

Enhancing Organizational Performance in Oil and Gas Industry: A Comprehensive Review of Quality Management Practices

Noor Ali Abdulridha¹ and Mohamad Syazli Fathi^{1*}

¹ Faculty of Artificial Intelligence, Universiti Teknologi Malaysia, Jalan Sultan Yahya Petra, 54100 Kuala Lumpur, Malaysia.

*corresponding author: syazli@utm.my

ABSTRACT

This study aims to conduct a comprehensive review on the implementation of quality management practices (QMP) and their implications of organizational performance in the oil and gas sector. Quality management is crucial in such a complex and high-stakes sector where even minor errors can have significant consequences. The paper systematically reviews quality management practices, emphasizing their advantages and critical factors that impact organizational performance. The findings highlight two key insights: firstly, although QMP demonstrate a positive influence on organizational performance, their adoption within the oil and gas sector remains relatively limited. Secondly, there is a notable scarcity of research focusing specifically on quality management practices within this industry. By addressing these gaps, this review contributes to a deeper understanding of QMP's role in enhancing organizational performance within the oil and gas sector.

Keywords: Oil and Gas sector; Quality Management Practices; Quality Management.

Abbreviations

API	American Petroleum Institute
ISO	International Standards Organization
QMP	Quality Management Practices
TQM	Total Quality Management
TSE	Turkish Standards Institute

1.0 INTRODUCTION

Quality management is a procedure of activities that is conducted to ensure that the development, design, and implementation of a service or product in an organization are effective and efficiently operated. American statistician Edward Deming is famous for his managerial views on productivity, quality, and competitive position, and he formulated a set of points for achieving quality that administrators must pay attention to. Examples of Deming points are removing barriers between different departments, establishing learning and development program, and consistently developing production and services system [1].

The "Shewart Cycle" for quality development, depicted in Figure 1 below, was extensively promoted by Deming and is commonly referred to as Plan, Do, Check, and Act (PDCA). This cycle embodies the philosophy of continuous quality improvement within an organization by integrating principles such as customer focus, meeting customer expectations, and ensuring customer satisfaction as the primary goals of quality management. Effective leadership is pivotal in achieving quality, with strong emphasis placed on the active involvement of all employees, from top management to front-line workers, in the pursuit of quality excellence. This approach underscores the importance of leadership guidance by fostering a culture of participation and collaboration across all levels of the organization to drive quality improvement initiatives effectively [1].

Total Quality Management (TQM), defined by [2], is achieving the continuous improvement of quality for services and goods within organization by integrating the processes and functions of the quality. Total Quality Management is not a department that an organization can buy or a system that it can create; rather it is contribution of all organization workers to implement specific philosophy of quality with commitment to their role and responsibilities. The goal is customer satisfaction. Total quality management is about making the entire organization oriented toward meeting customer needs. Top management and all employees are involved for this purpose. It is about training people, creating a management system, establishing the right culture and monitoring processes, contracting with the right suppliers and adopting the right technologies, and continuous improvement to the satisfaction of the customer.

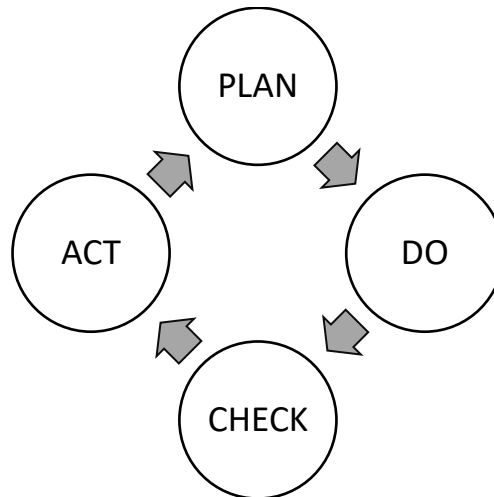


Figure 1. Shewart cycle (Adopted from [1])

TQM has got a great deal of attention by the organizations because it helps organizations to get their goal of achieving excellence and prosperity. Total quality management is the main driver for many organizations to achieve market survival and competitive advantages. Some organizations have failed for various reasons to adopt quality management principles. Stories of failure and success aroused the interest of researchers in researching the obstacles and success factors of total quality management [2]. The (PDCA) quality cycle by Shewhart and Deming is a model that was developed for early quality efforts. It depends on the Plan, followed by Do, then Check and finally Act for quality inspection. The cycle is one of the quality models that is used for quality improvement [87], [2].

Since the opening of the first oil well in 1859 [3], oil production has become a complex and continuous process. API and ISO jointly developed the ISO/TS 29001:2010 standard. It is a quality management system that caters to the development, service, design, installation and production of products for the oil, natural gas and petrochemical industries.

The ISO 9001, Quality Management System standard, is a standard used in the organization despite of the size or sector it operates in. ISO 9001 depends on some principals such as strong customer focus, the process approach and the involvement of top management [72]. It is the basis for the ISO/TS 29001 standard that is related to oil and gas sector. It also includes additional requirements that emphasize waste minimization, distancing and prevention from service providers. This standard is announced by the Turkish Standards Institute (TSE) with the following title: TSE ISO/TS 29001 Petroleum, natural gas and petrochemical industries-Requirements for companies providing products and services-Sector-specific quality management systems. The motivation behind the work is the interest in delving into a typical industry for a region to demonstrate its difference in total quality management perspective from the rest of the world. Oil and gas sector is the main contributor to the country's income [3].

Quality management practices is defined as a combination of procedures and methodologies that aims to improve product and service quality in the organization. Increasing customer satisfaction, reducing errors and defects, and improving operational performance are reasons of developing QMP [68]. Quality management practices have lately gained good awareness in most developed countries but still the companies do not have the most appropriate practices to gain effective quality [69]. Implementation of effective QMP in oil and gas organizations could produce high recognition and reputation for the companies. The implementation of effective quality management practices could reduce wasted cost and time that might cause the companies' losses due to not applying effective quality practices on their products and processes [4].

Meeting the expectation of customer is an essential issue to the organization; thus, the organization pays attention to quality practices [5] and accordingly chooses the suppliers who implement better quality. The companies know that with best quality, they reduce their waste and cost.

There are some studies on quality management practices, but there are still few studies on the impact of petroleum sector [71]. The companies in oil and gas sector need to find which quality practices are important to improve the performance, so that the study will show the importance of applying QMP in developing the performance of oil and gas sector. In literature review below, the studies show the important practices and critical factors of QMP, and the relationship between the practices and organizational performance. This study focuses on the advantages of applying QMP and the critical factors of quality management practices that affect the performance of the organization.

2.0 PRACTICES OF QUALITY MANAGEMENT

QMP is a management philosophy that increases a company's competitiveness. It includes every individual in the organization [6]. It is a holistic approach to gain competitive advantage. Companies have realized the importance of quality with increasing competition. Based on the extensive literature of QMP, about fifty quality factors have been developed to measure Deming's fourteen principles [6].

Across the world, gas and oil industries are adapting practices of quality to achieve competitiveness and high operational performance [7], [95]. A research in the Indonesian oil and gas sector determined a connection between a company's innovative performance, financial performance and QMP. The research found that QMP has a significant relationship with Operational Excellence Practice which leads to improve oil and gas business. The quality management practices in oil and gas industry, such as improving quality program commitment from top management, supervising and leadership, training practices for improving services and products, have caused positive impact on operational excellence [7].

The study by [8] in gas and oil industry determined that teamwork, employee empowerment and top management are the elements to translate innovative ideas into actions and enable QMP. Meanwhile, the study conducted by [9] established that employee involvement, top management support and employee training are related to the organizational performance, implementation and performance of quality management.

Therefore, QMP from all the studies mentioned above is highly related to many organizational factors and critical factors of quality. The next section will explore the critical factors of QMP.

2.1 Critical factors of QMP

It is essential to identify the critical factors of QMP in order to implement them in the right way. Juran [10] mentioned in his research the main factors of success and failure of quality initiative. The factor is the commitment of senior management towards improving quality. The research conducted by [11] found that the level of intensive continuous training affects the implementation of quality management.

The improvement quality program developed by [12] consisted assessment of quality costs, commitment of senior and middle management, taking corrective action, zero defect philosophy, measurement of quality indicators, training, an employee appreciation plan and setting clear objectives. On the other hand, the results from empirical study have validated the quality management critical factors found by [14] such as reporting and quality data, supplier quality management, service/product design, the top management role, training, quality policy, and operations management, in addition to quality department role and employee relations through comprehensive pretesting for quality management factor. The study ensured that the factors have been validated and suggested further studies are conducted to better understand QMP and researchers focus on different sectors to find the deference between them.

With the implementation of quality processes, [13] stated that the company will operate with the lowest cost and high efficiency. The research conducted by [14] identified the critical factors of QMP that should be used at the operational level. The factors are operations management, workforce management, support of top management, customer engagement, supplier engagement, product design and information quality.

The TQM survey instrument designed by [15] was applied to improve the understanding of TQM through the validated 10 critical factors of Baldrige model. The result of the study could be used to improve self-assessment models in the organizations.

The research conducted by [16] aimed to identify soft and hard quality elements and their relationship to the performance of the organization. The study found that continuous improvement workforce and customer focus have direct impact on the performance. Studies were done by [17], [99] by using a survey in small and medium enterprises (SMEs) which classified the 12 aspects of QMP. The aspects are quality of data and reports, customer satisfaction, training and education, use of human resources, process quality management, strategic quality planning, continuous improvement, management commitment, leadership, performance measurement, supplier liaison, customer focus, and colleagues' professional. These factors affect the performance with different percentage. The study conducted by [18] declared that the dimensions of strategic planning and leadership, analysis, customer focus and information, human resource management, supplier management and operations management are positively related to quality management practices.

A study by [19] declared that quality management practices are related to some interconnected factors such as top management, development, training, knowledge management, customer and information focus, supplier quality, process management, measurement, information management and how the company gets better performance with the practices mentioned. Survey-based research [20] investigated the construction industries on the usage level of QMP implementation. The quality practices used are senior leadership management, people management, supplier management, organizational learning, customer management, operations management, quality information management and continuous improvement.

The research conducted by [21] revealed that manufacturing services industries in India reported seven critical factors of quality, which are categorized differently in both industries. The factors are continuous improvement, senior management commitment, teamwork and customer satisfaction, training of employee and feedback, and communication effective.

Another research conducted by [22] in the gas and oil industry in Iran found that employee training and development, management participation, and worker engagement are the key factors of operational performance in terms of inconsistency. The researcher [23] conducted a paper to determine the main elements of quality in the Libyan construction industry. The factors are communication for quality improvement, organization management, training and culture, employee engagement and development. Considering the following factors studied, the implementation level of quality management involves customer focus, continuous support, employee involvement, information and analysis, employee training, quality organization, supplier quality management, statistical quality technology, management support, and supreme and quality system improvement [24].

The research by [25], [99] revealed that there is a significant constructive relationship of projects related to gas and oil with quality practices and project performance. The research conducted by [6] argued that customer focus, leadership and strategic planning are critical factors for resolving quality-related issues in the oil and gas sector in which practitioners need to focus more. The research conducted by [26] used technology factor, top management skills, teamwork, consumer factor, communication factor, economic factor, advantage competitive, market orientation, financial factor and policy of government to determine the level of quality management implementation in Indian SMEs.

The study conducted by [27] was based on eight quality constructs used to evaluate the internal quality of the company, which are quality training, support senior management for quality management, quality data and reports, product/service design, process management, problem solving, rewards and continuous improvement.

Many other researchers [28-37] worked on different cultural contexts in identifying the critical factors of QMP. The results of the research varied with regard to the number and type of quality aspects that were taken into account [38].

A study was conducted by [6] in the oil and gas sector to overcome quality problems, customer focus, strategic planning and leadership are critical factors. Quality management practices aspects that have been studied worldwide by various researchers have been recognised in terms of quality awards and models. The models found are Malcolm Baldrige National Quality Award, European Quality Foundation (EFQMA), and Deming Award Model, in which these models take a baseline from which all QMP factors are implemented and extracted [6].

It could be concluded from the literature that QMP is a multidimensional approach, because it is a set of different factors that are used to improve and measure quality levels.

2.2 Quality management practices factors

Anderson [39] showed that teamwork, leadership, scientific approach to problem-solving, customer focus are the factors of QMP. On the other hand, [40] studied on continuous improvement, visionary leadership, employee fulfillment, external and internal cooperation, customer satisfaction, and learning process management as the QMP factors.

Another study by [29] identified process control feedback, top management support, teamwork, product design, quality improvement rewards, quality leadership, supplier involvement, process management, workforce management, customer involvement and quality information as the factors of QMP.

Factors such as employee empowerment, statistical process control usage, top management commitment, employee involvement, internal quality information usage, supplier performance, benchmarking, customer focus, supplier quality management, design quality management and employee training have been studied by [15].

Besides strategic quality management, corporation culture for quality, people and customer management, operational quality planning, teamworking, communication of improvement information, external interface management, customer satisfaction orientation, supplier partnerships, quality improvement measurement systems have also been mentioned by [37]. Thus, many researchers have reported on different success factors of QMP.

The researcher [41] conducted a study on critical success factors. They found that common success factors of QMP are customer focus, commitment and leadership of senior management, training and information, supplier management, analysis operations management, employee engagement, human resource management, strategic planning, service and product design, teamwork, continuous improvement, and process control. Measurement, employee empowerment, social responsibility, quality assurance, and employee satisfaction are the other factors of QMP as shown in Table 1.

Table 1: Quality Management Practices Factors

Author	Year	QMP factor
Saraph [42]	1989	Top Commitment Management, Teamwork, Development, Training, Employee Engagement, Training, Product/Service Design, Operations Management, Quality Management, Customer Focus
Kessler [43]	1993	Management Leadership, Role of the Quality, Process Management, Supplier Quality Management, Quality Data and Reporting Department Employee Relations
Flynn [14]	1994	Quality Improvement Teams, Statistical Control Methods, Customer Satisfaction Monitoring, Production-Oriented Practices, Customers Satisfaction, Work Simplification, Self-Inspection, Process Reengineering, Manufacturing Cells or Work Cells, Cost-of-Quality Monitoring, Just-in-Time Deliveries, Cross Functional Planning, Quality Councils, Collaboration With Suppliers
Wilson & Collier [44]	2000	Education and Training, Top Management, Work Environment, Involvement of Teamwork, Employee Quality Culture
Ho & Shih [45]	2001	Strategic Planning, Leadership, Information & Analysis, Process HRM, Management
Al-Rasheed & Al-Khalifa [46]	2009	Customer Focus, Leadership, Use of Just-In-Time Principles, Use of Teams, Personnel Training, Use of Benchmarking, Cooperative Supplier Relations, Workforce Commitment, Shared Vision Use of Advanced Manufacturing Systems
Sadikoglu & Zahir [47]	2010	Top Management Leadership and Commitment, Vision and Quality Policy, Training, Education and Rewards, Employee Participate, Supplier Management, Cost of Quality, Continuous Improvement, Process Control, Customer Focus, Culture Information Technology
Al-Ani & Adhmawi [48]	2011	Customer Orientation Benchmarking, Top Management Support, Product/Process, Design, Quality Information Availability, Employee Involvement, Strategic Quality, Quality Information Usage, Planning, Employee Training, Quality Citizenship, Supplier Quality
Parast [22]	2011	Employee Training and Relations, Supplier Quality Data, Quality Management and Reporting
Siddiqui [8]	2012	Strategic Planning, Customer Focus and Organization Process Management, Performance, Supplier Quality
Goicoechea & Fenollera [49]	2012	Quality Costing, Benchmarking, Quality Function Deployment
Jaafreh & Al-abadallat [50]	2013	Human Resources, Leadership, Customer Focus, Process of Management Training and Education
Jain & Samrat [51]	2015	Supplier Quality Management, Leadership, Knowledge and Process Management, Customer and Training
Putri [52]	2016	Quality Assurance, Top Management, Production Planning
Dey [53]	2016	Customer Focus, Management Responsibility, Supplier Management and Resource-People
Srinivas [54]	2019	Employee Training, Top Commitment Management, Employee Participation

2.3 The relationship between QMP and organizational performance in oil and gas sector

Several studies have explored the relationship between Quality Management Practices (QMP) and organizational performance within the oil and gas sector. For instance, [56] introduced a model and framework aimed at enhancing the performance of Indian companies through Total Quality Management (TQM) implementation, which identified key performance indicators for companies to gauge their effectiveness. Similarly, [51] addressed the dearth of empirical studies on TQM implementation in developing countries like Libya, particularly within the oil and gas sector, by identifying critical success factors and establishing a framework for TQM implementation. They emphasized the importance of factors such as customer-led processes, senior management commitment, employee engagement, and continuous improvement culture in achieving

organizational sustainability. At the Jordanian Petroleum Refinery Company (JPRC), [57] found that the application of TQM practices positively impacted business performance compared to companies not implementing TQM.

Moreover, studies like [58] in the Yemeni oil industry highlighted a significant relationship between individuals' readiness for change and TQM principles, underscoring the importance of organizational adaptability. In Iraq, [59] demonstrated a statistically significant relationship between TQM, organization performance, and supply chain management for an oil pipeline company, emphasizing the interconnectedness of these factors.

Furthermore, research in Iranian oil and gas companies by [61] identified leadership, customer focus, and strategic planning as critical success factors for TQM implementation, aligning with the findings of [63] who emphasized the importance of employee awareness, involvement, and senior management commitment in TQM success within gas and oil service companies. Similarly, studies in Saudi Arabia [64] and Egypt [65] highlighted the positive impact of QMP on organizational performance, while [66] emphasized the role of quality management-based maintenance programs in reducing downtime and failures, ultimately enhancing customer satisfaction. Additionally, [67] found a significant correlation between customer satisfaction and QMP, reinforcing the idea that effective quality management practices contribute positively to organizational performance.

Overall, these studies collectively underscore the importance of various QMP, including employee training, top management commitment, customer focus, leadership, and the use of benchmarking, that positively influence firm performance within the oil and gas sector.

2.4 Advantages of QMP in oil and gas industry

The practices of quality management in the oil and gas sector represent a critical area of interest due to their direct correlation in enhancing organizational performance and gaining competitive advantages. Key practices such as effective management of workers, customer focus, and strong leadership are intricately linked to improving operational performance, while behavioral factors contribute significantly to enhancing competitive advantages within oil and gas companies [79]. Furthermore, the scale of Quality Management Practices (QMP) utilization and the capital structure of organizations are intertwined with overall performance outcomes [100].

Specific investigations, such as the exploratory study conducted by [75], have delved into the relationship between distinct QMP and quality performance in the oil and gas sector, revealing that the core of QMP yields success across various quality dimensions. Moreover, research conducted in a Spanish oil and gas plant by [80] highlights the predominant association of QMP application with operational performance improvement, in which human resource practices and product design emerge as significant predictors. Similarly, studies focusing on pipeline transportation and production within the oil and gas sector have demonstrated how systematic implementation of QMP in pipeline projects can prioritize critical activities such as maintenance [81].

An international review study, leveraging AI technology, aimed at enhancing environmental management in the oil and gas market across different countries. The study revealed that adopting AI technology can lead to improvements in stability, financial efficiency, and environmental outcomes, ultimately fostering sustainable development [82]. In the Libyan oil and gas industry, a study employing the Deming management model underscored the necessity of an integrated approach to QMP implementation to achieve quality goals effectively [83].

Application of QMP in the oil and gas industry yields numerous advantages, including performance enhancement, financial stability improvement, and competitive advantage for organizations. Behavioral factors like employee engagement and leadership play pivotal roles in the success of QMP implementation. Additionally, integrating technologies such as AI and emphasizing environmental management contribute significantly to sustainable development. A systematic approach to Quality Management, supported by robust infrastructure and a culture of knowledge sharing, is indispensable for addressing operational challenges and attaining strategic quality objectives [84], [85], [86].

2.5 Enhancing performance through quality management

The enhancement of the performance in oil and gas companies has faced many challenges issues that involve different strategies such as training and development strategies, professional commitment strategies and leadership strategies [88].

A study in oil and gas sector in Pakistan investigated the relationship between the strategies of training and development implemented in the organization on the performance of the organization. The study found that the training and development strategy implemented leads to make the employees more satisfied with their work and that positively affects on the performance [89]. In contrast, TQM practices have mainly affected competitive performance in an unequal way for each component of quality [90], [91].

A study done by [92] found that employee engagement in oil and gas sector develops internal improvement, process control, efficient supplier relationship and customer satisfaction. It means the impact of employee engagement passively affects the performance.

Enhancing organizational performance in the oil and gas industry is closely linked to the implementation of quality management practices across various domains. Green HRM, supported by top management, improves environmental outcomes and organizational performance. Training and development, along with transformational leadership, directly contribute to employee productivity and organizational success. While TQM has a significant impact on competitive performance, the effectiveness of specific components varies. Quality management systems, when implemented effectively, lead to increased customer satisfaction and better process control. Finally, professional commitment and competence are crucial for optimal job performance, which is essential for organizational effectiveness [93], [94].

The performance of companies inside the oil and gas can be enhanced through a mixture of powerful OHSM practices, inexperienced performance management and strategic human resource management [96]. Additionally, elements such as compensation, communication and professional commitment play substantial roles in enhancing worker performance [97]. Technological efficiency and resilience to disruptive activities are also essential for preserving and enhancing organizational overall performance of this industry [98].

3.0 RESULTS AND DISCUSSION

From Table 1, QMP factors such as top management commitment, employee participation, quality function deployment, strategic quality, quality information usage and other factors have been identified and these studies showed the impact of these factors on the positive side of organization performance. In addition, the studies showed that employee awareness, involvement, and senior management commitment are examples of factors that affect the success in implementing TQM in oil and gas companies, while lack of resources is found in the aspect of practical studies of applying quality management practices. The studies showed that the application of QMP model in oil and gas companies is limited.

From the relationship between organizational performance and QMP literature above, positive impact of QMP has been identified. The literature study shows that the implementation of quality management practices is the main key to producing high quality items and accordingly develop the performance of the business and companies. Quality management practices in the oil and gas sector lead to improved operational performance, competitive advantage, environmental and financial efficiency, and alignment with sustainable development goals, with significant factors including leadership, customer focus, product design, human resource practices, and knowledge management.

In order to maintain the positive impact of applying QMP on performance of organization and business in oil and gas sector, the gap of resources should be covered while tools and guides for the companies should be provided for the process of continuous improvement and enhancing the performance.

4.0 CONCLUSION

The literature review reveals a significant gap in research regarding the application of Quality Management Practices (QMP) in the gas and oil exploration business, particularly in practical field settings. Despite the critical role of QMP in the oil and gas sector, the number of papers addressing their implementation is notably lacking. This gap underscores the need for further investigation to fill this research void and provide insights into the effective application of QMP within this specific domain.

Furthermore, the scarcity of research on QMP implementation in the oil and gas sector highlights a clear deficiency in published literature. This gap presents an opportunity for future research to address and potentially rectify, thereby contributing to a more comprehensive understanding of QMP's impact within this industry.

Given the importance of Total Quality Management (TQM) practices in enhancing organizational performance, studying its implementation within the oil and gas sector becomes imperative. Linking success factors to organizational performance allows for a deeper understanding of how TQM practices influence overall performance outcomes. This research endeavor holds a promise in shedding light on the key factors that drive organizational success and may serve as a catalyst for companies to adopt QMP, thereby improving their performance.

Moreover, the findings of this study could offer valuable insights to companies, encouraging them to implement QMP to reap the benefits of enhanced performance. Additionally, it may aid researchers and experts in developing tools or guides for continuous performance improvement based on the factors and practices identified in the study.

In conclusion, quality management practices play a pivotal role in organizational success by influencing various performance outcomes and competitive advantages. While existing literature suggests that effective implementation of QMP positively contributes to firm performance, it is important to recognize that the strength of this relationship may vary depending on specific practices or contextual factors. Thus, further research is essential to clarify these differences and facilitate informed decision-making within the industry.

REFERENCES

- [1] W. E. Deming, *The New Economics for Industry, Government, Education*. Massachusetts Institute of Technology, Center for Advanced Engineering Study, 1994, p. 247.
- [2] N. Hietschold, R. Reinhardt, and S. Gurtner, "Measuring critical success factors of TQM implementation successfully—a systematic literature review," *International Journal of Production Research*, vol. 52, no. 21, pp. 6254-6272, 2014.
- [3] P. A. Dickey, "The first oil well," *Journal of Petroleum Technology*, vol. 11, no. 1, pp. 14-26, 1959.
- [4] S. Rodchua, "Factors, measures, and problems of quality costs program implementation in the manufacturing environment," *Journal of Industrial Technology*, vol. 22, no. 4, pp. 1-6, 2006.
- [5] D. H. Stamatis, *Six Sigma fundamentals: A complete introduction to the system, methods, and tools*. CRC Press, 2019, p. 368.
- [6] A. Yazdani, M. Ali Soukhakian, and M. Reza Mozaffari, "Evaluation of critical success factors in total quality management implementation and prioritization with AHP-case study: Pars Oil and Gas Company," *European Online Journal of Natural and Social Sciences: Proceedings*, vol. 2, no. 3(s), pp. 1624-1633, 2013.
- [7] F. M. S. Al-Otaibi, M. F. Alharbi, and A. Almeleehan, "Effect of total quality management practices factors on the competitiveness: Evidence from Saudi Arabia," *International Journal of Business and Management*, vol. 10, no. 5, pp. 85-97, 2015.
- [8] W. S. Ciptono, A. R. Ibrahim, A. Sulaiman, and S. L. S. A. Kadir, "Sustainability of TQM Implementation Model In The Indonesia's Oil and Gas Industry: An Assessment of Structural Relations Model Fit," *Gadjah Mada International Journal of Business*, vol. 13, no. 1, pp. 1-20, 2011.
- [9] F. Siddiqui, A. Haleem, and C. Sharma, "The impact of supply chain management practices in total quality management practices and flexible system practices context: An empirical study in oil and gas industry," *Global Journal of Flexible Systems Management*, vol. 13, pp. 11-23, 2012.
- [10] K. Linderman, R. G. Schroeder, S. Zaheer, C. Liedtke, and A. S. Choo, "Integrating quality management practices with knowledge creation processes," *Journal of Operations Management*, vol. 22, no. 6, pp. 589-607, 2004.
- [11] J. M. Juran, "The upcoming century of quality," *Quality Progress*, vol. 27, no. 8, p. 29, 1994.
- [12] S. L. Ahire and K. O'shaughnessy, "The role of top management commitment in quality management: An empirical analysis of the auto parts industry," *International Journal of Quality Science*, vol. 3, no. 1, pp. 5-37, 1998.
- [13] P. B. Crosby, *Quality is free: The art of making quality certain*. McGraw-Hill, 1979.
- [14] J. V. Saraph, P. G. Benson, and R. G. Schroeder, "An instrument for measuring the critical factors of quality management," *Decision Sciences*, vol. 20, no. 4, pp. 810-829, 1989.
- [15] A. V. Feigenbaum, *Total quality control*. McGraw-Hill, New York, 1991, p. 863.
- [16] B. B. Flynn, R. G. Schroeder, and S. Sakakibara, "A framework for quality management research and an associated measurement instrument," *Journal of Operations Management*, vol. 11, no. 4, pp. 339-366, 1994.
- [17] S. A. Black and L. J. Porter, "Identification of the critical factors of TQM," *Decision Sciences*, vol. 27, no. 1, pp. 1-21, 1996.
- [18] S.-u. Rahman and P. Bullock, "Soft TQM, hard TQM, and organisational performance relationships: An empirical investigation," *Omega*, vol. 33, no. 1, pp. 73-83, 2005.
- [19] W. G. Lewis, K. F. Pun, and T. Lalla, "Exploring soft versus hard factors for TQM implementation in small and medium-sized enterprises," *International Journal of Productivity and Performance Management*, vol. 55, no. 7, pp. 539-554, 2006.
- [20] I. Sila, "Examining the effects of contextual factors on TQM and performance through the lens of organizational theories: An empirical study," *Journal of Operations Management*, vol. 25, no. 1, pp. 83-109, 2007.
- [21] R. Fellows and A. Liu, "Impact of participants' values on construction sustainability," in *Proceedings of the Institution of Civil Engineers-Engineering Sustainability*, 2008, vol. 161, no. 4: Thomas Telford Ltd, pp. 219-227.

- [22] T. Y. Koh and S. P. Low, "Empiricist framework for TQM implementation in construction companies," *Journal of Management in Engineering*, vol. 26, no. 3, pp. 133-143, 2010.
- [23] R. Kumar, D. Garg, and T. Garg, "TQM success factors in North Indian manufacturing and service industries," *The TQM Journal*, vol. 23, no. 1, pp. 36-46, 2011.
- [24] M. M. Parast, S. G. Adams, and E. C. Jones, "Improving operational and business performance in the petroleum industry through quality management," *International Journal of Quality & Reliability Management*, vol. 28, no. 4, pp. 426-450, 2011.
- [25] N. Gherbal, A. Shibani, M. Saidani, and A. Sagoo, "Critical success factors of implementing total quality management in Libyan organisations," in *International Conference on Industrial Engineering and Operations Management Istanbul, Turkey, Istanbul, Turkey., 2012*, pp. 80-89.
- [26] P. Muturi, S. Maranga, and C. Getecha, "A survey of quality management practices in the Kenyan small and medium manufacturing industries," *International Journal of Scientific & Technology Research*, vol. 2, no. 11, pp. 370-374, 2013.
- [27] K. M. Sawalim, "Appraising Project performance and Total Quality Management (TQM) practices in the Libyan oil and gas sector," *Dissertation, Liverpool John Moores University (United Kingdom)*, 2015.
- [28] S. S. Dubey and A. Kumar, "Literature review on implementation of total quality management," *International Research Journal of Engineering and Technology*, vol. 4, no. 2, pp. 1839-1943, 2017.
- [29] K. Panuwatwanich and T. T. Nguyen, "Influence of total quality management on performance of Vietnamese construction firms," *Procedia Engineering*, vol. 182, pp. 548-555, 2017.
- [30] E. E. Adam Jr, "Alternative quality improvement practices and organization performance," *Journal of Operations Management*, vol. 12, no. 1, pp. 27-44, 1994.
- [31] S. L. Ahire, D. Y. Golhar, and M. A. Waller, "Development and validation of TQM implementation constructs," *Decision Sciences*, vol. 27, no. 1, pp. 23-56, 1996.
- [32] R. S. Allen and R. H. Kilmann, "The role of the reward system for a total quality management based strategy," *Journal of Organizational Change Management*, vol. 14, no. 2, pp. 110-131, 2001.
- [33] L. Bani Ismail, "An evaluation of the implementation of Total Quality Management (TQM) within the construction sector in the United Kingdom and Jordan," *Doctoral thesis, University of Huddersfield*, 2012.
- [34] S. Curkovic, S. Melnyk, R. Calantone, and R. Handfield, "Validating the Malcolm Baldrige National Quality Award framework through structural equation modelling," *International Journal of Production Research*, vol. 38, no. 4, pp. 765-791, 2000.
- [35] Z. S. Dimitriadis, "Total involvement in quality management," *Team Performance Management*, vol. 6, no. 7/8, pp. 117-122, 2000.
- [36] D. Dow, D. Samson, and S. Ford, "Exploding the myth: do all quality management practices contribute to superior quality performance?," *Production and Operations Management*, vol. 8, no. 1, pp. 1-27, 1999.
- [37] M. G. Khwaja, S. Mahmood, and A. Jusoh, "The impacts of quality management on customer focus in the beverages industry," *Proceedings on Engineering Sciences*, vol. 2, no. 1, pp. 81-92, 2020.
- [38] T. C. Powell, "Total quality management as competitive advantage: A review and empirical study," *Strategic Management Journal*, vol. 16, no. 1, pp. 15-37, 1995.
- [39] D. Samson and M. Terziovski, "The relationship between total quality management practices and operational performance," *Journal of Operations Management*, vol. 17, no. 4, pp. 393-409, 1999.
- [40] J. C. Anderson, M. Rungtusanatham, R. G. Schroeder, and S. Devaraj, "A path analytic model of a theory of quality management underlying the Deming management method: Preliminary empirical findings," *Decision Sciences*, vol. 26, no. 5, pp. 637-658, 1995.
- [41] S. Albers Mohrman, R. V. Tenkasi, E. E. Lawler, and G. E. Ledford, "Total quality management: practice and outcomes in the largest US firms," *Employee Relations*, vol. 17, no. 3, pp. 26-41, 1995.
- [42] I. Sila and M. Ebrahimpour, "Examination and comparison of the critical factors of total quality management (TQM) across countries," *International Journal of Production Research*, vol. 41, no. 2, pp. 235-268, 2003.
- [43] F. Kessler, "Total quality management for the oil and gas Industry," in *SPE Annual Technical Conference and Exhibition?*, Houston, Texas, USA, 1993: SPE, pp. SPE-26412-MS.
- [44] D. D. Wilson and D. A. Collier, "An empirical investigation of the Malcolm Baldrige National Quality Award causal model," *Decision Sciences*, vol. 31, no. 2, pp. 361-383, 2000.

- [45] D. Ho, V. Duffy, and H. Shih, "Total quality management: an empirical test for mediation effect," *International Journal of Production Research*, vol. 39, no. 3, pp. 529-548, 2001.
- [46] A. Firend and K. Al-Khalifa, "An examination of TQM critical success factors at Qatar's Oil & Gas industry," *The International Journal of Business and Management Research*, vol. 2, no. 1, pp. 107-127, 2009.
- [47] E. Sadikoglu and C. Zehir, "Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms," *International Journal of Production Economics*, vol. 127, no. 1, pp. 13-26, 2010.
- [48] R. Al-Ani and F. I. Al-Adhmawi, "Implementation of quality management concepts in managing engineering project site," *Jordan Journal of Civil Engineering*, vol. 5, no. 1, pp. 89-106, 2011.
- [49] I. Goicoechea and M. Fenollera, "Quality management in the automotive industry," in *DAAAM International Scientific Book: DAAAM International*, 2012, ch. 51, pp. 619-632.
- [50] A. B. Jaafreh and A. Z. Al-abedallat, "The effect of quality management practices on organizational performance in Jordan: An empirical study," *International Journal of Financial Research*, vol. 4, no. 1, pp. 93-109, 2013.
- [51] M. Munir Ahmad and R. Elhuni, "Critical quality factors for successful TQM implementation in Libyan oil and gas sector," *Benchmarking: An International Journal*, vol. 21, no. 5, pp. 713-733, 2014.
- [52] R. K. Jain and A. Samrat, "A study of quality Practices of Manufacturing Industries in Gujarat," *Procedia-Social and Behavioral Sciences*, vol. 189, pp. 320-334, 2015.
- [53] N. T. Putri, Y. S. r. Mohd, and D. Irianto, "Comparison of quality engineering practices in Malaysian and Indonesian automotive related companies," in *IOP Conference Series: Materials Science and Engineering*, Kuala Lumpur, Malaysia, 2016, vol. 114: IOP Publishing Ltd, p. 012056.
- [54] S. Dey, "A study of quality management practices in electronics industry of northern India," *Doctoral Thesis*, Chitkara University, Department of Applied Sciences, 2016.
- [55] R. Srinivas, D. Swamy, and T. Nanjundeswaraswamy, "Quality management practices in Oil and gas industry," *International Journal for Quality Research*, vol. 14, no. 2, pp. 421-438, 2019.
- [56] F. Talib, Z. Rahman, and M. Qureshi, "Assessing the awareness of total quality management in Indian service industries: An empirical investigation," *Asian Journal on Quality*, vol. 12, no. 3, pp. 228-243, 2011.
- [57] R. A. Al-Damen, "The impact of total quality management on organizational performance case of Jordan oil petroleum company," *International Journal of Business and Social Science*, vol. 8, no. 1, pp. 192-202, 2017.
- [58] Q. A. Al-Maamari, M. Abdulrab, B. A. Al-Jamrh, and A. H. Al-Harasi, "The Relationship Between Total Quality Management Practices and Individual Readiness for Change at Petroleum Exploration and Production Authority in Yemen " *International Journal of Business and Industrial Marketing* vol. 2, no. 6, pp. 48-55, 2017.
- [59] R. H. FOUAD, Z. M. HAMED, and O. A. ABDULWAHHAB, "Exploring TQM and SCM Practices Influence On Oil Pipelines Company's Performance," *International Review of Management and Business Research* vol. 4, no. 4, pp. 1070-1082, 2015.
- [60] A. Alsaidi, "Applying TQM approach in equipment maintenance of oil and gas industry," *International Journal of Engineering Research and Science and Technology*, vol. 3, no. 3, pp. 115-124, 2014.
- [61] A. K. Yazdi, A. Mehdiabadi, T. Hanne, A. H. Sarfaraz, and F. T. Yazdian, "Evaluating the Performance of Oil and Gas Companies by an Extended Balanced Scorecard and the Hesitant Fuzzy Best-Worst Method," *Mathematical Problems in Engineering*, vol. 2022, pp. 1-21, 2022.
- [62] M. Wagimin, K. Elisa, A. Juhary, and N. H. Vembri, "The Effect of Leadership on Employee Performance with Total Quality Management (TQM) as a Mediating Variable in Indonesian Petroleum Companies: A Case Study," *International Journal of Integrated Engineering*, vol. 11, no. 5, pp. 180-188, 2019.
- [63] M. M. Abubakar and G. S. Ebigenibo, "IMPACT OF TOTAL QUALITY MANAGEMENT ON PERFORMANCE OF OIL SERVICING COMPANIES IN PORT HARCOURT " *Global Scientific Journals*, vol. 7, no. 3, pp. 807-817, 2019.
- [64] K. Alofi and A. Younes, "Total quality management (TQM) implementation in the manufacturing sector in Saudi Arabia: A systematic review," *Business and Management Research*, vol. 8, no. 1, pp. 41-54, 2019.

- [65] A. R. ElMelegy, M. Alnajem, and N. Albuloushi, "Assessment of quality performance in the Egyptian manufacturing industry," *The TQM Journal*, vol. 34, no. 5, pp. 1365-1394, 2022.
- [66] J. B. Hmida, A. J. Gaspard, and J. Lee, "TQM-based equipment maintenance in oilfield service industries," *Global Perspectives on Engineering Management*, vol. 2, no. 2, pp. 60-69, 2013.
- [67] S. Mehra and S. Ranganathan, "Implementing total quality management with a focus on enhancing customer satisfaction," *International Journal of Quality & Reliability Management*, vol. 25, no. 9, pp. 913-927, 2008.
- [68] N. Kim-Soon, "Quality management system and practices," in *Quality Management and Practices*, InTech, 2012.
- [69] T. H. Chan and H. A. Quazi, "Overview of quality management practices in selected Asian countries," *Qual. Manag. J.*, vol. 9, no. 1, pp. 23-49, 2002.
- [70] R. S. Behara and D. E. Gundersen, "Analysis of quality management practices in services," *Int. J. Qual. Reliab. Manag.*, vol. 18, no. 6, pp. 584-604, 2001.
- [71] R. Srinivas, Department of Industrial Engineering and Management, JSS Academy of Technical Education, Bangalore, Karnataka, India, D. R. Swamy, and T. S. Nanjundeswaraswamy, "Quality management practices in oil and gas industry," *Int. J. Qual. Res.*, vol. 14, no. 2, pp. 421-438, 2020.
- [72] I. Abuhav, *ISO 9001: 2015 - A complete guide to quality management systems*. London, England: CRC Press, 2021.
- [73] A. Nair, "Meta-analysis of the relationship between quality management practices and firm performance - Implications for quality management theory development," *J. Oper. Manage.*, vol. 24, no. 6, pp. 948-975, 2006.
- [74] H. Kaynak, "The relationship between total quality management practices and their effects on firm performance," *J. Oper. Manage.*, vol. 21, no. 4, pp. 405-435, 2003.
- [75] B. B. Flynn, R. G. Schroeder, and S. Sakakibara, "The impact of quality management practices on performance and competitive advantage," *Decis. Sci.*, vol. 26, no. 5, pp. 659-691, 1995.
- [76] D. Dow, D. Samson, and S. Ford, "Exploding the myth: Do all quality management practices contribute to superior quality performance?," *Prod. Oper. Manag.*, vol. 8, no. 1, pp. 1-27, 1999.
- [77] J. J. Tarí, J. F. Molina, and J. L. Castejón, "The relationship between quality management practices and their effects on quality outcomes," *Eur. J. Oper. Res.*, vol. 183, no. 2, pp. 483-501, 2007.
- [78] V. Siva, I. Gremyr, B. Bergquist, R. Garvare, T. Zobel, and R. Isaksson, "The support of Quality Management to sustainable development: A literature review," *J. Clean. Prod.*, vol. 138, pp. 148-157, 2016.
- [79] D. Samson and M. Terziovski, "The relationship between total quality management practices and operational performance," *J. Oper. Manage.*, vol. 17, no. 4, pp. 393-409, 1999.
- [80] J. M.-D. De Cerio, "Quality management practices and operational performance: Empirical evidence for Spanish industry," *Int. J. Prod. Res.*, vol. 41, no. 12, pp. 2763-2786, 2003.
- [81] C. McGovern, D. Richardson, and R. Longpre, "Quality Management Process for the Design of Monitoring and Inspection Strategies," *Corrosion*, 1998.
- [82] Y. V. Chutcheva, L. M. Kuprianova, A. A. Seregina, and S. N. Kukushkin, "Environmental management of companies in the oil and gas markets based on AI for sustainable development: An international review," *Front. Environ. Sci.*, vol. 10, 2022.
- [83] R. M. Elhuni and M. M. Ahmad, "Investigating the total quality elements based on Deming management model in oil industry in Libya - An empirical study," *Int. J. Product. Qual. Manag.*, vol. 13, no. 2, p. 142, 2014.
- [84] M. Rehan, "The Quality Management Practices, its Implementation and Total Quality Management: A Review of Literature," *Industrial Engineering Letters*, vol. 6, pp. 1-4, 2016.
- [85] N. G. da S. Neves and D. M. R. Salles, "The influences of engagement on the perception of quality management systems in the oil and gas industry," *Revista Científica Multidisciplinar Núcleo do Conhecimento*, pp. 106-122, 2023.

- [86] A. Harthy, Y. Oo, S. Alsaqri, and A. Karim, "Critical Factors Affecting the Quality Management System in Oil and Gas On-Shore Drilling Sector For In-Sourcing Drilling Model," *International Journal for Advance Research and Development*, vol. 3, pp. 47–61, 2018.
- [87] P. L. Tilkemeier, "The Quality Cycle," in *Quality Evaluation in Non-Invasive Cardiovascular Imaging*, Cham: Springer International Publishing, 2016, pp. 9–20.
- [88] A. Baroun, "Would attitude moderate organizational performance? A case study on the oil and gas industry," *Corp. Gov. Organ. Behav. Rev.*, vol. 7, no. 2, special, pp. 373–384, 2023.
- [89] H. Raza and Foundation University Rawalpindi Campus, "Training and development impact on organizational performance: Empirical evidence from oil and gas sector of Pakistan," *IOSR J. Bus. Manag.*, vol. 16, no. 1, pp. 67–72, 2014.
- [90] S. S. A. Wibowo and F. Y. Adisty, "Analysis of total quality management on competitive performance of oil and gas industry," 2017.
- [91] M. Munizu, "The Impact of Total Quality Management Practices towards Competitive Advantage and Organizational Performance: Case of Fishery Industry in South Sulawesi Province of Indonesia," *Pakistan Journal of Commerce and Social Sciences*, vol. 7, pp. 184–197, 2013.
- [92] N. G. da S. Neves and D. M. R. Salles, "The influences of engagement on the perception of quality management systems in the oil and gas industry," *Revista Científica Multidisciplinar Núcleo do Conhecimento*, pp. 106–122, 2023.
- [93] M. Skaf, "Building organizational decision quality, A source of strategic advantage," in *London 2013, 75th Eage Conference en Exhibition Incorporating SPE Europec*, 2013.
- [94] W. Cai-Jun, *On Establishing Quality Management System in Designing and Monitoring the Drilling Project*. 2010.
- [95] A. Agus and Z. Hassan, "Enhancing production performance and customer performance through total quality management (TQM): Strategies for competitive advantage," *Procedia Soc. Behav. Sci.*, vol. 24, pp. 1650–1662, 2011.
- [96] E. N. K. Nkrumah, S. Liu, D. Doe Fiergbor, and L. S. Akoto, "Improving the safety–performance nexus: A study on the moderating and mediating influence of work motivation in the causal link between occupational health and safety management (OHSM) practices and work performance in the oil and gas sector," *Int. J. Environ. Res. Public Health*, vol. 18, no. 10, p. 5064, 2021.
- [97] A. M. Akpobolokami and Rivers State University, Nkpolu-Oroworukwo, Port Harcourt, Nigeria, "Green Performance Management and Organizational Agility of multinational oil and gas companies in Nigeria," *Journal of Strategic Management*, vol. 6, no. 6, pp. 140–154, 2022.
- [98] S. Sukrasno and F. Elmi, "The effect of compensation, organizational communication, and job satisfaction on employee performance (case study on Civil Servants of the Downstream Oil and Gas Regulatory Agency)," *Dinasti International Journal of Management Science*, vol. 2, no. 6, pp. 943–959, 2021.
- [99] A. Chiarini, P. Castellani, C. Rossato, and N. Cobelli, "Quality management internal auditing in small and medium-sized companies: an exploratory study on factors for significantly improving quality performance," *Total Qual. Manage. Bus. Excel.*, vol. 32, no. 15–16, pp. 1829–1849, 2021.
- [100] M. Potkany, J. Zavadsky, R. Hlawiczka, P. Gajdos, and J. Schmidtova, "Quality management practices in manufacturing enterprises in the context of their performance," *J. Competitiveness*, vol. 14, no. 2, pp. 97–115, 2022.