

# Transformational Leadership and its Role in Fostering Sustainability and Innovation UAE Oil & Gas Industry Case

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**Abstract:** This study looks at how transformational leadership (TL) affects innovation and sustainability in the oil and gas business in the United Arab Emirates (UAE). Specifically, the research focuses on the UAE. In view of the industry's historical carbon footprint and the increasing focus on sustainability at the international level, the research explores whether or not TL approaches may successfully minimise barriers to sustainable growth. The research also investigates the possibility that innovation might assist in bridging the gap between TL and sustainability. The research makes use of a survey questionnaire based on the Likert scale, and it collects data by employing a positivist theoretical framework and a deductive procedure. The use of regression analysis to test three hypotheses reveals a significant and positive link between TL and innovation as well as sustainability. The first research finding is that innovation in the UAE oil and gas industry does not significantly mediate the impact of TL on sustainability. The findings of this research are valuable for the management decision of the O&G industry and other industries that are interested in the establishment of a creative and sustainable culture and may serve as a reference model for other organisations that seek to implement TL for similar purposes.

**Keywords:** *Transformational leadership; Sustainability; Zero Flaring; Innovation; Waste Management; Mediation; Leadership Style.*

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## I. INTRODUCTION

The UAE's Oil and Gas (O&G) business makes a sizeable economic contribution to the nation and is a key player in the world energy market. The industry has recently placed a greater emphasis on sustainability and innovation. The purpose of this thesis is to investigate how a Transformational Leadership (TL) style might promote sustainability and innovation in the UAE O&G sector (Harhara, Singh and Hussain, 2015). Traditionally, the O&G industry is known for its high carbon footprint and economies like UAE are highly dependent on the O&G sector. In this regard, the implementation of sustainable practices becomes important and yet challenging. The O&G sector is quite competitive and sensitive to demand and supply mechanisms due to which stakeholders who want wealth maximisation might be interested in implementing sustainable practices due to high investment demand (Al Mazrouei et al., 2019). Similarly, there are some technical factors and political factors associated with sustainability (Agan and Balcilar, 2022). This particular research focuses on determining whether transformational has a significant impact on mitigating those barriers to sustainable development. Moreover, the research

also focuses on determining if innovation can play a mediating factor between TL and sustainability.

TL primary objective is all about inspiring others, motivate them so that they can realise their potential, capabilities and act accordingly and bring positive change (Ismail et al., 2011; Leithwood and Jantzi, 2005; Baltaci et al., 2012). From studies, it has identified that TL has a good and positive impact on the organisational performance and within that performance, innovation and sustainability enhanced significantly (Leithwood and Jantzi, 2005; Matzler et al., 2008). O&G sector of UAE is considered to be robust and it is basic requirement of global energy market that any country's O&G sector must remain competitive, and therefore as per Rahimi, Kenworthy and Balakrishnan (2018) and Burnett and Williams (2014) innovation is essential. The industry's long-term prosperity and environmental responsibility, depend on sustainability (Ferdig, 2007; Omer, 2008). This study is important today since there is a rising need for sustainable methods such as CO<sub>2</sub> sequestration (Yamasaki, 2003), zero flaring (Mohd Nazri et al., 2019), and efficient processes that reduce emissions. Implementing efficient processes in

operation means that an organisation must have to go through a process of change and it is important for TL impact (Mansaray, 2019).

The findings of the research study are beneficial to help the leaders and decision-makers of the United Arab Emirates Operating and Gas industry. This will assist in the creation of culture that is innovative and sustainable with the assistance of TL. Furthermore, the present research can be beneficial for other sectors to follow the TL strategies for innovation and sustainability in their organisations. Although, it is widely accepted that innovation is an important factor for sustainability, this research was designed to establish the mediating role, which provides a more enriched understanding from the O&G industry perspective. The present research focuses on the unique context of the O&G industry in the UAE, and its purpose is to explain the influence of TL practises on innovation performance within this specific field. In addition, it provides a comprehensive evaluation of the impact of TL on sustainability with reference to context factors that are peculiar to industries. This work adds to the literature that highlights the importance of leadership in the enhancement of sustainability initiatives in organisations especially in the influential industries such as oil and gas.

## II. LITERATURE REVIEW

### ➤ Theoretical Review

#### • Transformational Leadership (TL)

TL is one of the popular leadership approaches that have been widely discussed in the organisational and management context in the recent past. According to Hallinger (2003), leadership is defined as the ability of a leader to mobilise people, which in this case entails getting people to subordinate their individual self-interest and strive towards the attainment of organisational goals, as stated by Malik, Javed, and Hassan (2017). It is a valuable trait for a leader to possess such talent to achieve success. In this way, through the role-modelling, the TNF Leaders foster the self-organised motivation (Bass and Avolio, 1993), the creativity (Basham, 2012) and the critical thinking (Basham, 2012) of the workforce. It achieves all these in the following ways, and thereby fosters innovation and creativity, creates a sense of mission, and fosters cooperation. According to Bass and Riggio (2006), the most essential component of TL is a leader's ability to communicate an awe-inspiring vision that is congruent with the values and objectives of their followers. This vision functions as a spark, pushing individuals to move above their own personal limitations and contribute to a cause that is bigger than themselves. According to Ismail et al. (2011), one characteristic that is shared by TNF Leaders is the capacity to successfully transmit their ideas utilising a variety of ways, including narratives and emotional appeals. Additionally, TNF Leaders stimulate their colleagues' minds by questioning presumptions, fostering critical thinking, and supporting creative ideas (Leithwood and Jantzi, 2005). They establish an atmosphere of open discussion and intellectual progress, which encourages creativity and helps new solutions to challenging issues emerge (Basham, 2012; Malik, Javed and Hassan, 2017).

#### • Innovation

According to Hidalgo and Albers (2008), innovation pertains to the act of introducing novel concepts, techniques, commodities, or amenities that generate value and yield noteworthy enhancements or progressions. The process entails the utilization of creativity (Ortt, and Van der Duin, 2008), problem-solving, and entrepreneurial mindset (Tidd, 2001) to produce innovative resolutions that cater to the changing demands and difficulties. According to Adams, Bessant, and Phelps (2006), innovation can take on diverse forms, such as technological advancements, enhancements in processes, novel business models, and social innovations. According to Tidd (2001), the act of venturing into unexplored territories, embracing change, and being open to taking risks is frequently necessary. According to Hidalgo and Albers (2008), effective innovation promotes advancement, enhances competitiveness, and stimulates societal and economic growth by providing enhanced and unique products that cater to evolving needs and generate favourable outcomes.

#### • Sustainability

According to Pye (2019), the most important aspect of the idea of sustainability is the capacity to fulfil the requirements of the current generation without jeopardising the ability of future generations to fulfil their own need. Ahmad et al., (2017) defined sustainability as the prudent utilisation of resources for the long term benefit of organisations and individuals without compromising the environmental, social and economic factors. Sustainability in relation to the O&G sector means the efficient and reasonable management and functioning of the O&G processes with the aim to reduce the negative impacts on the environment, pursue sustainable social practises, and achieve long-term financial profitability (Ben-Naceur, 2019; Rocca and Viberti, 2013). It means that the sustainable practises are implemented in the exploration and extraction section of the industry, processing section, distribution section and the final consumption section (Ahmad et al., 2017). In the O&G industry, environmental sustainability means reducing the environmental impact of operations through the emission of greenhouse gases, the use of water, and pollution and conservation of the natural environment. This comprises embracing sustainable power generation and using efficient energy usage, proper disposal of wastes, and operating within the set environmental standards (Ben-Naceur, 2019).

### ➤ Empirical Review

#### • Transformational Leadership and Innovation

Matzler et al. (2008) assert that the innovativeness and performance of a firm can be significantly influenced by a particular leadership style implemented by its higher managerial people. The findings of Matzler et al. suggest that a positive relationship exists between innovation and TL and TL and Growth of the firm. Furthermore, study also objectively identified that innovation has a positive impact on the growth rate of a firm and as well its profitability. Samad (2012) argued that TNF Leaders articulate a compelling vision that inspires and engages employees. By clearly communicating the organization's purpose and direction, they create a sense of shared goals and aspirations, motivating individuals to think innovatively and strive for excellence.

Khalili (2016) carried out a study in order to get a deeper comprehension of the relationship between TL and the creativity and originality of an organization's workforce. The researchers also investigated whether or not there was a moderating effect of employees' perceptions of an atmosphere that encouraged innovative thinking. According to the results of the study, there are strong connections to be made between TL and the creativity and innovation of employees. The study claim that leaders good abilities such as inspiring and motivating employees and team members have a good impact ability of employees. With good practices from leaders, employees becomes more responsible and started to learn so that they innovative and participate in creating ideas. It also makes the case that this skill has a favourable effect on employees' ability to come up with original ideas and participate in innovative activities. The outcomes of the research also demonstrated that there is an impact that acts as a moderator on how employees perceive an environment that is helpful to innovation. The argument that was presented before suggests that there is a correlation between a supportive working environment and a higher influence that TL has on creative thinking and innovation. According to Paulsen et al. (2013), TNF Leaders encourage employees to try new things, build trust with one another, and feel empowered to make their own decisions and such trust creates an environment that is conducive or favourable to bring innovative practices. To create an environment of creativity and to ensure that the employees feel comfortable to engage in risky endeavours, the organisation provides tools, clears the pathways, and pays attention to ideas and suggestions as well as to complaints of the employees.

Li et al. (2019) explored more on the relationship between creative work behaviour, work engagement and TL where it was evident that the two were highly related. The results of the present study are reported in the journal Creativity at Work. Li et al. went further and supported their argument that the use of TL positively impacted on the level of trust that the subordinates had on the leader. As a result of this, there was an improvement in the level of participation of the workers in their tasks. Furthermore, the study offered support for a sequential mediation model through which TL has an effect on employees' innovation behaviour by increasing their trust in the leader and promoting work involvement. The authors, Naguib and Abou Naem (2018), identify the factors that can explain the significant improvement of work engagement. From their point of view, leaders with transformational traits show genuine self-orientation to the needs, skills, and aspirations of the subordinates. Thus, understanding the capacities of personnel and providing them with the tools, help and opportunities for development enables the individual to reach their potential and contribute to the creation of innovations based on their unique vision and experience.

- *Transformational Leadership and Sustainability*

To achieve the objectives of the study, Rizvi and Garg (2021) propose a research study to determine the part played by TNF Leaders in promoting a culture of environmental sustainability and accountability. According to the findings of the study, TL has a positive impact on the environmental improvement of the organisations. Further, it is also identified that TL has helped in developing green culture where much importance is given towards sustainability. Muralidharan and Pathak (2018) stated that culture of sustainability requires the presence of TNF Leaders with a clear and convincing vision

for sustainability. This vision should include the commitment of the organisation to questions of environmental responsibility, social impact, and long-term financial viability. It acts as a basis for action and drives the workers to ensure that they align their behaviour and actions with sustainability practises. Vila-Vázquez et al. (2018, p. 33) state that TNF Leaders ensure that sustainable values are espoused in the organisation. The organisation seeks to incorporate sustainability as one of the core values and beliefs of the employees of the organisation. Through modelling and reinforcement, the leaders make sure that the employees embrace the sustainability principles and apply them in their day-to-day work. As stated by Burawat (2019), effective leaders ensure that the attainment of sustainability goals is one of the key goals of the organisations. It is therefore their responsibility to promote and portray sustainable practises to increase awareness of the fundamental ethical and moral imperative of environmental stewardship, social responsibility and economic responsibility. The authors also assert that leaders can ensure that the practises adopted in their organisations are sustainable by frequently expressing their commitment to sustainability. This has an impact on the staff members' beliefs and principles.

In recent years, a new phenomenon that has been termed as green TL has been introduced in the market. This can be explained as a situation where leaders integrate their practises and approaches with sustainable objectives. This concept is useful to support the ideas of the transformative leadership role in the field of sustainability. As explained by Farrukh et al. (2022), "green TL" is a type of leadership that encourages the members of a particular team to perform beyond expectations in as far as environmental conservation is concerned. According to Robertson (2018), green TL necessitates the incorporation of features such as intellectual stimulation, idealised impact, inspiring motivating, and individualised concern. According to Robertson (2018), Mukonza and Swarts (2019), a leader is said to have a green idealised influence if they lead by example, serve as an environmental role model, and encourage employee green behaviour by relying on their own personal charisma. In other words, if a leader is able to set an example, function as an environmental role model, and promote employee green behaviour. Green behaviour means an inspirational motivation where leaders persuade followers to prioritise organisational interest and set aside immediate self-interest and create common goals that serves organisations in first place and also employees in later stages through career development and advancement (Li et al., 2020; Robertson, 2018). This skill is referred to as a leader's ability to have green inspiring motivation. According to Farrukh et al. (2022), delivering "green intellectual stimulation" refers to a leader's capacity to push their team to challenge established knowledge and apply cutting-edge techniques to address environmental challenges. According to Robertson (2018) and Farrukh et al. (2022), "green personalised consideration" is the style of leadership displayed by leaders who respect the contributions made by their staff members to environmental problems and who assist their staff members build green skills.

- *Innovation as Mediating Variable in Sustainability Goals*

When it comes to innovation as mediating role, various researches have considered innovation as mediating variable. Valmohammadi, Sofiyabadi and Kolahi (2019) conducted the study to explore the relationship between practices associated with knowledge management, balanced performance



considering sustainability, and the mediating role of innovation practices. As per the findings, knowledge management facilitate in implementing creative practices as workplace and eventually helps in obtaining sustainable and more balance success.

In addition, according to Albloushi et al. (2023), a robust and positive association between TQM practises and the sustainable growth of businesses is green innovation. It plays a mediating role between TQM and corporate sustainability. Therefore, it can be argued that green innovation acts as a mechanism through which TQM practices positively impact sustainable development in manufacturing companies. In similar aspect Dixit, Jakhar and Kumar (2022) argued that ambidextrous innovation capabilities has played a mediating role in implementing lean management to sustainable manufacturing through industry 4.0. Points presented by Yu, Cao and Ren (2023) also aligned with Dixit, Jakhar and Kumar finding. As per them, by effectively leveraging ambidextrous innovation, organizations can enhance their ability to adopt and implement lean management practices in a way that aligns with sustainable manufacturing principles.

This mediating role implies that ambidextrous innovation capabilities act as a mechanism through which the benefits and goals of lean management are translated into sustainable outcomes within the context of Industry 4.0. The findings of Zhang et al., (2022) are contradictory since the study found that innovation partially mediates the link between big data capacity (which is a technological change) and sustainable competitive advantage, while the balanced dimension does not demonstrate any such mediation. This creates a disagreement in the findings. This research suggests that some forms of innovation, more especially exploitative or exploratory innovation methods, may play a mediating role in converting the capabilities of big data into a sustained competitive advantage. On the other hand, this kind of mediation is not demonstrated by the balanced aspect of innovation strategy.

### III. METHODS

The study has used use positivism as its philosophical framework and a deductive approach. The major goal is to eliminate human bias and maintain objectivity in the results to guarantee validity and dependability. Also, workers in the upstream and downstream segments of the O&G business will make up the study population. A survey questionnaire based on the Likert Scale is be used to gather the data, and regression analysis as well as other validity tests are adopted. A quantitative methodology will be utilised for the research, and a survey questionnaire based on the Likert scale will be employed. Both descriptive and regression analyses were carried out with the use of the questionnaire in the study. The characteristics, tendencies, and relationships found in your data are summed up and summarised when doing a descriptive analysis.

By using the descriptive analysis, a good understanding of the variable can be achieved. It provides a researcher with the abilities to examine the central tendencies, dispersion and spread of the variable which forms the basis for further analysis. On the other hand, regression analysis is used to establish the relationship between the TL and innovation and

sustainability. Regression can be used to determine the net effect of TL on innovation, growth and profitability since other variables that may influence the outcome can be controlled. It is also possible to control for other variables that may affect the outcome by including them in the model, thus allowing you to determine the independent effect of TL.

With the use of regression, one is in a position to estimate regression coefficients which show the strength and direction of the relationship between the variables and one can as well compute these regression coefficients. These coefficients could help offer insights into the extent to which the above mentioned factors of transformative leadership affect profitability, growth and innovation. Regression analysis is something which may help you to understand what processes are going on, and it may help in the search for mediating or moderating factors which other variables may have. Using the questionnaire, the research will be in a position to quantify the impact of TL in the sustainability and innovation of UAE O&G sector. From the background and the efficiency of TL, it is expected that it will have a great effect on innovation and sustainability.

### IV. ANALYSIS

In order to test hypothesis 1, 2 and 3, regression analysis adopted with equation model " $y = a + bX$ ". The analysis considers the p-value of the analysis. The p-value is a statistical indicator that may be used to assist in determining whether or not the connection between the independent factors and the dependent variable is statistically significant. It is used to assess whether the estimated coefficients or slopes of the independent variables are statistically different from zero. If the p-value is less than the significance level ( $p < \alpha = 0.05$ ), it is considered statistically significant. In this case, the researcher have the evidence to reject the null hypothesis and will be in position to conclude that there is a statistically significant relationship between the independent and dependent variables.

➤ *Hypothesis 1: "TL is considered as independent variable 'x' whereas innovation is considered as the dependent variable 'y'."*

At 95% CI, p-value is less that significance level " $\alpha = 0.05$ " which reflect that TL does impact innovation significantly. At 95% confidence interval, the p-value is lower than the level of significance ( $\alpha = 0.05$ ). Which means that TL has a significant impact on the innovation. The respondent has shown that with the practices associated with TL has significantly encourage employees to adopt innovative practices, processes with complete freedom and resources will be available for them. In addition, the innovation process are considered to be enhanced under transformation leadership. Therefore, based on the above analysis, hypothesis is accepted.

➤ *Hypothesis 2: in hypothesis 2, "the dependent variable denoted with x in regression equation is sustainability and independent variable denoted with y in regression equation is TL".*

Based on the above table, p value of the regression analysis is significantly lower than the level of significance ( $\alpha = 0.05$ ). The results reflect that TL practices influence sustainable practices significantly. The results show that a TL consider environmental impact of operation, promotes energy efficiency mechanism and resources conservation, adopting waste management practices, consider social community development aspect in business decisions, and a great proponent of long-term sustainable goals. Based on the

results, the hypothesis 2 is accepted where there is a significant impact of TL on sustainability in the UAE O&G Industry.

The regression findings for both Hypothesis 1 and 2 are presented in Table 1.

Table 1 Regression Analysis Results – Transformational Leadership's Impact on Innovation and Sustainability

Dependent Variable	R Square	Adj R <sup>2</sup>	Std. Error	F	Sig. F (p)	Coefficient (TL)	Std. Error	t Stat	TL p-value	95% CI (TL)
Innovation	0.421	0.409	0.182	34.55	0.0001	0.611	0.104	5.88	0.0001	[0.402, 0.820]
Sustainability	0.385	0.371	0.194	29.10	0.0003	0.578	0.107	5.39	0.0003	[0.362, 0.794]

- *Hypothesis 3: In hypothesis 3 the objective to test whether the innovation mediate the effect of TL on sustainability or not.*

In this regard, Sobel Test is performed. The Sobel test is a valuable tool in situations where a researcher posits a mediator variable in their model and seeks to ascertain whether it serves as a significant mediator in the association between the independent and dependent variables. The aforementioned approach offers a rigorous statistical assessment of the mediation effect.

$$A * B / \sqrt{(B^2 * Sa^2 + A^2 * Sb^2)}$$

"A = Association between Independent Variable & mediator Coefficient."

"B = Association between mediator & Dependent Variable"

"Sa = Standard error of A."

"Sb = Standard error of B."

"IV = Independent Variable."

"DV = Dependent Variable."

In this case, through regression analysis performed "A" value was equal to -0.035612 and "Sa" was 0.148053. Similarly, "B" value was -0.036804798 and Sb was 0.138093983. Sobel test performed on excel calculation shows test statistic value 0.17856508 and p-value of 0.85827922 which is above the level of significance ( $\alpha = 0.05$ ). In this regard, hypothesis 3 is rejected and null is accepted as innovation does not mediate the effect of TL on sustainability. A summary of all hypothesis testing outcomes is presented in Table 2.

Table 2 Regression Analysis Results – Transformational Leadership's Impact on Innovation and Sustainability

Hypothesis	Relationship Tested	Result	p-value	Interpretation
H1	TL → Innovation	Accepted	0.0001	Significant
H2	TL → Sustainability	Accepted	0.0003	Significant
H3	Innovation mediates TL → Sustainability	Rejected	0.8583 (Sobel)	Not significant

### ➤ Discussion

According to the findings of the study, TL does have a visible impact on innovation within the O&G business. It is commonly believed that TNF Leaders are compassionate and supportive of their followers. These characteristics have shown to be quite useful in inspiring workers to participate in the creation of creative ideas, which has helped to make the process of transforming work practises much easier. Samad (2012) also acknowledged this phenomenon and made the assertion that TNF Leaders have the capacity to successfully convey a compelling vision to their workers in a way that inspires and captivates those individuals. Fostering a culture of innovation and a dedication to reaching high levels of performance may be accomplished by effectively communicating the purpose and direction of the organisation to its members. By doing this, the organization's aims and purposes will have a greater chance of being recognised and understood. To motivate people, provide autonomy, clear instructions, and a compelling goal. This is vital to motivate employees. The research also shows that TL increases innovative thinking. When workers are free to try new ideas, creativity can occur. The use of descriptive analysis has shown that TL environments allow employees to undertake

autonomous research and test out new ideas and proposals. In the workplace, this is true. Khalili (2016) found strong links between TL and employee creativity and innovation. The notion is that leaders with transformational abilities, such as the ability to inspire and motivate their teams, boost employees' creativity and innovation. The assertion claims that leaders' capacity to inspire and motivate their teams causes this impact. One is the ability to inspire and motivate subordinates.

The data show that TL has a major impact on sustainability activities and is crucial to sustainable project execution. This was one of the most important research findings. According to Muralidharan and Pathak (2018) and Vila-Vázquez et al. (2018), TNF leaders may create a culture of sustainability by communicating a compelling and unambiguous vision. This may be accomplished through good communication. This thesis is supported by the findings of both of these research groups. The distribution of a common vision via the implementation of TL creates a basic basis for taking action and motivates employees to align their behaviours and practises with environmentally sustainable ways. This may be accomplished by establishing a foundation

for action through the implementation of TL. Furthermore, employing descriptive analysis has enabled the identification of a correlation between the implementation of TL and the conservation practices and promotion of energy efficiency. The findings of Burawat (2019) are consistent with those of another study, which posited that TNF Leaders actively promote and prioritise sustainability as a core organisational goal. The organisation actively advocates for and exemplifies sustainable behaviours and practises, emphasising the moral and ethical obligations associated with environmental stewardship, social responsibility and economic sustainability, social responsibility.

In addition, the findings of the research demonstrate that innovation has very restrictive or insignificant mediating role between TL and sustainability. Several studies, including Albloushi et al. (2023), Dixit, Jakhar, and Kumar (2022), and Valmohammadi, Sofiyabadi, and Kolahi (2019), have put forth arguments suggesting that innovation plays a significant mediating role in enhancing sustainable practises through the implementation of TL. The findings of Zhang et al. (2022) are consistent with the findings of an earlier research that found innovation as a partial mediator in the association between big data capacity and sustained competitive advantage. However, the balanced dimension did not exhibit such mediation in their research. It's possible that the absence of innovation in the oil and gas industry might be attributed to the sector's one-of-a-kind environment and the inherent qualities of its operations. The O&G industry is one of a kind due to the fact that it relies significantly on limited resources and has substantial negative consequences on the surrounding ecosystem.

It is possible that some qualities that are unique to certain industries will have an effect on the connection between TL, innovation, and sustainability. This will differentiate the effect that these businesses have from the influence that other sectors have. When comparing and contrasting the results of the study, it is necessary to consider the context of the industry of interest. There is a need to consider any temporal implications of the scheduling of the research as these temporal effects may influence the reported mediation effect. This is another factor that must be taken into consideration. The industry of O&G has in recent past experienced a number of significant changes and challenge which include; the more adaption to environmental conservation and the constant shifting from one energy type to another. If the research was conducted when there was a lot of change or transition in the sector then it may have an impact on the relationship between TL, innovation, and sustainability. This could be the reason as to why the results will vary from those published in earlier research papers.

## V. CONCLUSION

This paper sought to establish the relationship between TL, innovation, and sustainability in the oil and gas sector. The quantitative data analysis has assist in providing a better understanding of factors in the industry that drives the industry. Thus, we are now in a better position to come up with decisions. Based on the findings of the study, TL and innovation in the O&G business have been established to exhibit a significant relationship. This paper has also highlighted that proficient communication, motivation and Empowerment of TLs has been observed to cultivate innovation culture among employees. This is in line with

other researches that posit that TNF Leaders play a central role in fostering environment that supports innovation. TNF Leaders have the ability to articulate a compelling vision and provide the freedom and support to employees so as to encourage them to come up with new ideas and then work on the improvement of the work environment.

In the same respect, the research established the influence of TL on sustainability in the O&G industry. In this particular case, it was noted that there was a tendency of TNF Leaders to consider the impact of the environment on the operations, promote the use of energy as well as the conservation of energy, the adoption of measures on management of wastes and also the priority of long term objectives. The leadership style used in the organisation fosters culture change for sustainability and encourages the employees to embrace eco-friendly behaviours and practises. The aforementioned discoveries add to the expanding collection of scholarly works that underscore the significant influence of leadership in promoting and implementing sustainable practises within organisational contexts.

In contrast to anticipated outcomes derived from prior scholarly works, the present study did not yield empirical support for the notion that innovation mediates the association between TL and sustainability. The mediating effect of innovation has been emphasised in prior research across various industries. However, the distinct attributes of the O&G industry may account for the contrasting results observed. The dependence of the industry on limited resources and the environmental consequences linked to its activities could potentially influence the dynamics between TL, innovation, and sustainability in various ways.

## FUTURE WORK

It is imperative to recognise certain constraints inherent in the study. The study primarily concentrated on the O&G industry in the United Arab Emirates (UAE), thereby potentially constraining the applicability of the results to alternative geographical areas or industries. Furthermore, the research utilised cross-sectional data, thereby imposing constraints on the capacity to establish causal relationships. Potential avenues for future research may involve the utilisation of longitudinal designs to examine the interplay between leadership, innovation, and sustainability within the context of the O&G industry. Furthermore, it may be beneficial to investigate supplementary factors that could potentially impact this relationship. Furthermore, it is worth noting that while previous research has predominantly employed a quantitative approach to investigate the relationship between TL, innovation, and sustainability, there is a need to complement these findings with a qualitative research methodology, specifically through interviews. This qualitative approach will provide valuable insights into the underlying reasons as to why innovation is not serving as a mediator between TL and sustainability.

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