Journal of Mines, Metals and Fuels, *73(7): 1841-1850; 2025. DOI: 10.18311/jmmf/2025/49887*

Print ISSN : 0022-2755

Journal of Mines, Metals and Fuels

Contents available at: *www.informaticsjournals.co.in/index.php/jmmf*

Investigating the Role of Critical Risk Factors on the Construction Project Success in the Oil and Gas Industry

Mohammed Alblooshi[1], Mohd Faiz Hilmi[1*], Gouher Ahmed[2] and Anas Abudaqa[1]

[1]*School of Distance Education, Universiti Sains Malaysia, Penang, Malaysia; Faiz@usm.my*
[2]*School of Business, Skyline University College, Sharjah City, United Arab Emirates*

Abstract

Introduction*: External risk factors, particularly economic, environmental, political, local people, and contractor-related aspects, substantially impact construction project success within the oil and gas sector. This study explores the connection between these critical risk factors and their impact on construction project success in the UAE.* ***Methods****: A survey questionnaire was developed using existing literature. A valid sample of 353 respondents was analysed, comprising individuals with a substantial role in project success amid critical risk factors. Data was analysed using measurement and structural models under Smart PLS 4.0.* ***Results****: The measurement model confirmed the reliability and validity of the latent constructs and their items. The structural model findings confirmed a significant impact of economic, environmental, local people, and contractor-related risks on construction project success in the UAE oil and gas industry.* ***Conclusion****: The study findings provide several policy recommendations to support stakeholders, including project officials, risk managers, and administrative personnel linked to construction projects in the UAE oil and gas industry. Limitations and future research directions are also discussed.*

Major Findings: *The study reveals that economic, environmental, and contractor-related risks significantly and negatively affect construction project success in the UAE oil and gas industry. In contrast, local-people risk positively influences success, while political risk shows no significant impact. These findings offer critical insights for risk mitigation and strategic project planning.*

Keywords: *Construction, Critical Risk Factors, Oil and Gas, Project Success, UAE*

1.0 Introduction

For the social and economic welfare in the economy, the construction industry has been regarded with several contributions in terms of the creation of both direct and indirect jobs. Moreover, within their production process, the construction industry has its remarkable linkage with other sectors which produce materials, services, and equipment[1]. Meanwhile, it is among the first sectors which can signal the financial situation of any region along with the economic recession and exponential growth, respectively[1]. More specifically, the construction sector encompasses the industrial segment of production and commerce that deals with the construction, restoration, enhancement, and upkeep of infrastructure in the economy while covering different industries like housing, education, transportation, residential, industrial, heavy civil projects, and energy, including oil and gas. Because of its regional and macroeconomic significance, it plays a pivotal role in a nation's technological and technical progress, frequently governing the pace of the country's infrastructure expansion, which, in turn, contributes

**Author for correspondence*

to the nation's advancement in ensuring sustainability practices[2].

Although construction projects have major economic and financial significance in any region, there exists a range of critical risk factors for construction projects in the oil and gas industry. These risk factors have been observed with their adverse influence on the project in terms of final cost and schedule of the projects, which ultimately halt the achievement of the strategic objectives. Moreover, various international oil and gas companies are choosing to expand their markets beyond their local business operations to enhance their profitability and earning capabilities. Construction projects at the international level entail dealing with not only the uncertainties and risk dynamics typically associated with local construction projects but also the intricate risks specific to international transactions[3-5]. For this reason, the role of critical risk factors towards the success or failure of construction projects in the oil and gas industry has been under the observation of researchers, policymakers, and other stakeholders. In this regard, the critical factors have been entitled as economic risk, environmental risk, political risk, local people risk, and contractor-related risk, respectively.

The term project success reflects several performance measures, for which titles like cost, time, and scope have been widely recognised in the available literature, covering the scope of projects[6-8]. It is believed that if the project is completed on time and within the defined budget, the project is usually considered successful. However, over recent years, several other criteria have been developed and utilised by researchers to determine the concept of project success, depending on the specific goals and objectives of the project, like customer or stakeholder satisfaction, technical requirements, functionality, health and safety, future perspective, and business and commercial performance[9]. However, due to their wider significance and level of acceptance in the available literature, the current research mainly focuses on cost, time, project objectives, quality, and stoppage as key indicators to determine project success.

It is believed that construction stands as one of the largest and most challenging industries in the contemporary globalised environment[10]. This is because it revolves around the complicated process of converting conceptual ideas into tangible products[11]. Meanwhile, the 21st century has witnessed a significant surge in complex and large-scale construction undertakings because of technological advancement and similar developments[12]. However, the core objective in these ventures is to successfully deliver projects within predetermined timeframes based on the allocated financial and non-financial resources, with a requisite quality of the product[13]. It is noteworthy to acknowledge that, as noted by Shibani *et al.*[13], the realisation of construction projects in today's world is a rarity, with many falling short of their intended goals, hence unable to address customer demands and achieve successful completion. Such projects are often categorised as unsuccessful when they fail to meet specified requirements[14]. Notably, project delays tend to be accompanied by supplementary work in intricate projects, resulting in additional costs[15]. Consequently, these time and cost overruns impede construction projects from achieving their intended objectives[16], while exposing them to various project-related issues[13].

- To examine the impact of economic risk on the construction project success in the oil and gas industry of the UAE.
- To examine the impact of environmental risk on the construction project success in the oil and gas industry of the UAE.
- To examine the impact of political risk on the construction project success in the oil and gas industry of the UAE.
- To examine the impact of local people's risk on the construction project success in the oil and gas industry of the UAE.
- To examine the impact of contractor-related risk on the construction project success in the oil and gas industry of the UAE.

2.0 Literature Review

The linkage between Critical Risk Factors and project success has garnered significant attention from researchers, policymakers, and other stakeholders in both current and past studies. However, the role and significance of these critical risk factors in determining project success and performance dynamics have yielded mixed results, depending on the regional context and several other micro- and macroeconomic variables. In this regard, Wu *et al.*[17] explored the Chinese construction industry to examine the relationship between critical

risk factors and project success. The authors argue that achieving success in projects requires the implementation of an efficient project risk management procedure. The study aims to explore the impact of risk factors on project success within the specific context of the Chinese construction industry, employing a combination of qualitative and quantitative estimation techniques.

Moreover, the study systematically investigated risk factors closely correlated with project success in the Chinese construction sector. Through a comprehensive survey and in-depth analysis, it was determined that various risk factors pertain to different stakeholders, including designers, contractors, subcontractors, clients, and government representatives. Each of these stakeholders has a distinct impact on project success in China's construction industry. Additionally, the research suggests that enhancing the generalizability of its findings could be achieved by employing larger and more representative sample groups from diverse industries and regions across China.

Zwikael and Globerson[18] identified various causes of project failure, pointing out that project managers can often list the key factors differentiating between project success and failure, referred to as Critical Success Factors (CSFs). Despite the well-established nature of CSFs, the rate of project failures remains high due to the presence of these factors at both the micro and macro levels. This may be attributed to the fact that existing CSFs are overly generalised and lack specific insights crucial for project managers' decision-making. Their study examined how 16 different planning processes impact project success, identifying Critical Success Processes (CSPs) that influence project outcomes.

Data collected from 282 project managers in the construction industry revealed that pivotal planning processes include defining project tasks, developing schedules, organisational planning, acquiring relevant staff, communications planning, and project plan development. The study also found that project managers often do not allocate their time to these processes according to their respective influence on project success.

Lamprou *et al.*[19] also examined the relationship between critical success factors and project success, highlighting the extensive discussion around project success in the field of Project Management. The authors noted that project success has drawn considerable attention due to its macroeconomic significance. Success in projects typically involves both success criteria and

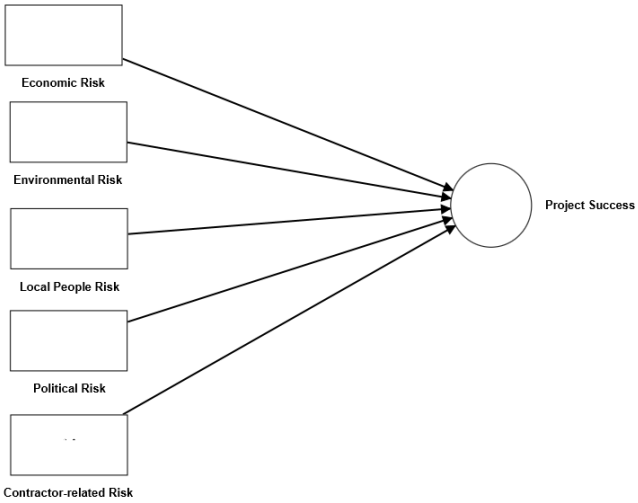


Figure 1. Research framework, source: Self-developed.

CSFs. Their study aimed to identify and assess these factors through a comprehensive review of past studies and content analysis, estimating the frequency with which success criteria and CSFs impact project success.

The study developed a questionnaire distributed to individuals and organisations in Greece with experience in the industry to evaluate the perceived significance of these factors in achieving project success. Figure 1 shows the research framework used in the study.

H_1: There is a significant impact of economic risk on the construction project success in the oil and gas Industry of the UAE.

H_2: There is a significant impact of environmental risk on the construction project success in the oil and gas Industry of the UAE.

H_3: There is a significant impact of local people's risk on the construction project success in the oil and gas Industry of the UAE.

H_4: There is a significant impact of political risk on the construction project success in the oil and gas Industry of the UAE.

H_5: There is a significant impact of contractor-related risk on the construction project success in the oil and gas Industry of the UAE.

3.0 Research Methodology

A research design is referred to as a structured plan or outline for the execution of a research project within a given time. Meanwhile, it outlines the steps and methods

which are required to gather the required data for shaping and potentially resolving the research investigation[17]. The research design establishes the groundwork for the project's execution[17]. Moreover, the term research design is also expressed as a plan or a structure of means which are being adopted to answer the research questions. In this regard, the research design can be categorised into quantitative and qualitative approaches. The term quantitative refers to that type of research design in which the numerical data will be collected using a structured questionnaire or a similar technique. Additionally, under quantitative research design, the collected data will be in numerical format and will be analysed through applying some statistical techniques[18]. In the realm of research investigation, the fundamental techniques employed for the examination of data are referred to as statistics. These statistical methods encompass tasks related to the organisation, analysis, interpretation, and presentation of numeric information for better decision making based on statistical inference. The field of statistics encompasses a broad domain of study, finding applications across different fields of interest like information systems, human resources, project management and many others. The advent of computers, especially personal computers, has significantly facilitated the accessibility of statistical processes for data handling and analysis, which plays their fundamental role in the quantitative research design[18]. Figure 2 provides a better understanding of the quantitative research design covering the terms research questions, variables, hypotheses, sampling, data collection and analysis, and results and conclusion, which have been regarded as the complementary component under quantitative research design. The same has been adopted in the present study.

To define the population more precisely, it can be characterised as the complete count of individuals residing in a specific geographic area, as described by Lamprou and Vagiona[19]. Similarly, an alternate perspective on population is offered by Downing and Clark[20], who assert that it encompasses a group of individuals, entities, or objects of interest to a statistical observer or a researcher. Under the present study analysis, the major focus is to examine the trends in project success as determined by the critical risk factors. For this reason, it is found that the total number of construction employees, including the project managers, project coordinators, site engineers, site supervisors, and similar other individuals, is 1.6 million



Figure 2. Quantitative research design.
Source: Self-developed

as per the latest data available[21]. Therefore, the total size of the population under the present study has been regarded as 1.6 million individuals as linked with the construction industry of the UAE.

The term sample has been regarded as a part of the population through which the desired data would be collected with the help of some techniques, like a questionnaire. In this regard, a sample represents the part of the population which is being selected through applying a specific technique, like probability or non-probability sampling. However, selecting a total sample size is quite important in any research. In this regard, different authors have provided some valuable suggestions in order to finalise the sample size. More specifically, one of the key measures for selecting the sample size is based on the theoretical contribution of Statista[21]. In this regard, the desired sample size can be collected by considering the size of the population in a given research. As per the given Figure 3, it is found that N represents the size of the population, whereas S represents the sample size. For example, if the size of the population is 10,000, then the desired sample size would be 370. Similarly, if the population is 1 million or above, the desired sample size would be 384. According to the present study, the total size of the population is 1.6 million employees in the construction industry of the UAE; therefore, the desired sample size has been regarded as 384 respondents.

In addition, the description of the variables in terms of their measurement has been well presented in Appendix A. For the purpose of data analysis, the current research considers the two-step approach under smart PLS.

4.0 Results

In the initial effort, a sample of 500 questionnaires, with the help of team members, has been distributed across different construction-related individuals of the oil and gas industry over a time span of 10 weeks. Out of this distributed sample of 500 questionnaires, the researcher, along with the team members, was able to collect 413 copies from the targeted respondents, whereas the rest of the 87 questionnaires have not been returned by the respondents due to several reasons. These reasons might include the lack of motivation or interest to fill in the questionnaires, time constraints, privacy concerns, lack of understanding of the questionnaire, forgetfulness, and other personal or organisational concerns. Consequently, the stated number of 87 questionnaires was automatically dropped from the final sample of questionnaires. Moreover, a detailed investigation of the collected questionnaires has made it evident that a few questionnaires have been observed with missing or incomplete responses from the respondents. These incomplete questionnaires with missing responses were a total of 52, hence dropped from the sample of 417. Additionally, the researcher has further found that there were 8 outliers in the data as observed during the data filtration process. For this reason, a final sample of the valid responses of 353 is good enough for applying the measurement model and structural model assessment. Table 1 provides the outlook for the sample response rate and valid sample, respectively. Figure 3 covers the graphical representation of the sample response and valid response rate.

In addition, in the initial phase of this study, the investigators conducted a thorough examination of the measurement model to ensure the internal consistency, reliability, and validity of the constructs. Additionally, they took careful steps to address the potential issue of Common Method Bias (CMB) and conducted a

Table 1. Sample Response and Valid Response Rate

Questionnaire	Frequency	%
Total distributed	500	100
Not returned by the respondents	87	17.4
Questionnaires with missing responses	52	10.4
Outliers found	8	1.6
Usable for analysis	353	70.6
Valid response rate	70.6	

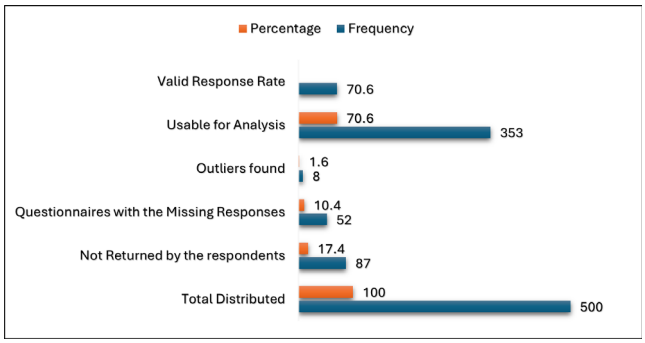


Figure 3. Sample Response and Valid Responses. Source: Self-developed

robust test to minimise its impact. To assess the internal consistency and reliability of the data, the researchers employed two widely recognised metrics: "Cronbach's Alpha (α) and Composite Reliability (CR)." These metrics play a pivotal role in determining how consistently the indicators of constructs measure the underlying concept. The researchers aimed for scores exceeding 0.70 for both Alpha and CR, signifying a satisfactory level of internal consistency and reliability[22].

The researchers also gave significant attention to examining convergent validity, which investigates how effectively the indicators of a latent variable are interrelated based on established theoretical foundations from prior research[23]. To assess convergent validity, two key metrics were employed: "factor loadings and average variance extracted (AVE)"[24]. Factor loadings of each item were scrutinised to determine the internal consistency of the constructs. Factor loadings exceeding 0.7 were indicative of strong internal consistency, affirming that each item accurately represents its corresponding latent variable[23]. Consistent with the recommendations outlined by Hair *et al.*[24], it was expected that constructs would exhibit AVE values equal to or greater than 0.5 to establish satisfactory convergent validity.

Additionally, the study examined discriminant validity to assess the distinctiveness of each concept within the model, with the aim of preventing substantial correlations between indicators of one construct and those of other constructs. To evaluate discriminant validity, the criteria set forth by Fornell and Larcker[25] were followed, which stipulate that the square root of AVE for each construct should surpass the correlation of that construct with other constructs. The researchers also considered HTMT (Heterotrait-Monotrait) ratios as an additional measure

Table 2. Construct Reliability and Validity

Variables	CB Alpha	CR_rho_a	CR_rho_c	AVE
ECR	0.827	0.836	0.897	0.743
ENR	0.874	0.878	0.914	0.727
LPR	0.849	0.883	0.906	0.764
PLR	0.799	0.799	0.883	0.715
PRS	0.890	0.895	0.924	0.752
CRR	0.736	0.734	0.851	0.656

to verify discriminant validity. Through a rigorous examination of these aspects, the researchers ensured the robustness of the measurement model, establishing a solid foundation for subsequent data analysis and the meaningful interpretation of the study's findings.

The findings under Table 2 show the reliability and validity of the latent constructs entitled ECR, ENR, LPR, PLR, PRS, and CRR, respectively. The results report that there is no problem with the construct reliability and validity in terms of CB alpha, composite reliability, and average variance extracted. Figure 2 shows the measurement model output.

Under the SEM technique for exploring the direct relationships between the exogenous and endogenous constructs of the study, the results have been reported in Table 3. The findings have been represented through coefficients based on the original sample, sample mean, relative standard deviation, t-value and pvalue, respectively. More specifically, it is found that the coefficient for the ECR towards PRS is -0.344 with the relative value of standard deviation as 00049. Based upon the stated coefficient and standard deviation, the hypothesis has achieved the tvalue of -7.05 with a pvalue of 0.000. It means that there is a significant and negative impact of ECR on determining the project-related success among the construction projects in the oil and gas industry of the UAE. This impact indicates that keeping the rest of the factors constant, a one per cent change in the value of ECR tends to decrease the value of project-related success by 0.344, which is found to be highly significant at 1% as pvalue is less than 0.000. In this regard, several risk factors can be observed under the title of ECR, having their adverse influence on the project's success. Under the present study, these risk factors have been measured through economic and financial crisis, foreign currency fluctuation, higher insurance and transportation prices, and lack of infrastructure projects, respectively. These factors are showing their combined and adverse impact on reducing the success of the construction projects in the oil and gas industry of the UAE.

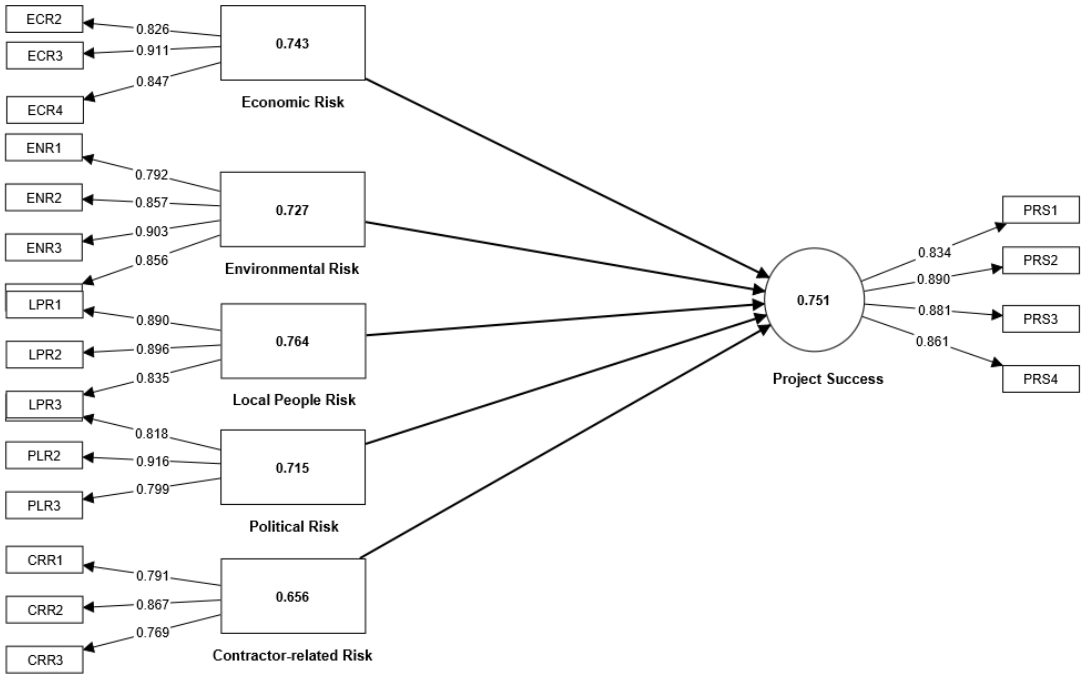


Figure 4. SEM Model.
Source: Self-developed

In addition, the findings under Table 3 also report the direct relationship between environmental risk and project success among the construction projects of the oil and gas industry in the UAE. As per the findings, the value of the coefficient for the ENR towards PRS reflects a score of -0.266 with a standard deviation of 0.057. Additionally, the value of T-statistics has been found as -4.682 with the p-value of 0.000. Based on the relative t-value and p-value, it is inferred that there is a significant and negative impact of environmental risk factors on the project success among the oil and gas construction projects in the regional context of the UAE. The stated coefficient is highly significant at 1%, claiming that keeping the rest of the factors constant, a one per cent upsurge in the value of ENR tends to cause a decline in the value of project-related success by 0.266, which is not a good indication. In this regard, the existing studies like Akanni *et al.*[26] state that the project's environmental factors have their significant linkage in determining the project performance and success-related factors.

Moreover, the findings under Table 3 explore the role of local people's risk towards the success of the construction projects in the oil and gas industry of the UAE. As per the given findings, it is found that the coefficient for the LPR towards PRS is 0.110 with a standard deviation of 0.056. Based upon the given coefficient and the stated standard deviation of the coefficient, the researcher has achieved a t-value of 1.945 with a pvalue of 0.052, significant at 10%. It means that there is a significant and positive impact of LPR on the PRS among the construction projects of the oil and gas industry of the UAE[27,28]. More specifically, it shows that keeping the rest of the factors constant, a 1% upsurge in the value of the LPR is positively impacting the PRS, hence, causing an upward shift of 0.110 in the value of project-related success among the oil and gas industry. In this regard, the current findings are consistent with Abudaqa *et al.*[29], who have found that the impact of local people's risk on the project-related success is positively significant when explored through the original sample with the help of a structural equation modelling approach. However, this impact is negatively significant under mean sample consideration, respectively[30,31].

In addition, the findings under Table 3 also indicate the relationship between the political risk and project-related success among the oil and gas industries in the UAE. The findings reveal a coefficient of 0.060 with a standard deviation of 0.037. Moreover, the given value of the T-statistic is 1.628 with the pvalue of 0.104. As the t-score is less than the threshold level of 1.96 and the p-value is also insignificant even at 10%, therefore, it is inferred that there is an insignificant relationship between the political risk and project-related success[32,33]. This might be due to various reasons, where the relationship between political risk and project-related success is not statistically significant. For instance, the region of the UAE has been well recognised for its noteworthy political stability and a favourable environment for business operations and commercial and industrial activities. In this regard, the government has implemented policies to encourage foreign direct investment and accelerate economic expansion through several other financial and economic strategies.

Finally, the findings under Table 3 cover the direct relationship between contractor-related risk on project-related success in the oil and gas industry. The findings reveal that there is a negative impact of contractor-related risk on the project success among construction projects in the oil and gas industry. More specifically, the value of the coefficient for the CRR is -0.287 with a standard deviation of 0.050. Through the stated coefficient and standard deviation, the t-score of 5.715 has been achieved, which further provides the p-value of 0.000. It means that there is a significant and negative impact of CRR on the PRS in the regional context of the UAE. More specifically, it indicates that keeping the rest of the factors as constant, a one per cent change in the value of CRR tends to change the PRS by -0.287 when considered through an original sample of the study. This negative impact implies that contractor-related risk factors have their adverse influence on the performance of the construction projects, specifically in the oil and gas sector. In this regard, the research work conducted by Alblooshi *et al.*,[34] reveals that contractor-related factors play their critical role to play towards the construction projects Abudaqa *et al.*, 2018[35] have

Table 3. Direct relationships between the variables

Path	Original sample (O)	SD	T statistics	P values
ECR -> PRS	-0.344***	0.049	-7.055	0.000
ENR -> PRS	-0.266***	0.057	-4.682	0.000
LPR -> PRS	0.110*	0.056	1.945	0.052
PLR -> PRS	0.060	0.037	1.628	0.104
CRR -> PRS	-0.287***	0.050	-5.715	0.000

also examined the various factors towards determining the sustainable management of construction projects. Ahmed et al. 2022[31] confirm that the findings reveal that, among others, the contractor-related factors are playing a substantial role in project management.

5.0 Conclusion

The purpose of the present study is to examine the effect of critical risk factors on the construction project success in the oil and gas industry of the UAE. The results explore direct relationships between variables using the Smart PLS structural equation modelling technique. The results indicate significant and negative impacts of critical risk factors (economic, environmental, and contractor-related) on project success within the oil and gas construction projects in the UAE. Conversely, there is a positive and significant relationship between local-people risk and project success, while no significant relationship is observed between political risk and project success in the UAE. Based upon the provided framework, targeted region and industry, and empirical findings, the study has several contributions which can be identified through theoretical, methodological, empirical, and practical perspectives. Details are given:

This study contributes to the existing literature by exploring the role of various critical risk factors, entitled environmental risk, economic risk, local people risk, political risk, and contractor-related risk, towards the project-related success among the oil and gas industry while exploring the relevant construction projects. In this regard, the study aids the existing knowledge on theoretical grounds. More specifically, the study covers a detailed review of the past studies which provides a comprehensive insight for the readers, academic and, industry experts, managers, and other stakeholders who are directly or indirectly linked with the oil and gas construction projects and want to enhance their understanding related to critical risk factors and their role towards project success. Moreover, the theoretical contribution of this research can also be viewed in a context where it has explored the nexus between critical risk factors and project success through both underpinning and supportive theories. Additionally, the study's theoretical contribution has been covered through discussing the significance of the risk management practices and top management commitment as key moderators on the relationship between critical risk factors and project success in the construction projects of the oil and gas industry. Practically, this research provides several policy implications for different stakeholders. Details are as follows:

Firstly, the present research can help the project managers and related team members while identifying the most critical risk factors that can affect the project's success. In this regard, the project managers can strategically plan for the risk mitigation, efficient allocation of the resources, while reducing the likelihood of uneven future outcomes.

Secondly, the findings under current research can lead to more informed decision making where the project managers and relevant administration can make strategic choices to improve the project's success through observing the role of a range of risk dynamics and their linkage with the project's success. The study underscores the importance of stakeholders involved in oil and gas construction projects formulating strategies to address external risks. Additionally, it emphasises the necessity of clearly defining responsibilities among stakeholders to minimise these risks.

Thirdly, this study also suggests that the construction projects of the oil and gas industry in the UAE need to focus on several models which are substantially helpful in mitigating the adverse effects of risk factors. Alblooshi *et al.*,[34] and Abudaqa *et al.*,[35], These models are entitled as Project Risk Management Model as suggested by Construction Industry Instituted (CII), Construction Project Risk Assessment Model, Risk and Opportunity Management in Projects, Risk Analysis and Management for Projects, Project Risk Wheel (*i.e.*, categories different risk factors based on the cost, schedule and external factors), Failure Mode and Effects Analysis, Bowtie Risk Management Model, Supply Chain Risk Management, Earned Value Management, and safety risk management model, respectively.

6.0 Acknowledgements

I would like to extend my heartfelt gratitude to Dr. Mohd Faiz Hilmi, who was my research supervisor and Dr. Anas Abudaqa for invaluable support and guidance throughout this research. Their expertise, resources, and encouragement have been instrumental in the successful completion of this study.

7.0 References

1. Pacheco-Torgal F, Ding Y, Colangelo F, Tuladhar R, Koutamanis A. Advances in construction and demolition waste recycling: management, processing and environmental assessment. Woodhead Publishing; 2020. https://doi.org/10.1016/B978-0-12-819055-5.00001-2 PMCid:PMC7545234
2. Hussain CM, Paulraj MS, Nuzhat S. Source reduction and waste minimization. Elsevier; 2021. https://doi.org/10.1016/B978-0-12-824320-6.00005-8
3. Alvand A, Mirhosseini SM, Ehsanifar M, Zeighami E, Mohammadi A. Identification and assessment of risk in construction projects using the integrated FMEA-SWARA-WASPAS model under fuzzy environment: A case study of a construction project in Iran. Int J Constr Manag. 2023; 23(3):392-404. https://doi.org/10.1080/15623599.2021.1877875
4. Loo SC, Abdul-Rahman H, Wang C. Managing external risks for international Architectural, Engineering, and Construction (AEC) firms operating in Gulf Cooperation Council (GCC) states. Proj Manag J. 2013; 44(5):70-88. https://doi.org/10.1002/pmj.21365
5. Smith NJ, Merna T, Jobling P. Managing risk in construction projects. John Wiley and Sons; 2014.
6. Mukhtar MM, Amirudin R. The success criteria of public housing project in Nigeria. Int J Built Environ Sustain. 2016; 3(2). https://doi.org/10.11113/ijbes.v3.n2.126
7. Tuuli MM, Adaku E, Banye EZ, Tettey AS. Project scope management in developing countries. Building a body of knowledge in project management in developing countries. World Scientific; 2023. p. 141-178. https://doi.org/10.1142/9789811224720_0005
8. Wai S, Yusof AM, Ismail S. Exploring success criteria from the developers' perspective in Malaysia. Int J Eng Bus Manag. 2012; 4. https://doi.org/10.5772/51096
9. Lamprou A, Vagiona DG. Identification and evaluation of success criteria and critical success factors in project success. Glob J Flex Syst Manag. 2022; 23(2):237-253. https://doi.org/10.1007/s40171-022-00302-3
10. Shinde V, Hedaoo M. A review on productivity improvement in construction industry. Int Res J Eng Technol. 2017; 4(11):210-215.
11. Gamil Y, Rahman IA. Identification of causes and effects of poor communication in construction industry: A theoretical review. Emerg Sci J. 2017; 1(4):239-247. https://doi.org/10.28991/ijse-01121
12. Gavali A, Halder S. Identifying critical success factors of ERP in the construction industry. Asian J Civ Eng. 2020; 21:311-329. https://doi.org/10.1007/s42107-019-00192-4
13. Shibani A, Mahadel O, Hassan D, Agha A, Saidani M. Causes of time overruns in the construction industry in Egypt. Int Res J Mod Eng Technol Sci. 2021; 3(1):510-531.
14. Yap JBH, Chow IN, Shavarebi K. Criticality of construction industry problems in developing countries: Analyzing Malaysian projects. J Manag Eng. 2019; 35(5):04019020. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000709
15. Sambasivan M, Deepak T, Salim AN, Ponniah V. Analysis of delays in Tanzanian construction industry: Transaction Cost Economics (TCE) and Structural Equation Modeling (SEM) approach. Eng Constr Archit Manag. 2017; 24(2):308-325. https://doi.org/10.1108/ECAM-09-2015-0145
16. Ullah F, Tahir MM, Ali A, Farooqui RU. Impact of contractual clauses on cost and time overruns of building projects. Eng Constr Archit Manag. 2017; 24(1):37-53. https://doi.org/10.18820/24150487/as24i1.3
17. Wu Z, Nisar T, Kapletia D, Prabhakar G. Risk factors for project success in the Chinese construction industry. J Manufact Technol Manag. 2017; 28(7):850-866. https://doi.org/10.1108/JMTM-02-2017-0027
18. Zwikael O, Globerson S. From critical success factors to critical success processes. Int J Prod Res. 2006;44(17):3433-3449. https://doi.org/10.1080/00207540500536921
19. Lamprou A, Vagiona DG. (2022). Identification and evaluation of success criteria and critical success factors in project success. Global J Flex Sys Manag. 2022; 23(2):237-253. https://doi.org/10.1007/s40171-022-00302-3
20. Downing D, Clark JR. Statistics the easy way; 1997.
21. Statista. Number of construction workers in the United Arab Emirates from 2014 with forecasts to 2021; 2023. https://www.statista.com/statistics/1351180/uae-number-of-construction-workers/#:~:text=In%202021%2C%20it%20was%20estimated,United%20Arab%20Emirates%20(UAE).
22. Hair J, Sarstedt M, Hopkins L, G. Kuppelwieser V. Partial Least Squares - Structural Equation Modeling (PLS-SEM). Eur Bus Rev. 2014; 26(2):106–121. https://doi.org/10.1108/EBR-10-2013-0128
23. Hair JF, Risher JJ, Sarstedt M, Ringle CM. When to use and how to report the results of PLS-SEM. Eur Bus Rev. 2019; 31(1):2-24. https://doi.org/10.1108/EBR-11-2018-0203
24. Hair JF, Hult GTM, Ringle CM, Sarstedt M, Danks NP, Ray S. Partial Least Squares Structural Equation

Modeling (PLS-SEM) using R. Classroom companion: Business. Springer International Publishing; 2021. https://doi.org/10.1007/978-3-030-80519-7
25. Fornell C, Larcker DF. Structural equation models with unobservable variables and measurement error: Algebra and statistics. J Market Res. 1981; 18(3):382–388. https://doi.org/10.2307/3150980
26. Akanni PO, Oke AE, Akpomiemie OA. Impact of environmental factors on building project performance in Delta State, Nigeria. HBRC J. 2015; 11(1):91-97 https://doi.org/10.1016/j.hbrcj.2014.02.010
27. Kamran HW, Rafiq M, Abudaqa A, Amin A. Interconnecting sustainable development goals 7 and 13: The role of renewable energy innovations towards combating the climate change. Environ Technol. 2024; 45(17):3439-3455. https://doi.org/10.1080/09593330.2023.2216903 PMid:37204776
28. Abudaqa A, Alzahmi RA, Hilmi MF, Almujaini H. Impact of job security, career advancement and employee participation on employee engagement in oil and gas industry, UAE. Universidad y Sociedad. 2023; 15(3):26-36.
29. Abudaqa A, Alzahmi R, Hilmi MF, Ahmed G. How organisational leadership and strategic management helps in business excellence: moderating role of employees' motivation in UAE. Int J Bus Excel. 2024; 33(2):191-209. https://doi.org/10.1504/IJBEX.2024.139915
30. Abudaqa A, Alzahmi R, Hilmi MF Almujaini H. Study of the trends in career success through leadership, innovative behavior and motivation in UAE university, UAE. Universidad y Sociedad. 2023; 15(3):130-138.
31. Ahmed G, Abudaqa A, Jayachandran C, Limbu Y, Alzahmi R. Nation branding as a strategic approach for emerging economies: The case of UAE. Palgrave Stud Market Emerg Econ. 2022; 41-57 https://doi.org/10.1007/978-3-030-88678-3_3
32. Abudaqa A, Alzahmi RA, Hilmi MF, Almujaini H. Impact of job security, career advancement and employee participation on employee engagement in oil and gas industry, UAE. Universidad y Sociedad. 2023; 15(3):26-36.
33. Abudaqa A, Alzahmi R, Hilmi MF, Ahmed G. How supply chain resilience is achieved in SMEs of Dubai, UAE? Considering the flexible supply chain practices as a mediator. Int J Logist Sys Manag. 2023; 45(2):159-174. https://doi.org/10.1504/IJLSM.2023.131420
34. Alblooshi T, Azli M, Hilmi MF, Abudaqa A, Ahmed G. Examining the trends in citizen satisfaction towards e-government services in United Arab Emirates: A structural equation modelling approach. Int J Serv Econ Manag. 2023; 14(1):58-58. https://doi.org/10.1504/IJSEM.2023.129597
35. Abudaqa A, Affendy AH. The effects of instant messaging services on working and communication quality. Int J Sci Technol Res. 2019; 8(11): 38-41.