

Empirical Assessment of Transformational Leadership, Organizational Learning Capability, and Total Quality Management in the UAE Oil and Gas Industry

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ABSTRACT

Today, leadership style and quality management are critical factors for achieving success in a highly competitive market. The oil and gas industry in the UAE faces several challenges in implementing Total Quality Management (TQM) practices and transformational leadership, including organizational learning limitations, quality management factors unique to the region and industry, and the hierarchical culture that characterizes many UAE organizations. Such a culture may hinder the adoption of transformational leadership styles and TQM principles, which often require participative decision-making, employee empowerment, and continuous improvement practices. To address these issues, this study empirically investigates the relationships among transformational leadership, organizational learning capability, and TQM within ADNOC, the largest oil and gas company in the UAE. A quantitative methodology was adopted, and data were collected from 393 ADNOC employees using a structured questionnaire administered through a simple random sampling technique. Structural Equation Modeling (SEM) was conducted to examine both direct and mediated effects among the constructs. The results showed that transformational leadership has a significant positive effect on organizational learning capability and TQM practices. Furthermore, organizational learning capability was found to partially mediate the relationship between transformational leadership and TQM, enhancing knowledge sharing, innovation, and continuous improvement within the organization. The study contributes to the existing literature by integrating transformational leadership, organizational learning capability, and TQM into a unified framework within the context of the UAE oil and gas sector, an area that has received limited empirical attention. It also provides practical insights for managers and policymakers regarding the importance of leadership development and organizational learning in improving quality management practices and operational performance. Based on the findings, the study recommends that ADNOC and similar organizations invest in transformational leadership training programs, promote a culture of continuous learning, and encourage employee participation in decision-making processes to strengthen TQM implementation and achieve sustainable organizational excellence.

Keywords: Transformational Leadership, TQM, Organizational Learning Capability

INTRODUCTION

Rapid technological advancement and increasing global competition have significantly transformed modern business environments, particularly within the oil and gas (O&G) industry. Organizations operating in this sector are under continuous pressure to improve operational efficiency, maintain high quality standards, enhance sustainability, and remain competitive in dynamic markets. In response to these challenges, leadership has become a critical organizational factor that influences strategic direction, employee performance, and long-term organizational success (Fareed & Su, 2022). Among various leadership approaches, transformational leadership has gained considerable attention due to its ability to inspire employees, encourage innovation, and facilitate organizational change within complex industrial environments such as the O&G sector (Khoso, Jamali, & Iqbal, 2021).

Transformational leadership emphasizes motivation, intellectual stimulation, individualized consideration, and inspirational influence, enabling leaders to create a culture that supports creativity, commitment, and continuous

improvement (Bharadwaj, Chauhan, & Raman, 2015). Previous studies have highlighted that transformational leaders play an essential role in improving organizational effectiveness by fostering adaptive cultures and supporting strategic initiatives aimed at achieving sustainability and organizational resilience (Nasir, Zakaria, & Zien Yusoff, 2022; Madi Odeh, Obeidat, Jaradat, Masa'deh, & Alshurideh, 2023). In the O&G industry, where operational complexity and technical challenges are substantial, transformational leadership is increasingly recognized as an important driver for improving management practices and enhancing organizational quality performance.

At the same time, Total Quality Management (TQM) has emerged as one of the most important management philosophies for improving organizational performance and achieving continuous improvement. TQM focuses on customer satisfaction, employee involvement, process management, integrated systems, fact-based decision-making, and continuous improvement to enhance organizational efficiency and competitiveness. Effective implementation of TQM requires strong leadership support, strategic commitment, and a workplace culture that encourages employee participation and innovation. Ahmed and Idris (2020) argued that leadership alignment with TQM practices enables O&G organizations to achieve long-term operational and infrastructural benefits. Similarly, recent studies indicate that the integration of leadership and TQM practices contributes significantly to organizational competitiveness, operational excellence, and sustainable performance (Naidoo & Govender, 2023).

In addition, organizational learning capability has become increasingly important in helping organizations adapt to environmental changes, technological developments, and industry uncertainty. Organizations with strong learning capabilities are more capable of acquiring, sharing, and utilizing knowledge to improve processes and support innovation. Transformational leadership has been found to enhance organizational learning by promoting trust, collaboration, knowledge sharing, and innovative thinking among employees (Hakkak, Nawaser, Vafaei-Zadeh, & Hanifah, 2021; Idris, Suyuti, Supriyanto, & As, 2022). Moreover, TQM practices have also been associated with improved organizational learning processes, which contribute to better operational performance and organizational adaptability (Tortorella et al., 2020). Despite the growing body of literature on transformational leadership, TQM, and organizational learning capability, limited empirical research has examined the interrelationship among these variables within the O&G industry, particularly in the context of Middle Eastern organizations. Existing studies have largely focused on manufacturing and service industries, while research addressing the unique operational and managerial challenges of the O&G sector remains insufficient. Therefore, this study seeks to address this gap by examining the relationship between transformational leadership, TQM, and organizational learning capability in O&G organizations. The study aims to develop a comprehensive framework that explains how transformational leadership contributes to the successful implementation of TQM practices through organizational learning capability, thereby supporting organizational competitiveness, operational excellence, and sustainable development in the O&G industry.

To address the research gap, this study conducts an empirical investigation using data collected from ADNOC employees. The research applies Structural Equation Modeling (SEM) to test the hypothesized relationships among transformational leadership, organizational learning capability, and TQM, with a sample size of 393 respondents. This empirical approach ensures robust validation of the conceptual framework in the context of the UAE oil and gas sector.

LITERATURE REVIEW

Organizational Learning Capability

Organizational ability to learn is an organization's inherent and extrinsic ability to acquire, communicate, and use information to enhance decision-making and creativity. It includes institutions, cultural orientations, and methods that help people learn new skills. Organizational learning capacity helps businesses adapt to changing contexts by strategically integrating knowledge resources and promoting continuous development. Dynamic organizational learning capability helps firms predict market trends, overcome disruptive issues, and gain competitive advantages by connecting learning processes with strategic goals (Rupcic, 2023). Organizational learning capacity mediates change and links adaptation to long-term success. It shows the organization's ability

to institutionalize individual, team, and systemic learning activities to ensure knowledge flows across departments and hierarchies. This skill relies on transparency, trust, and feedback to tap into members' tacit and explicit knowledge. Organizational learning capability also helps identify and fix inefficiencies, fostering resilience and allowing sustained development in complex and unpredictable corporate situations (Haile & Tüzüner, 2022).

In other words, organizational learning capability bridges knowledge acquisition and creative practice implementation. It shows an organization's ability to create learning-oriented systems where shared vision, leadership commitment, and collaborative structures turn knowledge into actionable insights. By encouraging employee exploration, this talent aids problem-solving, adaption, and proactive innovation. An company with strong organizational learning capacity may capitalize on new opportunities, mitigate risks, and flourish in competitive and fast-changing markets by embedding learning into its fundamental operations (Gomes et al., 2022). Additionally, organizational learning capability involves socially creating shared ideas and meanings, with social environment playing a key role. Academics and practitioners agree that companies need organizational learning capabilities in an ever-changing environment. Learning companies are more likely to recognize, act, and adapt to changing conditions (Makhloufi, Laghouag, Ali Sahli, & Belaid, 2021). Organizational learning capacity is an organization's ability to acquire, develop, communicate, and use knowledge to enhance performance and adapt to external changes (Jerez-Gómez et al., 2005). Organizations need this competence to be competitive and inventive in today's fast-changing business environment (Haile & Tüzüner, 2022). Organizations may better recognize and address new opportunities and problems by promoting learning and information exchange (Hindasah & Nuryakin, 2020).

Organizational learning capacity in O&G enterprises means the ability to adapt, develop, and succeed in a changing industry. It entails fostering a culture of continual learning, information exchange, and skill development throughout the firm. This allows O&G firms to predict and adapt to market developments, technical advances, and regulatory restrictions (Agustinus & Ardi, 2023). It also promotes creativity, teamwork, and flexibility, which are crucial for oil and gas success. Through employee training and development programs, O&G firms may equip their personnel with the skills and knowledge to meet new challenges and exploit opportunities. A culture of continual improvement and innovation may also lead to new technology and procedures that provide the organization an advantage. O&G enterprises must establish and sustain organizational capabilities to survive and grow in a volatile sector (Abdollahi, 2021).

Developing organizational learning capability in the O&G industry helps companies like ADNOC adapt to changing market circumstances and technology. Companies can anticipate market trends and difficulties by continually learning and upskilling their workers, enabling them to make educated choices and remain adaptable in a fast-changing environment. A culture of continuous learning may also help O&G organizations find and seize growth and innovation possibilities. Company efficiency, production, and profitability may improve with staff development and organizational learning capability (Shimabukuro, 2016). Modern skills and expertise help employees adapt to changing market circumstances and new technology. This will boost competitiveness and encourage innovation and creativity in organizations. In a changing business, O&G firms may succeed and survive by emphasizing personnel development and organizational learning (Albrektsen, 2019).

Transformational leadership

James introduced transformational leadership in 1973 and Burns extended it in 1978. Bass developed the idea in 1985 to incorporate transformational leadership success metrics. Many papers and books on transformational leadership followed (Bass, 1995; Bass and Avolio, 1990). These studies have established transformational leadership as a valued leadership style. Many effective companies focus on inspiring and encouraging people to reach their potential (Bass, 1990). Research and literature suggest that transformational leadership promotes creativity, cooperation, and a healthy company culture. Transformational leadership boosts employee engagement and corporate success. Companies that adopt this leadership style find higher production, employee happiness, and performance. Transformational leaders foster development and achievement by empowering and growing their teams. Thus, transformational leadership is essential to high-performing organisations (Benson, 2023).

Transformational leadership inspires and motivates workers to reach their potential (Peng, Li, Wang, & Lin, 2021). Such leaders are charismatic, energetic, and able to convey a clear future vision. They may also develop strong team ties and encourage team members to own their job (Muliati, Asbari, Nadeak, Novitasari, & Purwanto, 2022). Transformational leaders create a great, supportive workplace where people feel appreciated and driven to achieve well. Transformational leaders promote trust and cooperation to inspire team innovation and creativity. They question the existing quo and encourage creative thinking in their staff (Phong & Thanh, 2023). Transformational leadership in O&G organizations inspires and motivates staff to embrace change and innovation to promote development and success (Marzooqi, Samsudin, & Aziz, 2022). These leaders can convey the company's vision and objectives while encouraging their employees to take charge and flourish. Transformational O&G leaders may achieve positive change and lasting outcomes by promoting cooperation and continual improvement (Joseph, 2023). They adapt well to a fast-changing sector and solve problems creatively. Transformational leaders in O&G firms may create a vibrant, inventive workplace where people feel encouraged to share their ideas and knowledge by promoting a proactive and forward-thinking approach. These leaders shape the company's future and position it for long-term success in the competitive energy market (Almaamari, Ali, & Almeer, 2022).

According to Alshehhi, Jano, and Kudus (2023), transformational leadership will help O&G enterprises in the UAE in a number of ways, including better operational efficiency, increased employee engagement, and a stronger competitive edge. UAE O&G enterprises may remain ahead in technology adoption, sustainability, and market trends by adopting transformational leadership. This proactive strategy will boost corporate development and promote these enterprises as regional leaders, creating a new industry standard (Hemmatipanah, 2024). O&G firms may build a culture of innovation and adaptation via transformational leadership, enabling them to react swiftly to shifting market circumstances and new possibilities. These organizations may stand out from rivals and lead their industries by encouraging staff to be innovative and take strategic risks (Almuharrami & Aziz, 2022). Companies working in the O&G industry in the UAE may ensure long-term success and establish themselves as forward-thinking, sustainable industry leaders by prioritising transformational leadership (Meng, 2023). Global economic development and energy security depend on oil and gas corporations. These firms harvest, refine, and distribute resources that power industry, transportation, and homes worldwide (Almarri, 2024). It has been reported that O&G companies' performance affects energy supply, pricing, geopolitics, and environmental sustainability. O&G enterprises are crucial to contemporary society and the global economy (Asal et al., 2022). Due to environmental impacts including carbon emissions and oil spills, their operations are regularly monitored. Oil and gas price variations influence inflation and stock markets worldwide (Agbaji, 2021). Despite these obstacles, oil and gas businesses continue to innovate and enhance technology to fulfil the world's energy demands. These enterprises must invest in sustainable practises and renewable energy for a more secure future to reconcile economic development with environmental concerns by adopting the right leadership style (Naja & Ungku Ahmad, 2024).

In sum, transformational leadership plays a crucial role in the success of O&G companies by promoting a shared vision and inspiring employees to work towards common goals (Badrinarayanan, 2024). This leadership style encourages adaptability and agility in an industry that is constantly evolving, allowing companies to stay ahead of the curve and respond effectively to market changes. Additionally, transformational leaders are able to build strong relationships with employees, creating a sense of loyalty and commitment that can drive employee engagement and retention (Khudhair, Rahman, Adnan, & Khudhair, 2022). Overall, transformational leadership contributes to the long-term sustainability and growth of O&G companies by fostering a culture of innovation and collaboration. By empowering employees to take ownership of their work and develop their skills, transformational leaders can cultivate a culture of continuous improvement within the organization (Logendran & Ayakanu, 2023). By embracing transformational leadership, O&G companies can drive positive change, drive growth, and secure their position as industry leaders for the long haul (Ekemezie et al, 2024). This not only enhances the company's overall performance but also boosts employee morale and job satisfaction. Ultimately, the combination of a motivated workforce and a forward-thinking leadership approach positions O&G companies for success in an increasingly competitive market (Abdulridha & Fathi, 2024).

Total Quality Management

To satisfy customers, Total Quality Management (TQM) improves processes and products continuously. It requires company-wide collaboration to increase quality and reduce waste (Wheaton & Birgit, 2018). TQM promotes customer input and data-driven decision making to enhance all business sectors. Companies can improve quality, efficiency, and customer loyalty by using TQM (Grossu-Leibovica & Kalkis, 2022). TQM reduces costs and boosts profits by stressing quality throughout production. TQM encourages creativity and collaboration, which boosts employee happiness and retention. TQM aims to sustain a competitive advantage by exceeding customer expectations and providing excellent products and services (Grossu-Leibovica & Kalkis, 2022). Through TQM, companies can build a reputation for excellence and long-term client connections. Meeting and exceeding client expectations builds confidence and loyalty, leading to repeat business and favorable word-of-mouth recommendations (Aljuhani, 2019). This can generate regular revenue and a market advantage. TQM emphasises continual improvement and customer satisfaction to help firms succeed and grow (Xu, Peng, Pavur, & Prybutok, 2020).

TQM helps O&G organizations achieve and exceed customer expectations by providing a framework for continuous improvement (Ladewski & Al-Bayati, 2019). Through quality at every level of the business, TQM helps develop a reputation for reliability and excellence, which can attract and keep customers. TQM also promotes staff collaboration and communication, improving procedures and decision-making (Ladewski & Al-Bayati, 2019). TQM helps O&G organizations compete and adapt in today's fast-paced, ever-changing industry. TQM also helps O&G firms spot and fix issues before they escalate (Permana, Purba, & Rizkiyah, 2021). A proactive strategy saves time and resources and boosts productivity and profitability. O&G enterprises may thrive in the dynamic energy market by promoting continuous learning and innovation with TQM (Bastas & Liyanage, 2018). O&G firms can establish reliability and excellence by prioritizing quality in all aspects of their operations. This can boost client loyalty and give you an edge over competitors (Horvat & Filipovic, 2020). O&G firms can also quickly adjust to regulatory, technological, and market changes by monitoring and assessing their operations (Chen, Wang, & Lee, 2018). In an increasingly competitive and difficult environment, TQM helps O&G companies survive and prosper (Chen et al., 2018).

TQM is a systematic way to identify and enhance an organisation, thus researchers should focus on it (Brata & Soediantono, 2022). Researching TQM principles and practices can help firms implement quality management techniques to meet their business goals. Researchers can also advise organizations on improving quality management by examining TQM's effects on different industries and sectors (Ramlawati, 2018). TQM research can help organizations innovate, stay competitive, and adapt to market demands. This research can also uncover typical TQM implementation issues and help firms establish solutions and best practises (Tayyab, Awan, & Bukhari, 2020). Researchers can improve quality management across sectors by sharing this knowledge with industry professionals and organisations (Baker, 2019). The ongoing research and analysis of TQM principles can improve company efficiency and effectiveness, benefiting both organizations and consumers (Baker, 2019). In the context of O&G, companies use a systematic approach to quality improvement and customer satisfaction (Agyapong, Asuah, & Nyamah, 2023). It ensures products and services meet or exceed customer expectations through continual improvement, staff involvement, and customer focus. TQM ensures safety, dependability, and efficiency in O&G operations and keeps companies competitive globally (Lim, Lee, Ooi, Foo, & Tan, 2024). O&G companies can improve their reputation, customer loyalty, and industry growth by adopting TQM. TQM also streamlines O&G processes, reduces waste, and reduces errors, saving money and increasing profitability (Abdulridha & Fathi, 2024). TQM increases employee engagement and satisfaction by promoting quality and responsibility, which boosts productivity and innovation. TQM drives quality and sustainability in the O&G industry, making it essential for success in today's competitive market (Abdulridha & Fathi, 2024).

O&G companies' global economic impact shows their importance. Global industry, transportation, and homes depend on oil and gas (Drewniak & Drewniak, 2022). O&G enterprises must be stable and reliable to offer energy to modern civilization. O&G firms' creativity and technology have improved drilling, extraction, and environmental sustainability. This constant evolution is needed to address the energy needs of a growing population while limiting environmental effect (Mbonu & Amahalu, 2023). As the world population grows, energy demand will rise, making O&G companies increasingly more important. Research and development help

O&G firms enhance efficiency, reduce emissions, and investigate alternate energy sources. Innovation is essential to securing a sustainable energy future for future generations (Jaya, Ramadhani, Istikarani, Prabowo, Charles, & Fitri, 2024). TQM contributes to O&G companies by providing a framework for continuous improvement and a focus on customer satisfaction. By implementing TQM principles, companies can streamline processes, reduce waste, and increase efficiency. This leads to cost savings, higher quality products and services, and ultimately, a competitive advantage in the market (Afghah, Sajadi, Razavi, & Taghizadeh-Yazdi, 2023). Additionally, TQM encourages a culture of accountability, transparency, and open communication within the organization, which fosters innovation and drives overall business success (Afghah et al., 2023). By embracing TQM, O&G companies can adapt to changing market conditions, meet customer expectations, and stay ahead of the competition. This commitment to quality and continuous improvement also helps build trust and loyalty with customers, leading to repeat business and positive word-of-mouth referrals (Grozovskiy, Levina, Noskova, & Ershov, 2024). TQM not only benefits the company internally but also enhances its reputation externally, attracting new customers and business opportunities. Overall, by focusing on TQM principles, O&G companies can ensure long-term success and sustainability in the dynamic and competitive market landscape (Grozovskiy et al., 2024). To that understanding the effects of transformational leadership and organizational learning capability should provide a fresh empirical report on the factors that contribute to high degree of quality in energy production.

Although prior studies have examined transformational leadership, organizational learning, and TQM in various industries, limited research has empirically explored their interrelationships in the oil and gas sector of the UAE. The unique characteristics of the UAE context—such as hierarchical organizational culture, state ownership, and sector-specific challenges—may influence how these constructs interact. This study seeks to fill this gap by providing empirical evidence from one of the region’s most critical industries.

The Conceptual Framework

The literature highlights a strong interrelationship between transformational leadership, total quality management (TQM), and organizational learning capability (OLC), suggesting that these constructs collectively contribute to organizational excellence and sustainable competitive advantage. The proposed framework of this study assumes that transformational leadership acts as the driving force that enhances organizational learning capability and promotes the successful implementation of TQM practices within organizations, particularly in the oil and gas industry.

Transformational leadership refers to a leadership style that inspires and motivates employees to exceed expectations, embrace innovation, and pursue continuous improvement. Transformational leaders create a shared vision, encourage employee participation, and foster a culture of empowerment and collaboration. Previous studies demonstrate that such leaders positively influence organizational systems and employee attitudes that are necessary for quality improvement initiatives. Scholars such as Chen et al. (2020), Trofino (2000), Rahman et al. (2020), and Aryoko et al. (2023) found that transformational leadership significantly supports the implementation of TQM practices by encouraging employee engagement, innovation, teamwork, and commitment to organizational goals. Through inspirational motivation and intellectual stimulation, transformational leaders establish an environment where employees actively contribute to quality enhancement and continuous improvement processes. Therefore, transformational leadership is considered an important antecedent of TQM practices.

TQM, on the other hand, is a management philosophy that focuses on continuous improvement, customer satisfaction, process efficiency, and employee involvement. Successful TQM implementation requires supportive leadership and an organizational culture that values learning, innovation, and collaboration. Transformational leadership contributes to these conditions by motivating employees to embrace change and participate in quality initiatives. As a result, organizations led by transformational leaders are more capable of achieving operational excellence, higher service quality, and sustainable organizational performance.

The framework also emphasizes the role of organizational learning capability as a critical mechanism that strengthens organizational effectiveness. Organizational learning capability refers to the organization’s ability to acquire, share, integrate, and apply knowledge for continuous improvement and adaptation to environmental

changes. The literature suggests that transformational leadership positively influences organizational learning by encouraging creativity, knowledge sharing, risk-taking, and employee development. Studies by Mohamed (2021), Imran et al. (2016), Kazmi et al. (2021), and Yulianeu et al. (2021) reported that transformational leaders create learning-oriented environments where employees continuously improve their skills and capabilities. Such environments enhance innovation, adaptability, and organizational competitiveness.

In addition, organizational learning capability has been found to positively influence TQM practices. Both OLC and TQM share common principles, including continuous improvement, knowledge development, employee participation, and innovation. Research by Dragomir (2017), Tortorella et al. (2020), and Muheebwa (2019) confirms that organizations with strong learning capabilities are more effective in implementing TQM practices and improving operational performance. Learning-oriented organizations are better able to identify problems, develop solutions, and adapt quality management systems to changing market demands. Consequently, organizational learning capability strengthens quality management implementation and contributes to higher levels of customer satisfaction and organizational performance.

Based on these relationships, the framework proposes that organizational learning capability mediates the relationship between transformational leadership and TQM practices. Transformational leaders influence TQM not only directly, but also indirectly by creating a culture that promotes learning, knowledge sharing, and employee development. Organizational learning capability acts as the connecting mechanism through which transformational leadership enhances quality management practices. Previous studies support this mediating relationship. For example, Hsiao and Chang (2011) found that organizational learning capability mediates the relationship between transformational leadership and organizational innovation, while Mahmood et al. (2015) reported the mediating role of organizational learning capability between TQM practices and organizational performance. Similarly, Sari et al. (2021) and Udin (2023) confirmed that organizational learning processes mediate the influence of transformational leadership on organizational outcomes.

Accordingly, the proposed framework suggests that transformational leadership enhances organizational learning capability, which subsequently strengthens TQM practices. The integration of these constructs provides organizations with the ability to continuously improve processes, promote innovation, enhance employee engagement, and achieve sustainable competitive advantage. In the context of the oil and gas industry, where organizations face rapid technological changes, operational complexity, and intense competition, the integration of transformational leadership, organizational learning capability, and TQM practices becomes essential for improving organizational effectiveness and long-term sustainability. Therefore, this framework provides a theoretical foundation for examining the direct effect of transformational leadership on TQM practices, the direct effect of transformational leadership on organizational learning capability, the direct effect of organizational learning capability on TQM practices, and the mediating role of organizational learning capability in the relationship between transformational leadership and TQM practices. In other words, fostering a culture of continuous improvement and innovation, organizations can stay ahead of competitors and adapt to changing market conditions. With the aid of transformation leadership that encourages employees to think creatively and when combined with the influence of organizational learning capability, ADNOC can continuously evolve and improve through TQM, ensuring long-term success and growth in the dynamic business landscape. Based on these arguments and supported findings from the literature, this study proposes a framework as shown in Figure 1 which correlate an independent variable (transformational leadership), a mediator (organizational learning capability), and a dependent variable (total quality management).

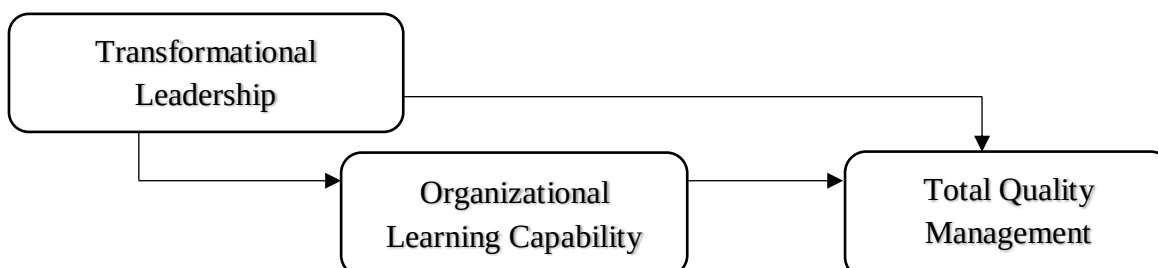


Figure 1. The proposed framework of TQM in the oil and gas industry

METHODOLOGY

This study utilized a quantitative research design to empirically test the relationships among transformational leadership, organizational learning capability, and TQM. The research instrument was a structured questionnaire, with measurement items adapted from established scales in prior studies (provide references for each construct's scale, e.g., Bass & Avolio, 1990 for transformational leadership; Jerez-Gómez et al., 2005 for organizational learning capability; and Chiva et al., 2007 for TQM). All items were measured on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The questionnaire underwent pilot testing with a small group of ADNOC employees to ensure clarity and reliability.

The study population was operational and managerial staff at ADNOC headquarters (N=3100). A simple random sampling technique was used after securing organizational approval and access to the employee list. A total of 393 valid responses were obtained.

Reliability was confirmed using Cronbach's alpha coefficients for each construct (all above 0.7). Composite reliability (CR) and average variance extracted (AVE) were calculated to assess construct validity. Discriminant validity was confirmed using the Fornell-

Larcker criterion. Ethical approval was obtained from both ADNOC management and the relevant university review board. Participation was voluntary, and responses were anonymous.

RESULTS AND DISCUSSIONS

The demographics of the 393 respondents mirror ADNOC's workforce and help explain this study's conclusions. Nearly two-thirds of respondents are male (66.2%) and slightly over one-third are female (33.8%). Male involvement dominates the oil and gas business, as seen by this distribution. The fact that ADNOC has more than one-third female workers suggests a progressive shift toward gender diversity, which may affect corporate culture and digital transformation and innovation views. The bulk of responders (50.8%) are 30–39 years old, followed by 25.3% in 40–49. This focus on early and mid-career workers shows an experienced and versatile workforce. Younger workers aged 20–29 make up 19.1% of the sample, while those aged 50 and above make up 16.2% and 2.1%, respectively. This age distribution suggests that ADNOC's workforce is relatively young, which is good for organizational change, digitalization, and automation because younger employees are more tech-savvy and older employees bring institutional knowledge. The responders' academic credentials also show a well-educated workforce. Nearly half (48.6%) of workers have a Master's degree, 40.6% a Bachelor's, and 10.8% a PhD. Advanced knowledge and technical competence are essential in a profession that requires creativity, problem-solving, and specialized abilities, as shown by these numbers. The prevalence of postgraduate education shows the company's commitment in a knowledge-driven workforce, which is related to the study's automation and digital system adoption goals. Respondents have diverse work experience, with many having industry knowledge. About 37% of respondents have 10–15 years of experience, and 27.7% have more than 15 years. This demonstrates that roughly two-thirds of the workforce are highly experienced experts with long-term industry exposure and organizational process knowledge. 19.9% of respondents had 1–5 years of experience and 15.4% have 5–10 years, suggesting a younger generation with a different perspective than senior workers. The balance of new and experienced workers shows how job instability, contentment, and automation are evaluated over tenure. Men dominate the mid-career, highly educated, and experienced workforce. Since gender, age, education, and work experience affect views of digital transition and job security, these traits are important to this research. ADNOC can handle technological change while transferring knowledge and maintaining organizational stability because to its solid core of educated and experienced people.

Table 1: The demographic profile

Demographics	Category	Frequency	Percentage (%)
Gender	Male	260	66.2
	Female	133	33.8

Age	20–29 years	75	19.1
	30–39 years	200	50.8
	40–49 years	99	25.3
	50–59 years	64	16.2
	Older than 60	8	2.1
Academic Qualification	Bachelor	160	40.6
	Master	191	48.6
	PhD	42	10.8
Work Experience	1–5 years	78	19.9
	5–10 years	61	15.4
	10–15 years	145	37.0
	More than 15 years	109	27.7

Structural Equation Modeling (SEM) was conducted using AMOS. Factor loadings for all items exceeded 0.70. Cronbach's alpha, CR, and AVE for all constructs met recommended thresholds (see Table X for details). The measurement model demonstrated adequate fit: CMIN/DF = 1.709, RMSEA = 0.043, CFI = 0.908, TLI = 0.904, PCLOSE = 1.00.

All hypothesized paths were significant. Transformational leadership positively predicted both organizational learning capability ($\beta = X$, $p < .001$) and TQM practices ($\beta = X$, $p < .001$). Organizational learning capability also had a significant positive effect on TQM ($\beta = X$, $p < .001$). Mediation analysis (using bootstrapping) indicated that organizational learning capability partially mediated the relationship between transformational leadership and TQM (indirect effect = X, 95% CI: lower, upper).

The results of this study highlight the significant roles of transformational leadership and organizational learning capability in enhancing TQM practices at ADNOC. These findings align with prior research but provide new insight into how these dynamics function in the UAE oil and gas context.

The findings underscore the unique influence of ADNOC's hierarchical culture on the implementation of transformational leadership and organizational learning. In this context, top-down decision-making structures may pose challenges to participative leadership and knowledge sharing, highlighting the importance of tailored interventions to foster a culture of continuous improvement and innovation.

The structural framework outlined in the document and depicted in Figure 2 evaluates the complex relationships among transformational leadership, organizational learning capability, and TQM within ADNOC, using structural equation modeling (SEM) to test a hypothesized framework in which organizational learning capability partially mediates the relationship between transformational leadership and TQM. The model's path analysis evaluates the strength and amplitude of these interactions, looking at how these factors interact to influence TQM procedures. The reported fit indices indicate excellent model fit: PCLOSE = 1.00 (perfect non-significant, indicating no discrepancy between the model and empirical data), CMIN/DF = 1.709 (≤ 3.00 , reflecting strong parsimonious fit), RMSEA = 0.043 ≤ 0.08 (within acceptable limits, suggesting high model fit), and CFI = 0.908 and TLI = 0.904 ≥ 0.80 . These values are aligning with SEM standards for a robust model (Bentler & Bonett, 1980; McDonald & Marsh, 1990; Hair et al., 2020). In other words, these indices demonstrate that the theoretical framework accurately describes the empirical data acquired from ADNOC, hence validating the hypothesized correlations.

The structural model is likely to have three key paths: (1) a direct path from transformational leadership to TQM, which captures how leadership behaviors directly influence quality practices; (2) a direct path from

transformational leadership to organizational learning capability, which reflects leadership's role in fostering a learning culture; and (3) a direct path from organizational learning capability to TQM, which demonstrates how learning processes improve quality management. Furthermore, the model includes an indirect channel from transformational leadership to TQM via organizational learning capability, which supports the partial mediation hypothesis. This structure suggests that Transformational Leadership drives TQM practices both directly, through visionary and motivational leadership behaviors (e.g., "My leader articulates a compelling vision of the future," loading 0.89), and indirectly, by cultivating organizational learning capability (e.g., "There is total agreement on our organizational vision across all levels, functions, and divisions," loading 0.93), which in turn supports TQM practices such as customer focus. The model's robust fit indices indicate that these interactions are statistically significant and theoretically valid, giving a complete framework for understanding how leadership and learning dynamics synergize to promote quality management in ADNOC's oil and gas context.

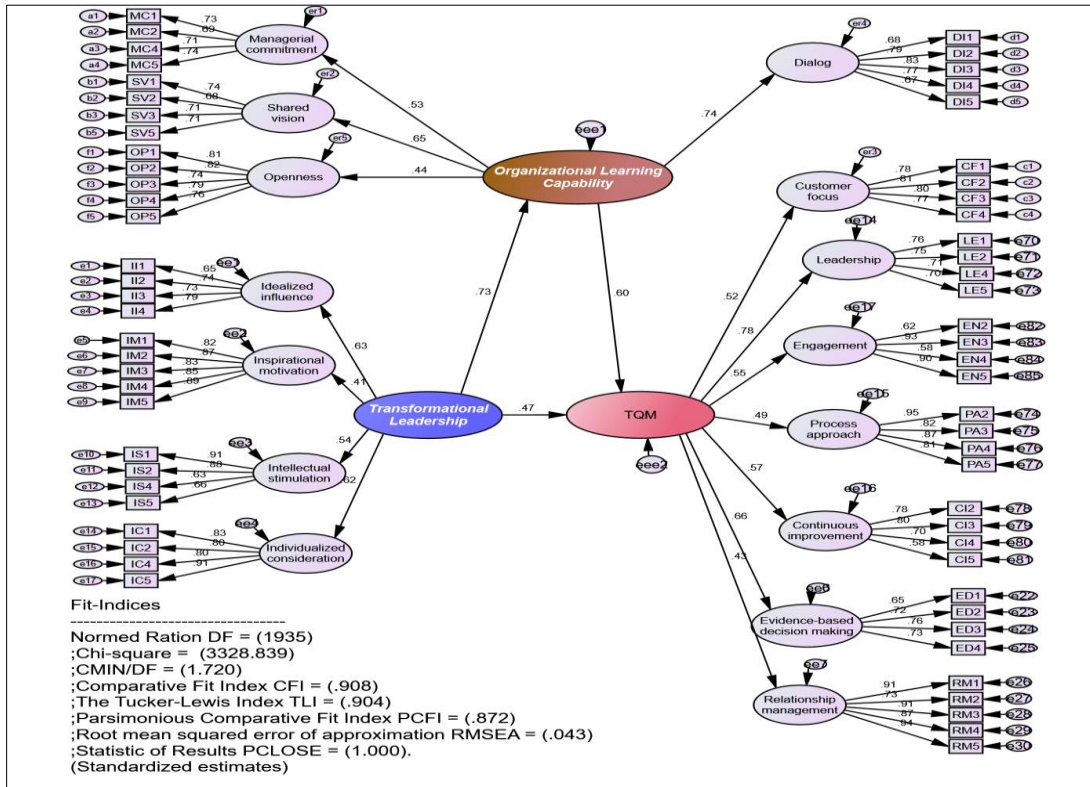


Figure 2. The validated framework output

The structural model's significance is multifaceted, offering substantial theoretical, methodological, and practical contributions to the study of organizational dynamics in ADNOC and similar industries. Theoretically, the model advances the integration of transformational leadership, organizational learning capability, and TQM by empirically validating their interrelationships within a single framework. It extends existing literature by demonstrating that Transformational Leadership not only directly enhances TQM but also indirectly does so through Organizational Learning Capability, providing a nuanced understanding of how leadership behaviors (e.g., inspiring trust, loading 0.91) foster a learning culture that supports quality outcomes (e.g., ISO-driven management improvements, loading 0.95). This mediation effect highlights organizational learning capability as a critical mechanism, bridging leadership and quality management theories. The model's applicability to ADNOC's oil and gas context suggests its potential generalizability to other knowledge-intensive, high-stakes industries, contributing to a novel conceptual framework that aligns with emerging paradigms in organizational behavior and quality management.

CONCLUSIONS

This study empirically validated a framework explaining the relationships among transformational leadership, organizational learning capability, and Total Quality Management (TQM) within the oil and gas industry, focusing on ADNOC in the UAE. The findings demonstrate that transformational leadership plays a vital role in fo

stering employee motivation, innovation, collaboration, and continuous improvement—all essential for effective TQM implementation. At the same time, organizational learning capability emerged as a key mechanism enabling organizations to acquire, share, and apply knowledge to respond effectively to changing market and operational conditions.

The empirical results indicate that transformational leadership influences TQM directly and also indirectly through the enhancement of organizational learning capability. This mediating role provides organizations with the flexibility and adaptability needed to sustain competitiveness in the highly dynamic oil and gas sector.

Overall, this study advances the literature by empirically integrating transformational leadership, TQM, and organizational learning capability into a single model tailored to the oil and gas industry, specifically within the UAE context. Practical implications for managers and policymakers include the need to prioritize leadership development, foster a culture of continuous learning, and encourage employee participation in decision-making to strengthen TQM implementation and achieve sustainable organizational excellence.

Based on these findings, it is recommended that ADNOC and similar organizations invest in transformational leadership training programs, promote organizational learning at all levels, and implement strategies that empower employees to participate in quality improvement initiatives, thereby ensuring long-term success and growth.

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