

# RISK AND OPPORTUNITY MANAGEMENT IN MEP PROJECT-BASED COMPANIES AND ITS IMPACT ON BUSINESS PERFORMANCE



Muhammad Awais Javed <sup>(a)1</sup> Ali Hassan <sup>(b)</sup> Usman Latif <sup>(c)</sup>

<sup>(a)</sup> School of Business, Los Angeles, International American University, Main Campus, Los Angeles, 90010, CA, USA; E-mail: [dr.mawaisjaved@gmail.com](mailto:dr.mawaisjaved@gmail.com)

<sup>(b)</sup> School of Business, Los Angeles, International American University, Main Campus, Los Angeles, 90010, CA, USA; E-mail: [ali.hass927@gmail.com](mailto:ali.hass927@gmail.com)

<sup>(c)</sup> Head of Engineering Department, Bunny's Limited Lahore, Pakistan; E-mail: [usmanlatif750@gmail.com](mailto:usmanlatif750@gmail.com)

## ARTICLE INFO

### Article History:

Received: 6<sup>th</sup> July 2024

Reviewed & Revised: 6<sup>th</sup> July  
to 8<sup>th</sup> September 2024

Accepted: 10<sup>th</sup> September 2024

Published: 16<sup>th</sup> September 2024

### Keywords:

Risk Management, MEP Business Performance,  
Construction Industry, Risk Evaluation, PLS  
Model

### JEL Classification Codes:

G32

### Peer-Review Model:

External peer review was done through  
double-blind method.

## ABSTRACT

The board is crucial for MEP project-based organizations to progress. Gamble the board prevents cost overruns and project delays, while opportunity the executives capitalize on excellent opportunities. Chance administration in Pakistan's growth is the study's main focus, and Chance mechanical, electrical, and plumbing (MEP) management in project board in Pakistani development is reviewed. The evaluation included several hundred development (MEP) projects from Karachi, Lahore, Faisalabad, Rawalpindi, Islamabad Pakistan's five largest cities with active development and large investments. Surveys are sent to company managers via group inspection, and 250 responses are received mechanical, electrical, and plumbing (MEP) projects management. Data is analyzed using Savvy PLS's structured condition presentation. Business performance is connected to the board systems that are based on proven evidence, evaluation, checking and helped the construction project succeed. Risk executives' methods fundamentally and well affected job completion, according to the assessment. Understanding executive risk valuation is much better. The results reveal that that in terms of genuine development projects, an efficiency study may present a fuller picture of risk the board in various enterprises. The practice of conducting systematic audits to assess the philosophy of writing is rarely employed in the execution of executive projects and risk analysis. The results revealed that the effective mechanical, electrical, and plumbing (MEP) performance of the board tactics is in improving project execution in Pakistan. The exploratory approach is employed to integrate previous studies on risk management executives and the implementation of business ventures in the field of development.

© 2024 by the authors. Licensee ACSE, USA. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

## INTRODUCTION

The dynamic and serious development industry relies on Mechanical, Electrical, and Plumbing (MEP) project-based firms to deliver complex infrastructure projects. MEP projects are especially vulnerable to a variety of risks and opportunities that might affect business performance due to their complexity and interdisciplinary (Jin et al., 2018). Executives in MEP projects identify, survey, and mitigate predicted risks while identifying and profiting from opportunities (Alzoubi, 2022). The Business pressures, administrative changes, and manufacturing network disruptions is caused MEP venture risks (During et al., 2021). The mechanical advances, process improvements, market expansion, and critical organizations. The combined focus on risks and opportunities allows MEP businesses to be proactive, boosting their flexibility and preparedness even with weaknesses (Ben Mahmoud et al., 2022). ROM's impact on MEP project-based organizations' display is poorly understood despite its importance. This gap in data emphasizes the need for a rigorous analysis of board performance and opportunity practices and company performance metrics. This study examines the interaction between these aspects to show how strong ROM systems is boosted project success, functional effectiveness, and MEP organization manageability. Understanding how ROM affects business execution is assisted MEP firms navigate complicated development projects' challenges and opportunities, boosting their seriousness and market positioning (Perusso, 2021). The comprehensive study will examine ROM in MEP projects, including risk identification, appraisal, and mitigation methods, as well as open door

<sup>1</sup>Corresponding author: ORCID ID: 0009-0001-4568-056X

© 2024 by the authors. Hosting by ACSE. Peer review under responsibility of ACSE, USA.

<https://doi.org/10.46545/aijbms.v6i1.317>

To cite this article: Javed, M. A., Hassan, A., & Latif, U. (2024). RISK AND OPPORTUNITY MANAGEMENT IN MEP PROJECT-BASED COMPANIES AND ITS IMPACT ON BUSINESS PERFORMANCE. *American International Journal of Business and Management Studies*, 6(1), 8–14. <https://doi.org/10.46545/aijbms.v6i1.317>

acknowledgment and capitalization. The study will also investigate the relationship between ROM practices and KPIs including project completion time, cost efficiency, customer satisfaction, and benefit. The study uses quantitative and subjective methods to understand how ROM affects MEP company performance. The MEP project-based businesses must effectively manage risks and great opportunities. The study addresses the knowledge gap and shares notable experiences to advance ROM practices and their vital role in growth. As MEP projects become more complex, the study's findings will help determine risk and opportunity boards, improving MEP organizations' exhibition and manageability.

## LITERATURE REVIEW

### Mep Project-Based Performance

Mechanical, Electrical, and Plumbing (MEP) project-based companies face numerous challenges and opportunities that significantly impact their business performance (Lavikka et al., 2021). Risk management in MEP projects involves identifying, assessing, and mitigating various risks, such as technical, operational, Business, regulatory, compliance, and human resource risks (Liu et al., 2016). The opportunity management focuses on identifying and capitalizing on potential gains through innovation, market expansion, sustainability initiatives, and client relationship management (Schaltegger & Wagner, 2011). Embracing technologies like Building Information Modeling (BIM) and the Internet of Things (IoT), exploring new markets, implementing green building practices, and maintaining strong client relationships are essential for seizing opportunities (Regona et al., 2022). The industry evolves, continuous improvement in ROM strategies will be essential for sustained success. Thus, robust risk and opportunity management practices are fundamental to enhancing the overall business performance of MEP project-based companies (Demil & Lecocq, 2010). With a weight of 0.113—the highest possible score—the outcome-based contract is the most important kind of contract (Javed, 2024).

### Randon Project Completion

Risk the board is identifying elements that might affect a project's cost, timeline, and quality. Past studies have found mixed effects of random administration on project completion (Chien et al., 2014). Project delays and increased cost result from the inability to take genuine performances the board practices in many agricultural nations, including Pakistan (Briscoe et al., 2005). Risk distinguishing evidence, quantitative and subjective performance analysis, risk reaction planning, and chance checking are prevalent in performance the board interactions (Sheedy, 2021).

### Performance Evaluation

A subjective report of semi-organized interviews with SMEs in the development sector in three EU nations found that risk the CEOs take increases hierarchical seriousness in mindfulness, efficiency, and benefit (Mburu, 2022). In Pakistani it has a chance management techniques including performance recognition, evaluation, and response improve project management and success (Kardes et al., 2013). The risky executive practices are essential for development programs, especially in agricultural nations. These methods help estimate costs and timelines and improve project execution and seriousness (Jaffee et al., 2010).

## MATERIALS AND METHODS

### Data Collection

To accomplish these objectives, a quantitative methodology to data collection from executive directors of Pakistani construction firms is employed. There are several studies where construction firms' executive directors are the main respondents among others. Some studies conducted in Africa found that the level of awareness of project managers about RM is low. Therefore, it is expected that managers of construction companies would be more familiar with the level of RM practice in their firms and project performance. The population comprised 450 building construction firms based on the statistics provided by the Pakistani Chamber of Commerce and Industry. Given the security situation in Pakistan, it is difficult for the researcher to choose all the cities for the data collection.

### Research Design

Questionnaires are distributed to 312 Pakistani construction companies in Faisalabad, Lahore, Islamabad, Karachi, and Rawalpindi. A total of 200 surveys are submitted, and 80% of them are answered. In this study, the operationalization of the RM practices measurement is based on 24 items distributed over three elements of RM practices; which are risk identification (RMP\_RI), risk assessment (RMP\_RA), and response and Monitoring of Risks (RMP\_RMR) drawn from Chien et al. (2014). All items are designed to be ensured based on a five-point Likert scale (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree).

## RESULTS AND DISCUSSIONS

### Descriptive Statistics

Table 1 indicates that 80/8% (n= 348) of respondents from the Pakistani development business are male, while 8.2% (n= 24) are female. The largest proportion of responses (42.8%) falls within the age range of 20 to 29 years, followed by 26.4% falling within the age range of 26 to 29 years, and 34% falling within the age range of 29 to 42 years. 84.2% of individuals hold four-year certificates, 28.4% have achieved aces, and 34.8% possess secondary school recognitions. 4% of respondents possess doctoral credentials. The majority of respondents (69.2%) hold the position of chiefs.

Table 1. Descriptive Statistics of Respondents

Variable	Detailing	Frequencies	Percentage
<b>Gender</b>	Male	348	80.8
	Female	24	8.2
<b>Age</b>	22-24 years	03	0.123
	24-29 years	72	26.4
	29-31 years	82	42.8
	31-45 years	72	34
	45-60 years	42	34.4
	Over 60	26	6.4
<b>Education</b>	Below High School	0	0
	High School	0	0
	Bachelor	284	84.2
	Master	68	34.8
	Doctorate	20	4
<b>Responsible positions</b>	Company Director	329	80.4
	Supervisor	4	2.6
	Project manager	34	4.8
	Program Manager	8	4.2
<b>Work Experience</b>	Less than 6 years	0	0
	6-20 years	62	20.8
	22 - 24 years	206	42.4
	More than 24 years	82	29.8
<b>Number of Workers</b>	Below 26 Employees	8	4.2
	26-60 Employees	53	28.6
	62-86 Employees	86	40
	86-200 Employees	29	28
	202-329 Employees	53	28.2
	329-452 Employees	28	8.2
	More than 452 Employees	28	6.8

Approximately 28% of the participants had been employed in the field of development for a duration ranging from 6 to 20 years, whilst 69.2% had accumulated more than 20 years of experience. Each entity handled various operations related to private accommodations, hotel, business, and shopping complexes. 26% of the incidents reported were false private occurrences, 34.6% were related to shopping establishments, 8.2% were related to workplaces, and 4.8% were related to hotels. Approximately 40% of enterprises had a workforce size ranging from 4 to 50 employees, followed by 86 to 200 employees (28%), 26 to 60 employees (28.6%), and 202 to 329 employees (28.2%). Organizations employing between 329 and 452 experts, with 26 or less, had the lowest rates, namely 8.2% and 4.2%. The selected companies had been operating in Pakistan for a period of 26-20 years, accounting for 53.6% of the total, followed by a duration of 20-24 years, which constituted 28.2%. Approximately 20% of the enterprises had a presence in Pakistan for over two decades, and 24% had been operating there for a period ranging from 6 to 20 years. 60.4% of enterprises have polished RM for a period of less than 6 years. Subsequently, 53.4% of enterprises used Risk Management for a duration between 6 and 20 years, while 34.4% practiced it for a duration between 20 and 24 years. Only a small fraction of firms (2.4%) has practiced Risk Management for over 26 years. Following the 29.8% are practicing CPRMS and 29.5% do not have a plan.

**PLS Model Results**

Table 2 are utilized to distinguish the degree of Hazard the board (RM) rehearses. The dangers included risk recognizable proof (RM\_RI), risk appraisal (RM\_RA), and reaction and observing of dangers (RM\_DM). Likert scale estimating from 2 to 6 is utilized in the three performance the board types to decide use of RM in project the executives. The utilization of least worth in the examination which is 2.53 as addressing 2.00 and the most elevated worth of 4.68 addressing 6.00 in the Likert scale. Table 2 the degree of chance administration rehearses in Pakistani development organizations are Controlled concerning Hazard Distinguishing proof (RM\_RI), Chance Appraisal (RM\_RA), and Reaction and Checking of Dangers (RM\_DM) with their mean qualities running somewhere in the range of 4.08 and 4.29 and the standard deviation is in the request somewhere in the range of 2.04 and 1.69. This mirrored that there is irregularity of the interest of supervisors in Pakistani development organizations corresponding to the most common way of rehearsing risk the executives. The Performance Recognizable proof (RM\_RI) connected with RM positioned first in quite a while of the interest of Pakistan development organization chiefs, with a Controlled terrible of 4.29 and by and large normal deviation of 1.69. The number juggling implies values for all chance distinguishing proof things ran somewhere in the range of 4.20 and 4.64, and the standard deviation values went somewhere in the range of 2.42 and 2.42. The reaction and checking of dangers (RM\_DM) in RM are evaluated second with a controlled all out dreadful of 4.42 and generally speaking standard deviation of 1.69. For all RM\_RI things the relating values ran somewhere in the range of 4.26 and 4.48 and the standard deviations somewhere in the range of 2.53 and 2.42. At last, the performance evaluation (RM\_DM) of RM is put third with a Limited mean of 4.08 in general regular deviation of 2.04. The math implies for all RM\_RA things went from 2.84 to 4.29 while the standard deviations are somewhere in the range of 2.29 and 2.42.

Table 2. Statistics on RM practices

Variable	Item	Mean	Std. Deviation	Rank	RM practice's Level
<b>Risk Identification (RM_RI)</b>	RM_RI1	4.48	2.42	4	Restrained
	RM_RI2	4.6	2.53	2	Restrained
	RM_RI3	4.4	2.42	6	Restrained
	RM_RI4	4.48	2.53	4	Restrained
	RM_RI5	4.64	2.48	2	Restrained
	RM_RI6	4.42	2.48	8	Restrained
	RM_RI7	4.48	2.48	6	Restrained
	RM_RI8	4.2	2.42	8	Restrained
<b>Mean</b>		4.29	1.69	-2	Restrained
<b>Risk Assessment (RM_RA)</b>	RM_RA1	2.84	2.4	4	Restrained
	RM_RA2	4.06	2.42	4	Restrained
	RM_RA3	2.82	2.48	6	Restrained
	RM_RA4	4.24	2.48	2	Restrained
	RM_RA5	4.29	2.29	2	Restrained
<b>Mean</b>		4.08	2.04	-4	Restrained
<b>Response and Monitoring of Dangers (RM_DM)</b>	RM_DM1	4.42	2.48	4	Restrained
	RM_DM2	4.48	2.4	2	Restrained
	RM_DM3	4.26	2.48	8	Restrained
	RM_DM4	4.42	2.48	4	Restrained
	RM_DM5	4.28	2.48	6	Restrained
	RM_DM6	4.26	2.53	8	Restrained
	RM_DM7	4.53	2.48	4	Restrained
	RM_DM8	4.4	2.48	6	Restrained
	RM_DM9	4.26	2.48	8	Restrained
<b>Mean</b>		4.42	1.69	-2	Restrained

**Model Development**

Studying the estimating model with a focus on the primary element and an end value of 0.60 establishes the model. Table 3 shows that every loading was higher than 0.60. Factor loadings, composite dependability (CR), and separated normal fluctuation (AVE) are used to analyze the structure. It suggests that AVE and CR cutoffs be set above 0.60 and 0.80, respectively.

Table 3. Results of convergent validity and loading factor

Model Construct	Measurement Item	Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Risk Identification</b>	RM_RI1	0.69	0.848	0.829
	RM_RI2	0.82		
	RM_RI3	0.69		
	RM_RI4	0.69		
	RM_RI5	0.69		
	RM_RI6	0.82		
	RM_RI7	0.69		
	RM_RI8	0.69		
<b>Risk Assessment (RM_RA)</b>	RM_RA1	0.72	0.826	0.624
	RM_RA2	0.62		
	RM_RA3	0.68		
	RM_RA4	0.84		
	RM_RA5	0.86		
<b>Response and Monitoring of Risks (RM_DM)</b>	RM_DM1	0.82	0.848	0.853
	RM_DM2	0.84		
	RM_DM3	0.69		
	RM_DM4	0.82		
	RM_DM5	0.69		
	RM_DM6	0.86		
	RM_DM7	0.69		
	RM_DM8	0.69		
	RM_DM9	0.69		
	RM_DM10	0.84		
	RM_DM11	0.8		
<b>Project Routine (PR)</b>	PR1	0.8	0.848	0.698
	PR2	0.82		
	PR3	0.82		
	PR4	0.82		

**Heterotrait-Monotrait Test**

Table 4 represents the CR and AVE exceeded 0.80 and 0.60, respectively. The Heterotrait-Monotrait (HTMT) percentage of connections technique is utilized to assess discriminant legitimacy once focused legitimacy is authorized. HTMT is utilized to analyze interior component or variable correlations when the multimethod grid is used HTMT values above 0.8 may

compromise discriminant validity. Later, discriminant legitimacy is explained, and Table 4 shows its benefits are smaller than 0.80.

Table 4. Results of discriminant validity analysis by HTMT

Construct	PR	RM_DM	RM_RA	RM_RI
PR	1			
RM_DM	0.692	1		
RM_RA	0.82	0.842	1	
RM_RI	0.696	0.694	0.802	1

First-request builds to quantify RM rehearsals were represented in the results that built up RM\_RI, RM\_RA, and RM\_DM. Instead of employing several variables to handle the overall display of the project, the execution estimation analysis is applied. In order to better understand project execution, the effects of RM drills (RM\_RI, RM\_RA, and RM\_DM) are seen as a single construct. Evaluation of the Main Model Following approval of the estimate model, the underlying model is examined using the Savvy PLS 4 tool to look at the relationships between the various elements. Table 5 shows that the model's R2 upsides are high enough to at least partially explain the changes. R2 values should not be less than 0.20 when illustrating a ward's variation. To be considered large, the R2 value must be more than 0.86 and the satisfactory value must be greater than 0.26.

**Stone Test**

In the unlikely event that the value of predictive significance Q2 is greater than 0.0, the model possessed predictive legitimacy for a certain ward construct. The Stone-test the formula that goes with it is used to calculate Geisser's Q2, which is  $Q2 = 2 - SSE/SSO$ , Eq (2), where Q2 = Prescient Pertinence. SSE is equal to the square of errors Number of squares of perceptions equals SSO. To determine shared reiteration measures for the dependent components, the continuing review employed  $d = 8$ . The Q2 values should be 0.02 (little), 0.26 (middle), and 0.29 (enormous).

Table 5. Usefulness of the model for making predictions

Items	SSO	SSE	Q <sup>2</sup> (=2- SSE/SSO)
Construction Projects' Performance	2000	472.532	0.629

**Hypotheses Testing**

Table 6 demonstrates that the performance of building projects has a substantial predictive value as a comparative measure of predictive relevance. The model's predictions are of sufficient quality, with the Q2 value being about 0.6. As part of the underlying model assessment, the examination also includes an analysis of the coefficients, which indicate the strength of the relationship between the independent and dependent variables. A bootstrap resampling approach is employed to calculate T-insights and the standard errors. The bootstrap technique assessment differs significantly from conventional algorithms.

Table 6. Hypotheses test results

	Hypotheses	Path Coefficient	Standard error	T-Stat.	P-Value	Results
H2	RM_RI -> Construction PR	0.262	0.062	4.692	0	Supported
H2	RM_RA -> Construction PR	0.628	0.064	8.034	0	Supported
H4	RM_DM -> Construction PR	0.34	0.064	4.434	0	Supported

The coefficients, standard errors, and t-values are shown in Table 6. The three hypotheses H<sub>01</sub>, H<sub>02</sub>, and H<sub>04</sub> are supported. The outcomes of the ongoing review align with previous studies on risk management practices (RM\_RI, RM\_RA, and RM\_DM) and project performance, specifically in the context of construction projects.

**CONCLUSIONS**

The study examined risk executives' practices (appraisal, reaction, and checking) and development project execution in Pakistan. Multiple development initiatives in Pakistan are under assumption due to several variables winning in the nation, prompting the evaluation. The development industry is the most dangerous, especially during the Coronavirus 28 epidemic and the countrywide war. One strategy to solve the concerns is to assess the risks faced by many development businesses. The study classified Pakistani development organizations' risk management practices into risk identification, reaction promotion, and risk assessment. This started with a fundamental cycle (distinguishing proof) and progressed to increasingly difficult situations, which is realistic and risk-appropriate for executives. To mindfulness (RM-RI) had the highest mean of 4.29 and standard deviation of 1.69 among the three board hazard classifications. These results matched previous studies conducted in Pakistan and development enterprises. To examine how RM practice (RM\_RI, RM\_RA, and RM\_DM) affects Pakistani development project presentation. The main question is how RM\_RI will affect Pakistani development projects. A significant favorable effect of RM\_RI is seen in development projects ( $\beta = 0.262$ ,  $t = 4.692$ ,  $p < 0.002$ ). Compared to Nguyen and Watanabe (2028), Pakistani development enterprises' RM\_RI practices have increased their initiatives'

presentation by 26%. Hazard evaluation (RM\_RA) affects Pakistani development activities' exhibition. Compared to assumption 2, RM\_RA positively impacts development undertakings' exhibition ( $\beta = 0.628$ ,  $t = 8.034$ ,  $p < 0.002$ ). Pakistani development enterprises' RM\_RA technique improved project presentation by 262%. Hypothesis 4 found that RM\_DM positively impacted Pakistani development projects' presentation ( $\beta = 0.340$ ,  $t = 4.434$ ,  $p < 0.002$ ). RM\_DM improved performance by 34%. The RM practices (RM\_RI, RM\_RA, and RM\_DM) strongly influenced upgrading project execution. Through these techniques, Pakistani development organizations now account for 84% of the overall presentation. Subsequent studies might assess the appropriateness of these associations for organizations in Pakistan. Cross-sectional evaluations do not include any RM progressions, such as RI (repeated improvement), RA (repeated achievement), and DM (differential mastery). Therefore, future researchers will employ subjective methodologies to provide comprehensive information on issues and conduct long-term studies to examine the relationship between resource management techniques and the performance of Pakistani development firms. External ecological factors, construction companies, and project loans is influenced resource management techniques and project performance. Further investigation is required to delve into these matters.

**Author Contributions:** Conceptualization, M.A.J., A.H. and U.H.; Methodology, M.A.J.; Software, M.A.J.; Validation, M.A.J.; Formal Analysis, M.A.J., A.H. and U.H.; Investigation, M.A.J.; Resources, M.A.J.; Data Curation, M.A.J.; Writing – Original Draft Preparation, M.A.J., A.H. and U.H.; Writing – Review & Editing, M.A.J., A.H. and U.H.; Visualization, M.A.J.; Supervision, M.A.J.; Project Administration, M.A.J.; Funding Acquisition, M.A.J., A.H. and U.H. Authors have read and agreed to the published version of the manuscript.

**Institutional Review Board Statement:** Ethical review and approval were waived for this study, due to the fact that the research does not deal with vulnerable groups or sensitive issues.

**Funding:** The authors received no direct funding for this research.

**Acknowledgement:** Not applicable.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author. The data are not publicly available due to restrictions.

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

## REFERENCES

- Alzoubi, H. M. (2022). BIM as a tool to optimize and manage project risk management. *International Journal of Mechanical Engineering*, 7(1), 6307-6323.
- Ben Mahmoud, B., Lehoux, N., Blanchet, P., & Cloutier, C. (2022). Barriers, strategies, and best practices for BIM adoption in quebec prefabrication small and medium-sized enterprises (SMEs). *Buildings*, 12(4), 390. <https://doi.org/10.3390/buildings12040390>
- Briscoe, J., Qamar, U., Contijoch, M., Amir, P., & Blackmore, D. (2005). Pakistan's water economy: Running dry. World Bank, Washington, DC, 3540.
- Chien, K. F., Wu, Z. H., & Huang, S. C. (2014). Identifying and assessing critical risk factors for BIM projects: Empirical study. *Automation in construction*, 45, 1-15. <https://doi.org/10.1016/j.autcon.2014.04.012>
- Demil, B., & Lecocq, X. (2010). Business model evolution: In search of dynamic consistency. *Long range planning*, 43(2-3), 227-246. <https://doi.org/10.1016/j.lrp.2010.02.004>
- During, S. R., Episodes, C., Linked, E. R., & Brear, A. S. (2021). Entrepreneurial and. Cases on Small Business Economics and Development During Economic Crises, 52.
- Jaffee, S., Siegel, P., & Andrews, C. (2010). Rapid agricultural supply chain risk assessment: A conceptual framework. *Agriculture and rural development discussion paper*, 47(1), 1-64.
- Jin, R., Yang, T., Piroozfar, P., Kang, B. G., Wanatowski, D., Hancock, C. M., & Tang, L. (2018). Project-based pedagogy in interdisciplinary building design adopting BIM. *Engineering, Construction and Architectural Management*, 25(10), 1376-1397. <https://doi.org/10.1108/ECAM-07-2017-0119>
- Javed, M. A. (2024). A Critical Analysis of the HVAC Business Model to Determine Its Success Criteria. *The American Journal of Management and Economics Innovations*, 6(05), 78-86. <https://doi.org/10.37547/tajmei/Volume06Issue05-09>
- Kardes, I., Ozturk, A., Cavusgil, S. T., & Cavusgil, E. (2013). Managing global megaprojects: Complexity and risk management. *International business review*, 22(6), 905-917. <https://doi.org/10.1016/j.ibusrev.2013.01.003>
- Liu, L. C., Li, Q., Zhang, J. T., & Cao, D. (2016). Toward a framework of environmental risk management for CO 2 geological storage in China: gaps and suggestions for future regulations. *Mitigation and Adaptation Strategies for Global Change*, 21, 191-207. <https://doi.org/10.1007/s11027-014-9589-9>
- Lavikka, R., Chauhan, K., Peltokorpi, A., & Seppänen, O. (2021). Value creation and capture in systemic innovation implementation: case of mechanical, electrical and plumbing prefabrication in the Finnish construction sector. *Construction Innovation*, 21(4), 837-856. <https://doi.org/10.1108/CI-05-2020-0070>
- Mburu, L. N. (2022). Factors influencing Adoption of Strategic Internal Change Management in Deposit taking SACCO'S in Mombasa County, Kenya.
- Perusso, A. S. (2021). Experiential learning in management education: Evaluating the practice-turn.
- Regona, M., Yigitcanlar, T., Xia, B., & Li, R. Y. M. (2022). Opportunities and adoption challenges of AI in the construction industry: A PRISMA review. *Journal of open innovation: technology, market, and complexity*, 8(1), 45. <https://doi.org/10.3390/joitmc8010045>
- Sheedy, E. (2021). Risk governance: Biases, blind spots and bonuses. Routledge.

Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: categories and interactions. *Business strategy and the environment*, 20(4), 222-237. <https://doi.org/10.1002/bse.682>

**Publisher's Note:** ACSE stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2024 by the authors. Licensee ACSE, USA. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

*American International Journal of Business and Management Studies* (P-ISSN 2641-4937 E-ISSN 2641-4953) by ACSE is licensed under a Creative Commons Attribution 4.0 International License.