. Kogan Page Publishers.
- Hubbard, D. W. (2020). *The failure of risk management: Why it's broken and how to fix it*. John Wiley & Sons.
- Joshi, C., & Singh, U. K. (2017). Information security risks management framework—A step towards mitigating security risks in university network. *Journal of Information Security and Applications*, 35, 128-137.
- Jr Hair, J. F., Michael, & Brunsveld, N. (2019). *Essentials of business research methods*. Routledge.
- Kaplan, R. S., & Mikes, A. (2016). Risk management—The revealing hand. *Journal of Applied Corporate Finance*, 28(1), 8–18.
- Kopia, J., Just, V., Geldmacher, W., & BUßIAN, A. (2017). Organization performance and enterprise risk management. *Ecoforum Journal*, 6(1).
- Leitch, M., & Sheremeta, D. (2016). Risk governance: How top management's willingness to increase dialogue and transparency influences risk identification and assessment. *International Journal of Risk Assessment and Management*, 19(1-2), 64-77.
- Mensah, J., & Gottwald, W. (2016). Assessment of enterprise risk management processes. *Journal of Risk and Financial Management*, 9(2), 10.
- Mohammed, H. K., & Knapkova, A. (2016). The impact of total risk management on company's performance. *Procedia-Social and Behavioral Sciences*, 220(1), 271-277.
- Mustapha, B., Olaleye, B. R., Yetunde, O. B., Olanike, O. O., Akindele, G., Abdurrashid, I., ... & Owoniyi, B. O. (2023). Risk Management Practice and Organizational Performance: The Mediating Role of Business Model Innovation. *Journal of Law and Sustainable Development*, 11(4), e892-e892.
- Posner, P. L., & Stanton, T. H. (2014). Risk management and challenges of managing in the public sector. *Managing Risk and Performance: A Guide for Government Decision Makers*, 63–85.
- Pritchard, C. L., & PMP, P.-R. (2014). *Risk management: concepts and guidance*. Auerbach Publications.
- Rampini, A. A., Viswanathan, S., & Vuillemeij, G. (2020). Risk management in financial institutions. *The Journal of Finance*, 75(2), 591–637.
- Saeidi, P., Saeidi, S. P., Sofian, S., Saeidi, S. P., Nilashi, M., & Mardani, A. (2019). The impact of enterprise risk management on competitive advantage by moderating role of information technology. *Computer Standards & Interfaces*, 63, 67–82.
- Sax, J., & Torp, S. S. (2015). Speak up! Enhancing risk performance with enterprise risk management, leadership style and employee voice. *Management Decision*.
- Sweeting, P. (2017). *Financial enterprise risk management*. Cambridge University Press.
- Tarantino, A. (2018). *Governance, risk, and compliance handbook: Technology, finance, environmental, and international guidance and best practices*. John Wiley & Sons.
- Tupa, J., Simota, J., & Steiner, F. (2017). Aspects of risk management implementation for Industry 4.0. *Procedia Manufacturing*, 11, 1223–1230.
- Yang, S., Ishtiaq, M., & Anwar, M. (2018). Enterprise risk management practices and firm performance, the mediating role of competitive advantage and the moderating role of financial literacy. *Journal of Risk and Financial Management*, 11(3), 35.

Zou, Y., Kiviniemi, A., & Jones, S. W. (2017). A review of risk management through BIM and BIM-related technologies. *Safety Science*, 97, 88–98.