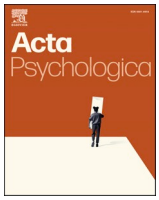
Acta Psychologica 257 (2025) 105116

Contents lists available at ScienceDirect

Acta Psychologica

journal homepage: www.elsevier.com/locate/actpsy



From ethical leadership to green voice: A pathway to organizational sustainability

Shanping Hu [a], Wafa Ghardallou [b], Rebecca Kechen Dong [c,*], Rita Yi Man Li [d], Shakira Nazeer [e]

[a] Industrial Digitalization Research Center, Huainan Normal University, West Dongshan Road, Tianjiaan District, Huainan City 232038, AnHui Province, PR China
[b] Department of Accounting, College of Business Administration, Princess Nourah bint Abdulrahman University, P.O. Box 84428, Riyadh 11671, Saudi Arabia
[c] Management Discipline, UTS Business School, University of Technology Sydney, Australia
[d] Sustainable Real Estate Research Center/Department of Economics and Finance, Hong Kong Shue Yan University, Hong Kong
[e] Faculty of Management, Virtual University of Pakistan, Lahore 54000, Pakistan

ARTICLE INFO

Keywords:
Environmentally specific ethical leadership (ESEL)
Green voice behavior (GVB)
Perceived Green organizational support (PGOS)
Leader-member exchange (LMX)
Oil and gas sector

ABSTRACT

In the realm of organizational life, exchanging different resources is crucial for the success and survival of both the employer and the employee. Green voice behavior (GVB), leader-member exchanges (LMX), and perceived green organizational support (PGOS) form a part of those exchanges, i.e., munificent and constrained conditions of these resources have implications for the organizational stakeholders. To better understand those implications, we have utilized the resource theory of social exchange while delineating the relationship dynamics between environmentally specific ethical leadership (ESEL) and GVB. By examining the moderating roles of leader-member exchange (LMX) and perceived green organizational support (PGOS), we address significant gaps in understanding the mechanisms that enhance ESEL impact on GVB in organizations. A time-lagged survey of 304 middle management employees from Karachi's petroleum sector was analyzed using SPSS and AMOS. Results indicate that when leader-employee and organization-employee-based resources, i.e., LMX and PGOS were readily available in plentiful condition, employees were also generous in offering their possessed resource, i.e., green voice in response to ESEL. Whereas a resource constrained condition from leaders and organization as a whole was unable to keep employees munificent in speaking up green ideas, hence the prediction of 3-way interaction effects has been validated in the context of petroleum industry in Pakistan. The study shows a three-way interaction effect where leader-member exchange compensates for limited organizational resources.

1. Introduction

The unprecedented nature of the current environmental crisis in its magnitude, severity, and occurrence at an unimaginable faster pace has caused substantial irreversible loss to the biodiversity of mother earth. Organizations, on account of greater carbon emissions and waste release in the climate, are being blamed for this climate deterioration (Robertson & Barling, 2017). Hence, researchers are increasingly concerned about studying pro-environmental practices (Boiral et al., 2018). Stakeholders' interest has caused a shift from business models to the development of green business paradigms, the major concern is to incorporate green initiatives in all business operations and procedures (Islam et al., 2019; Wagner, 2011). To this end, green voice or voluntary expression of information focused on influencing positive pro-environmental changes (Francoeur et al., 2021; Paulet et al., 2021), has been instrumental for the corrective actions, learning orientation, innovative and preventing (e.g., crisis avoidance) behaviors of the organizations (Morrison, 2014). That is why, in the past decades, researchers have developed an interest in understanding the mechanisms of inspiring such behaviors and attitudinal development in employees (e.g., (Chamberlin et al., 2017; N. U. Khan et al., 2022b).

While green behavior adaptation by employees has been extensively studied; green voice as an independent organizational citizenship behavior has not received widespread attention in the literature on pro-environmental management practices. Organizations can only arrange or to facilities the adoption of innovative green behaviors; participation of employees in 'green' activities is not, however formalized or necessitated by the entities (Boiral, 2009), let alone the green voice which is

* Corresponding author.
E-mail addresses: hushanpping@163.com (S. Hu), Wafa.ghardallou@gmail.com (W. Ghardallou), Rebecca.Dong@uts.edu.au (R.K. Dong), ymli@hksyu.edu (R.Y.M. Li), Shakira.nazeer@vu.edu.pk (S. Nazeer).

https://doi.org/10.1016/j.actpsy.2025.105116
Received 2 February 2025; Received in revised form 4 April 2025; Accepted 30 May 2025
Available online 6 June 2025

perceived as a risky behavior and highly discretionary. This research investigates employees' green voice behavior (GVB) as a means of achieving sustainability for both organizations and the environment. Green voice is a mechanism using which employees can assist their organizations in aligning their current business practices with the environmental sustainability regulations and remain innovative (Paulet et al., 2021). Nonetheless, green voice behavior is an under researched topic in corporate "greening". Hence, scant research is available on the antecedents and consequences of employees' green voice behavior.

Voice, as upward information, is a valuable resource exchanged in social interactions. Green voice involves constructive opinions on proactive ecologically friendly behavior. It includes disseminating ideas, discourse, and suggestions about minimizing environmental harm caused by organizational operations and improving business practices for eco-friendly processes (Temminck et al., 2015). It shows that the employees value and care about the environment. Previous literature on employee voice suggests that organizations and employees mutually benefit from voice behavior (Donovan et al., 2016). A growing number of research calls and rising interest in the literature indicate the need to explore the antecedents of employees' green behavior and the underlying mechanisms (boundary conditions) (Norton et al., 2017). Leadership significantly influences employees' green behavior (Gurmani et al., 2021; Khan et al., 2022b). Hence, owing to the growing calls for investigating leadership phenomenon as a predictor of subordinate green workplace behavior, this study harnesses environmental specific ethical leadership (ESEL) style to impact employees' green voice under resource-munificent and resource-constrained conditions utilizing the resource theory perspective (Foa & Foa, 1980), thereby helping the organizations to minimize the adverse effects of their operations on the environment (Boiral et al., 2015; M. A. S. Khan et al., 2019; Suganthi, 2019).

Leaders are the main recipients of employee voice, and employees exercising their voice are the recipients of good social exchanges from the leaders. Transformational leadership has been positively linked with the availability of such resources (Epitropaki & Martin, 2013). ESEL, a form of transformational leadership (Khan et al., 2022b), encourages the employees to speak up (Cheng et al., 2014) about environmental issues, or in other words, they facilitate the availability of resources, e.g., leader-member exchanges (LMX) to be exchanged with the green voice resource.

In the resource theory framework, organizations, by providing their employees with resources, for instance tangible benefits and socio-emotional support (Eisenberger et al., 2004), establish a social contract of reciprocity. Leaders have a substantial impact on how workers perceive resource availability and exchange. ESEL is valued as an important resource provider. ESEL leaders do not only exemplify green behaviors but also cultivate an environment where workers feel safe and encouraged to voice their green side. As Cheng et al., 2014 highlighted, such leaders facilitate resource exchanges, specifically in the context of green initiatives. The relative quality of LMX and perceived green organizational support (PGOS) considerably determine the essence of employees' social exchanges with the supervisors and the organizations, respectively. The quality of the relationship can be attributed as constraining (low LMX) or facilitating / munificent (high LMX) concerning the exchange of resources (Wilson et al., 2010): When LMX is constrained, employees are less likely to offer green voice as they perceive restricted access to the indispensable (tangible or intangible) resources necessary for crucial decision making. Further, since many green ideas are aimed at organizational operations causing environmental damage, employees may perceive high risk in voicing concerns unless supported by ESEL or PGOS. Contrary to that, when leaders are munificent (facilitating) in offering LMX, employees will also be munificent in exchanging their resources, i.e., they exercise more green voice behavior.

Epitropaki and Martin (2013) argue that resources as exchanged between leaders and members in the LMX context (Foa & Foa, 1980; Wilson et al., 2010) – are supposedly same as the exchange relationships in employee-organization relations context (PGOS) (Eisenberger et al., 2004). High PGOS indicates that extra-role behavior (green voice) will be noticed and rewarded whereas low PGOS signifies that the employees feel disadvantaged in their exchange relationships, and hence expect inadequate compensation. So, green voice behavior is exercised more under munificent resource exchanges as employees under the reciprocity norm try to fulfill their obligations towards sustainable organizational operations.

To the best of our knowledge, our model has not been studied under resource theory. Further, it is the first attempt to study the impact of ESEL on the green voice behavior of employees. Additionally, the boundary conditions of ESEL-green VB have not been investigated before, being the research's potential novel contribution.

Academic research into pro-environmental behaviors continues to expand yet researchers still lack sufficient understanding of how leadership shapes employee GVB. Literature has investigated multiple leadership types affecting standard pro-environmental conduct (Robertson & Barling, 2017; Tuan, 2021), but neglects to study the connection between ESEL and green voice behavior. Research gaps, being both theoretical and practical in nature, in understanding green voice practices are considerable because this behavior creates potential risks for employees distinct from other pro-environmental behaviors (Francoeur et al., 2021; Nazeer et al., 2025; Paulet et al., 2021).

The isolated assessment of LMX and POS as the consequences of leadership styles in previous studies (Epitropaki & Martin, 2013) fails to address the significant theoretical gap that exists in understanding their joint moderating impact on ESEL-GVB relationships, reflecting insufficient integration of resource theory of social exchange (Wilson et al., 2010). Standard leadership research (Detert & Burris, 2007; Xu et al., 2021; Zhu et al., 2022) has studied leadership-voice relationships yet ignored environmental-specific resource effects which determine how leaders and support from organizations can differently influence risky green voice behavior.

Taken together, this empirical investigation examines three key research gaps through a theoretical model by testing: (1) the direct impact of ESEL on GVB, (2) the effect of leader-member exchange and perceived green organizational support on the ESEL-GVB relationship and (3) the potential interactive effects of these boundary conditions. ESEL demonstrates a positive impact on GVB with the resource munificent conditions (high LMX/PGOS) strengthening this relationship and resource-constrained conditions (low LMX/PGOS) diminishing it. Specifically, this study aims to tackle three research questions:

RQ1. How does environmentally specific ethical leadership (ESEL) influence corporate employees' green voice behavior (GVB)?

RQ2. How do leader-member exchange (LMX) and perceived green organizational support (PGOS) moderate the relationship between ESEL and GVB?

RQ3. How do resource-constrained and munificent conditions influence the relationship between ESEL, LMX, and PGOS on employees' green voice behaviors?

We could not find any evidence of three-way interactions between environmentally-specific EL, PGOS, and LMX to influence green voice. The lack of such studies in Pakistan and workplace settings is another potential gap (Zhu et al., 2022). The research makes its distinctive contribution by integrating distinct theoretical bodies of knowledge into a unified explanation of sustainable voice behavior. The study reveals that the effectiveness of ESEL depends on both leader-member exchange quality and organizational support for environmental initiatives which provides a deeper understanding of resource dynamics behind GVB.

The study will produce findings which verify that excellent leader-member exchange relationships serve as a compensatory factor for scarce organizational resources. In comparison to the conventional voice studies, our study investigates these dynamics in sustainability contexts

with heightened organizational and societal implications. The research findings will demonstrate applications for sustainable employee engagement especially in resource-limited developing economic regions such as Pakistan (Zhu et al., 2022).

2. Literature

2.1. Theoretical framework: Resource theory of social exchange

This study is anchored in the Resource Theory of Social Exchange (RTSE) (Foa & Foa, 1980). A comprehensive illustration of various kinds of resources to be utilized in mutual exchanges can be found in this theory (Foa & Foa, 1980), which has received cross-cultural and cross-contextual support in different countries. The theory refers to resources as commodities – either material or symbolic. These resources can be categorized into six groups being goods (e.g., tangible products), money (e.g., currency with exchange value), status (i.e., esteem or prestige), services (like concrete actions a person performs for the other entity or fellow being), affiliation (e.g., support, regard or respect), and information (i.e., opinions, suggestions, enlightenment, or instructions). In the leader-follower mutual exchanges, different behaviors assume and draw their social meanings by being placed into any or some of these six categories. In a workplace setting, leaders or organizations benefit the followers, but followers don't offer that as that would be seen as a policy violation act (Wilson et al., 2010). Instead, leaders receive discretionary resources followers provide, e.g., service and information. Employee voice offers crucial information to the leaders for improved and effective decisions (Hussain et al., 2019) towards improving sustainable operations. Furthermore, employee voice is considered an upward communication and extra-role behavior aiming to foster organizational effectiveness (Maynes & Podsakoff, 2014) and climate effectiveness. Enabling leaders to sense social support from the employees' side voice is termed ‘good soldier’ behavior (LePine & Van Dyne, 2001).

RTSE identifies green voice information as highly valuable because it tackles essential organizational problems such as environmental sustainability. Environmentally specific ethical leadership (ESEL) functions as a primary resource provider in our model. Leaders using ESEL provide essential resources to employees which include status recognition for environmental contributions combined with affiliation through shared environmental values and informational environmental feedback (Khan et al., 2022a). Through RTSE the supplied resources establish a reciprocal obligation that leads employees to exercise green voice behavior in exchange. The resource-munificent characteristics of high-quality LMX relationships enable employees to safely exchange information resources (green voice) with trusted leaders because such relationships create better resource flow. The broader organizational resource exchange environment is reflected through PGOS (Epitropaki & Martin, 2013). A high perception of PGOS demonstrates that the organization recognizes environmental resource contributions from employees by offering rewards such as recognition and advancement in careers.

2.2. Environmentally specific ethical leadership and green voice behavior

GVB enhances the organization's shift towards sustainable practices, making it a crucial extra-role behavior. Morrison (2011), emphasizes leadership style's role in shaping employees' voice behavior, encouraging them to share their thoughts. Leaders, as power holders, impact key outcomes like work assignments, performance evaluations, and reward management (Morrison, 2011), making them central to employees' voice behavior. This influence is due to subordinates' dependence on resources within a hierarchy (Emerson, 1962; Pfeffer & Salancik, 2015). Speaking up involves sharing ideas with authority figures, hoping they will address concerns, especially regarding environmental practices (French et al., 1959). Followers feel encouraged when leaders are attentive to their green voice and willing to exchange resources (e.g., LMX, PGOS). A lack of such signals may lead followers to withhold their voice due to perceived resource constraints. In the realm of environmental stewardship within organizations, the role of leadership styles, particularly ESEL, becomes paramount when analyzed through the lens of Resource Theory. ESEL represents an approach where leaders not only promote ethics and sustainability in decision-making, but also facilitate employees with resources (N. U. Khan et al., 2022b) — such as information about ecological practices, empowerment to make green decisions, and support for initiatives aimed at waste reduction. In this context, a leader using ESEL may start and back a recycling program, motivate the elimination of waste in office processes, or encourage employee involvement in environmental sustainability projects. RTSE suggests that subordinates in hierarchical organizations are often in the resource-dependent position (Emerson, 1962; Pfeffer & Salancik, 2003; Pfeffer & Salancik, 2015). In this view, green voice behavior of employees is a function of what they anticipate to receive from their leaders in terms of resources (support, information, or permission).

Research highlights the impact of transformational, spiritual, servant, and ethical leadership styles on employees' green behavior (Robertson & Barling, 2017; Tuan, 2021), but green voice has not been specifically studied with these styles or ESEL. As a form of transformational leadership, ESEL promotes extra-role behavior by fostering POS (Tan et al., 2019) and positive LMX (Karabey & Aliogullari, 2018). Positive perceptions of ESEL regarding sustainable development influence innovative green behavior and provide a platform for green voice. Since POS and LMX are linked to voice behavior (VB) (Niu et al., 2018; Thompson et al., 2020), and, by extension, to green VB, we hypothesize that:

Hypothesis-1. ESEL significantly predicts the GVB of employees.

2.3. The moderating role of LMX and PGOS

As mentioned, we have adopted a resource perspective (Foa & Foa, 1980) to the social context. In their “resource theory of social exchange,” Foa and Foa (1980) propose that the resources exchanged in relationships are either intangible, such as love, information, status, or services, or tangible, such as goods and money. They also classify resources as abstract (like status and information) or concrete (like goods and services), and further as universal (like money) or particular (like socio-emotional). This study examines two situational variables as potential moderators between ESEL and green voice behavior: perceived green organizational support (PGOS) and leader–member exchanges (LMX). These variables represent the relational dimension in the organizational context, reflecting important resources exchanged between employees and their employers, as identified by Foa and Foa (1980).

2.4. LMX as a moderator

Equity, reciprocity, and social exchange are central to LMX concept (Dulebohn et al., 2012). Research shows employees engage in voice behavior when they receive high-quality LMX exchanges from supervisors (Botero & Van Dyne, 2009; Hsiung, 2012). Conversely, poor LMX leads to reluctance in voice (Gerstner & Day, 1997). Given this, we expect LMX to moderate the relationship between ethical leadership and voice, with high LMX employees more likely to speak up than those in low LMX relationships (Zhu et al., 2022).

Wilson, Sin, and Conlon (Wilson et al., 2010) note that leader-member relations involve exchanging resources (money, goods, services, status, information, and affiliation), categorizing them as high (facilitating) or low (constraining) LMX based on resource quality. LMX, involving mutual respect and trust, can moderate the impact of ESEL because followers in high-quality LMX dyads are more responsive to ethical leadership (Jada & Mukhopadhyay, 2019; Nguyen et al., 2019). Therefore, the relationship between ESEL and green voice behavior

(GVB) depends on leader-member exchange quality. High LMX employees feel obligated to reciprocate valued behavior and are more likely to advocate for green initiatives (Henderson et al., 2008).

Foa and Foa (1980) highlight that with finite resources according to RTSE, low LMX employees may feel disadvantaged. Thus, this study examines LMX as a moderator between ESEL and GVB. High LMX fosters a culture where employees reciprocate resources, advocating for green practices. ESEL supports employees, especially those with good LMX, fostering green orientation and encouraging GVB. Within such dyads, leaders are not merely authoritative figures but also serve as pivotal sources of ethical norms and values, which are integral resources for followers aiming to navigate organizational complexities with integrity. This rich exchange environment fosters a deep sense of trust and mutual respect, making followers more receptive to adopting and embodying (Brower et al., 2000) the ethical and environmental values championed by their leaders. Thus, RTSE elucidates how the quality of leader-member exchanges amplifies the effectiveness of ethical leadership by ensuring that the exchange of ethical guidance and support is maximized, directly influencing the propensity of followers to engage in green voice behaviors (Brown et al., 2005). The essence of RTSE, in this context, is its focuses on the quality and diversity of resources exchanged in leader-member interactions, highlighting how high-quality exchanges are instrumental in fostering a culture of ethical behavior and environmental stewardship.

In summary, high LMX followers are more empowered to propose and implement eco-friendly practices. While LMX has been studied as a mediator, its role as a moderator remains underexplored, especially with ethical leadership. Addressing this gap, we propose that:

Hypothesis-2. LMX as a social exchange resource moderates the relationship between ESEL and GVB, such that munificent-LMX would facilitate the GVB, and constrained-LMX would impede the GVB.

2.5. PGOS as a moderator

PGOS reflects employees' perceptions of organizational support for their environmental contributions and well-being (Tangirala et al., 2007). It is vital for motivating pro-environmental behavior, as organizations provide socio-emotional (e.g., affiliation, care) and tangible resources (e.g., benefits) (Eisenberger et al., 2004). High PGOS suggests the organization's commitment to green initiatives, prompting employees to reciprocate with greater efforts, believing their actions will be rewarded. According to Gouldner (1960), reciprocity norms motivate voluntary behavior; social support is gained or lost based on meeting exchange obligations. When PGOS is high, employees perceive their pro-environmental efforts will be recognized, but low PGOS makes them feel disadvantaged.

While the integration of POS and RTSE theories is rare, Epitropaki and Martin (2013) suggest all six types of resources (e.g., affiliation, socio-emotional support) can be exchanged in employee-organization relationships. Thus, organizations may expect reciprocity, such as green voice behavior (GVB), which could yield positive outcomes by adopting employees' innovative environmental ideas. High PGOS fosters a resource-rich climate encouraging GVB, whereas low PGOS discourages it due to fears of inadequate support. The direct impact of POS on voice behavior is established (Loi et al., 2014), and we extend this to the PGOS-GVB relationship. Nguyen et al. (2019) found PGOS amplifies pro-environmental behavior under servant leadership, suggesting ethical leaders with environmental values could enhance GVB under high PGOS.

Inconsistent signals, like supportive supervisors but non-supportive organizations, hinder green voice. Epitropaki and Martin (2013) validated POS as a moderator between transformational leadership and upward influence tactics. Building on this, we propose PGOS moderates the ESEL-GVB relationship. The lack of empirical evidence highlights the need to explore PGOS as a moderator, leading us to propose:

Hypothesis-3. The availability of PGOS as a social exchange resource moderates the relationship between ESEL and GVB, such that munificent PGOS would facilitate the GVB, and constrained PGOS would impede the VB.

2.6. Interaction between LMX and PGOS

A more comprehensive understanding will be developed by integrating ESEL, LMX, and PGOS to test the proposed 3-way interaction on GVB. We propose that in resource-constrained conditions (low LMX and PGOS) according to RTSE (Epitropaki & Martin, 2013), employee silence will prevail due to unsupportive supervisors and workplace. In resource-munificent conditions (both LMX/PGOS at high levels), employees benefit from a relatively amicable relationship with their managers and supportive organizational environment leading them to raise more green ideas. In moderate-resources conditions (low LMX/high PGOS or high LMX/low PGOS), GVB will be higher than that in the extremely resource-constrained conditions because leaders represent the face of the organization and are considered the agents acting on behalf of the organization (Armstrong, 2010).

Moreover, in extremely resource-constrained environments (low LMX / low PGOS) according to RTSE (Epitropaki & Martin, 2013), employees are unlikely to exercise GVB fearing alienation from leaders who are perceived as the sole providers of essential resources. Their fear of losing their single access point to significant resources increases employees' reluctance to speak up. In general, in resource-munificent conditions, the use of GVB is expected to be the maximum because, with the rise in the availability of resources (a move from resource-moderate to resource-rich conditions), the likelihood of exercising GVB increases. The opposite happens in resource-constrained situations. Taken together, we assume:

Hypothesis-4. The interaction between LMX and PGOS would significantly predict the GVB.

2.7. Three-way interaction effects for ESEL and GVB

Finally, we explore the 3-way interaction effect as anticipated when employees perceive their supervisor to be highly ethical for reducing the negative environmental impact caused by the organizational operations. A three-way interaction between ESEL, LMX and PGOS exists in our model to explain different workplace resource conditions which shape employee resource exchange behaviors. RTSE suggests organizations should maximize resource exchange behaviors by providing multiple resource channels that create a sense of fair reciprocity between members (Epitropaki & Martin, 2013). In line with the preceding arguments, we contend that resource-munificent conditions expand the exchange of voice resources between employees and ethical leaders. In resource-moderate conditions (low LMX/high PGOS or high LMX/low PGOS), subordinates are expected to speak up more than in a constraint-laden environment. In resource-moderate conditions, LMX can act as a substitute for the suboptimal organizational relationships; nonetheless, the need to engage in VB will remain lower than in fully supportive, resource-munificent conditions.

In resource-constrained conditions (low LMX & low PGOS), employees are unlikely to engage in GVB, fearing it may damage their chances for improved exchanges with a leader they respect and admire. GVB is expected to be utilized across all contexts (resource-constrained, resource-moderate, or resource-munificent) to varying degrees, as the hypothesizing is not meant to rule out the influence of the ESEL. We, therefore, hypothesize that the 3-way interaction effect of ESEL, LMX, and PGOS on GVB will be significantly enhanced.

Hypothesis-5. ESEL and GVB relationship would be jointly moderated by LMX and PGOS such that the 3-way interaction effect would be the highest at high-LMX and high-PGOS and vice versa (See Fig. 1).

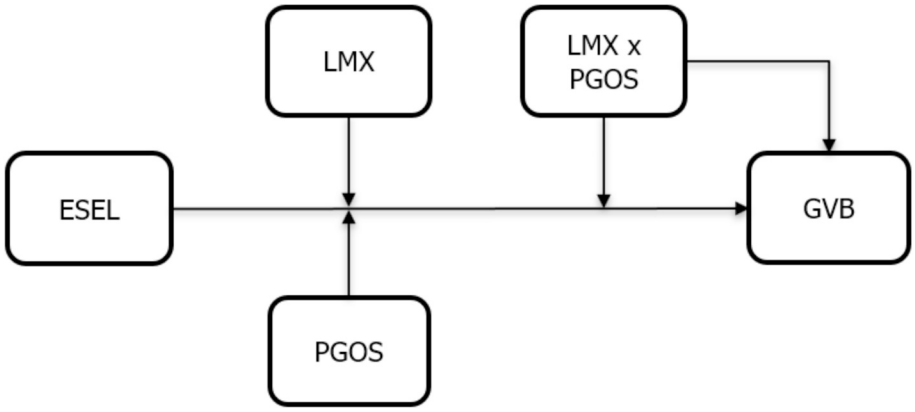


Fig. 1. – Research Model.

3. Research Method

This study's population comprised exploration & production companies in Karachi, Pakistan. The need for green voice and sustainable operations in this industry, but against the backdrop of rapid climate deterioration and the accompanying disasters, the urgency to implement sustainable ideas and harness green voice cannot be denied to stimulate the production of renewable energy. Acquisition and use of clean energy, creation of digital oilfields for sustainable decision making, reducing oil disposal and increased use of oil recycling, ways to reduce oil and gas methane emission along the value chain, decreased reliance on freshwater usage and recycling, and reuse of water for organizational operations, all these sustainable operations depend upon exercising and implementation of innovative green ideas. Hence, the study model has important relevance and significance concerning the country's sustainable development goals. Three specific reasons guided the selection of Pakistan's petroleum sector. First, employees' green voice behavior proves essential for this sector because it faces major environmental concerns, which brings increased regulatory requirements. Second, leadership exchange dynamics between higher-level staff and lower-level personnel operate optimally when studying environmental initiatives within the industry's hierarchical structure. Third, the petroleum sector in Pakistan currently experiences sustainability transitions which provide researchers with an appropriate setting to explore leadership's impact on organizational environmental conduct.

This research utilized a time-lagged survey design anchored in quantitative methodology which obtained data through two separate measurement points at three-month intervals. The sampling technique used in this study was stratified random sampling. This approach was selected since it enables the population to be stratified into smaller strata that are characterized by distinguished features so as to obtain a more representative sample. Random samples were drawn within each stratum. Detailed segmentation was based on the size of the oil and gas companies, their annual production, and the number of employees. This was done to ensure that the study adequately represented both large and small-scale exploration and production companies (Yates, 1946). By drawing random samples from each of these groups, we ensured diversity and representativeness in our study population. ESEL, LMX, PGOS and control variables occurred at Time 1. The survey collected data on GVB at Time 2. By using a time-lagged design the study strengthens its causal inferences through temporal measurement separation between the predictor and criterion variables to minimize common method bias (Podsakoff et al., 2003).

Our time-lagged design was appropriate for examining complex relationships between leadership variables and employee behaviors while minimizing same-source bias that frequently plagues cross-sectional designs. Additionally, we employed Harman (1976) single factor test as well to rule out common method bias. The chosen method adheres to leadership-employee behavior research protocols established by (Epitropaki & Martin, 2013; Wilson et al., 2010; Xu et al., 2021) which establishes strong predictor-outcome temporal sequencing to enhance the robustness of hypothesis testing.

We received a total of 304 responses through above research design. The suitability of this sample for double moderator interactions was evaluated according to the guidelines of Hair et al. (2019) on sample sizes in moderation analysis. Based on their guidelines, a sample of 304 is good enough to detect medium sized effects in double moderator interactions, especially given our sampling technique which ensures representation across different strata. Furthermore, with our sample size, we also achieved a power of 0.80 through G*Power, which is considered acceptable for social science research (Cohen, 1988; Faul et al., 2009).

Informed consent was taken before data collection. Study objectives were briefed to the target respondents. Three weekly email reminders were sent to them to mitigate the non-response bias. There were 82 % males and 18 % females, and most belonged to the age groups 31–40 and 41–50, with 39 % and 47 % representation, respectively. Nearly 52 % of the respondents had 11–15 years of work experience, and approximately 60 % of participants had a master's degree.

For each measure, respondents' agreement was assessed with different statements constituting various dimensions of each variable on a five-point Likert scale. The response format of the Likert scale ranged from “1= Strongly Disagree” to “5= Strongly Agree”. Ethical Leadership exclusively promoting environmental values has been assessed by using Brown et al. (2005) 10-items scale after modifying it for the environmental concerns, e.g., “My manager listens to what employees have to say regarding environmental issues” and “My manager defines success not just by results but also the way that they are obtained using sustainable means” are the sample items. Green Voice Behavior or Environmental Voice Behavior has been measured with Liang et al. (2012) ten-item scale. Four items were dropped based on exploratory factor analysis (EFA) results. EFA utilizing principal component with varimax rotation indicated that one factor with an eigenvalue of 3.67 explained 61.18 % of the total variance. The scale and this methodology have been used by Tabrizi et al. (2023) and Nourafkan et al. (2023) for measuring GVB.

The 8-item scale of Perceived green organizational support was adapted by merging two scales, Lamm et al. (2015), and a 3-item shorter version of POS (Eisenberger et al., 1986) modified and used by Cantor et al. (2012) for measuring perceived organizational environmental support in their research. LMX was assessed with a 7-item LXM scale developed by Scandura and Graen (1984).

Since employees' demographics (e.g., education, gender, age) have been found to impact voice behavior (Detert & Burris, 2007; LePine & Van Dyne, 1998), thus we controlled years of age, gender of respondents and educational qualification for this research, which were although influencing GVB but somehow their impacts were not significant.

3.1. Ethical consideration

To uphold the highest standard of participant autonomy and privacy in line with ethical guidelines, each participant was required to give written informed consent before taking part in the study. This consent was articulated in a document attached to every questionnaire, outlining the study's aim, methods, possible risks and benefits, confidentiality measures, and the participant's right to withdraw at any stage without consequences. The research team ensured that participants had sufficient time to understand the consent form and addressed any questions or worries before it was signed. Only adults were involved in the study, with minors being specifically excluded from participation. Every written consent was securely held, and copies were handed to each participant, guaranteeing a transparent and accountable process. Opting for written consent enabled a concrete and unequivocal record of every participant's voluntary agreement to be part of the study, mirroring our devotion to ethical research methods.

4. Results

Data were analyzed through SPSS version 26; the descriptive statistics such as means (M), standard deviations (SD), correlations, reliability, and validity are given in Table 1.

4.1. Assessment of measurement model

First, to rule out the common method bias in the data was evaluated by using Harman (1976) single factor test, results showed that study variables accounted for 69.55 % cumulative variance with 14.77 % variance by any single factor which was not the major variance (Podsakoff et al., 2003). Additionally a null model (e.g., (Elangovan & Xie, 1999)) was also evaluated in AMOS (Podsakoff et al., 2003) to identify the common method variance (CMV) more precisely. Since both models showed poor data fit (see Table 2), indicating CMV was not a concern. We used confirmatory factor analysis (CFA) with AMOS 24 to examine the factor structure of the study scales. Following Byrne (2016), the model was refined for optimal fit. Comparing alternative CFA models, our proposed 4-factor model showed the best fit ($\chi 2$ (844) / df (438) = 1.93, CFI = 0.92, TLI = 0.91, RMR = 0.018, RMSEA = 0.055). All factor loadings exceeded 0.5, and Cronbach's alpha and composite reliability met the criteria (>0.7). HTMT was below 0.85, confirming discriminant validity, while AVE was above 0.45, establishing convergent validity since composite reliability was above 0.6 (Hair et al., 2019; Fornell & Larcker, 1981). See Table 3 for detailed reliability and validity metrics.

4.2. Hypothesis testing

The bivariate correlations of the study variables have been reported in Table 1. Results in the table illustrate that variables in the expected directions. So, following Cohen et al. (2013), we used moderated hierarchical regression analyses to test our hypotheses. As given in Table 4, first, we entered the control variables, which influenced the voice but remained insignificant in all models with only 3 % variance (R^2) explained by the controls. We used centered predictor and moderator variables for a more meaningful interpretation of the analyses (Aiken et al., 1991; Hayes, 2018). As we can see from Table 4, ESEL positively and significantly predicted the GVB (b = 0.215, p = .000), which approved our hypothesis 1. We can also note from step-2 that the predictor variables explained nearly 38 % variance (R2), which indicated an increase of 35 % in R2, suggesting that this model was more effective.

Next, we tested the LMX moderation on the link between ESEL and GVB, as reported in Table 4; we noted that the interaction between ESEL and LMX positively and significantly predicted the GVB (b = 0.341, p = .022). Following Dawson (2014), we further confirmed the moderation of LMX by using simple slopes. As shown in Fig. 2, ESEL was more positively related to GVB at higher levels of LMX (slope gradient = 0.556; t = 3.636; p < .001) than the lower levels of LMX (slope gradient = 0.215; t = 3.925; p < .001). Thus, hypothesis-2 received further support.

Like the LMX, PGOS moderation on the link between ESEL and GVB was also tested. The interaction between ESEL and PGOS positively and significantly predicted the GVB (b = 0.242, p = .025), supporting hypothesis 3 (see Table 4). We further confirmed this moderation by

Table 1
M, SD, correlations, and composite reliability.

Variable	M	SD	ESEL	LMX	PGOS	GVB	CR
ESEL	3.56	0.43	–				0.90
LMX	3.10	0.40	0.18**	–			0.88
PGOS	3.99	0.47	0.43**	0.20**	–		0.86
GVB	4.15	0.50	0.37**	0.52**	0.38**	–	0.93

N = 304,
** p < .01.

Table 2
CFA models comparison.

Model	chi^2/ df	TLI	CFI	RMR	RMSEA
4-Factor: ESEL, LMX, PGOS & GVB	844 / 438 = 1.927	0.913	0.923	0.018	0.055
3-Factor: ESEL+LMX, PGOS & GVB	1730 / 441 = 3.923	0.727	0.757	0.046	0.098
2-Factor: ESEL+LMX + PGOS & GVB	2226 / 443 = 5.002	0.626	0.666	0.049	0.115
1-Factor: ESEL+LMX + PGOS+GVB	2428 / 444 = 5.468	0.582	0.626	0.049	0.121
Null Model	3899 / 476 = 8.191	0.328	0.355	0.103	0.154

Table 3
Reliability and validity.

	CA	CR	AVE	HTMT			
				ESEL	LMX	PGOS	GVB
ESEL	0.895	0.894	0.464	–			
LMX	0.878	0.882	0.490	0.198	–		
PGOS	0.868	0.871	0.459	0.489	0.226	–	
GVB	0.868	0.858	0.507	0.413	0.567	0.437	–

CA = Cronbach alpha, CR = composite reliability, AVE = average variance extracted, HTMT = heterotrait-monotrait ratio.

Table 4
Regression analyses.

Step	Variable	Green Voice Behavior			
		Beta Model-1	Beta Model-2	Beta Model-3	Beta Model-4
1	Gender	−0.081	−0.036	−0.011	−0.012
	Age	0.081	0.009	0.012	0.011
	Education	−0.078	0.004	−0.008	−0.008
2	ESEL		0.225**	0.231**	0.215**
	LMX		0.545**	0.606**	0.559**
	PGOS		0.222**	0.224**	0.208**
3	ESEL x LMX			0.300*	0.341*
	ESEL x PGOS			0.232*	0.242*
	LMX x PGOS			0.279*	0.330*
4	ESEL x LMX x PGOS				0.76*
	R-Sq	0.029	0.379	0.421	0.432
	R-Sq Change	–	0.350	0.042	0.011

N = 304,
** p < .01.
* p < .05.

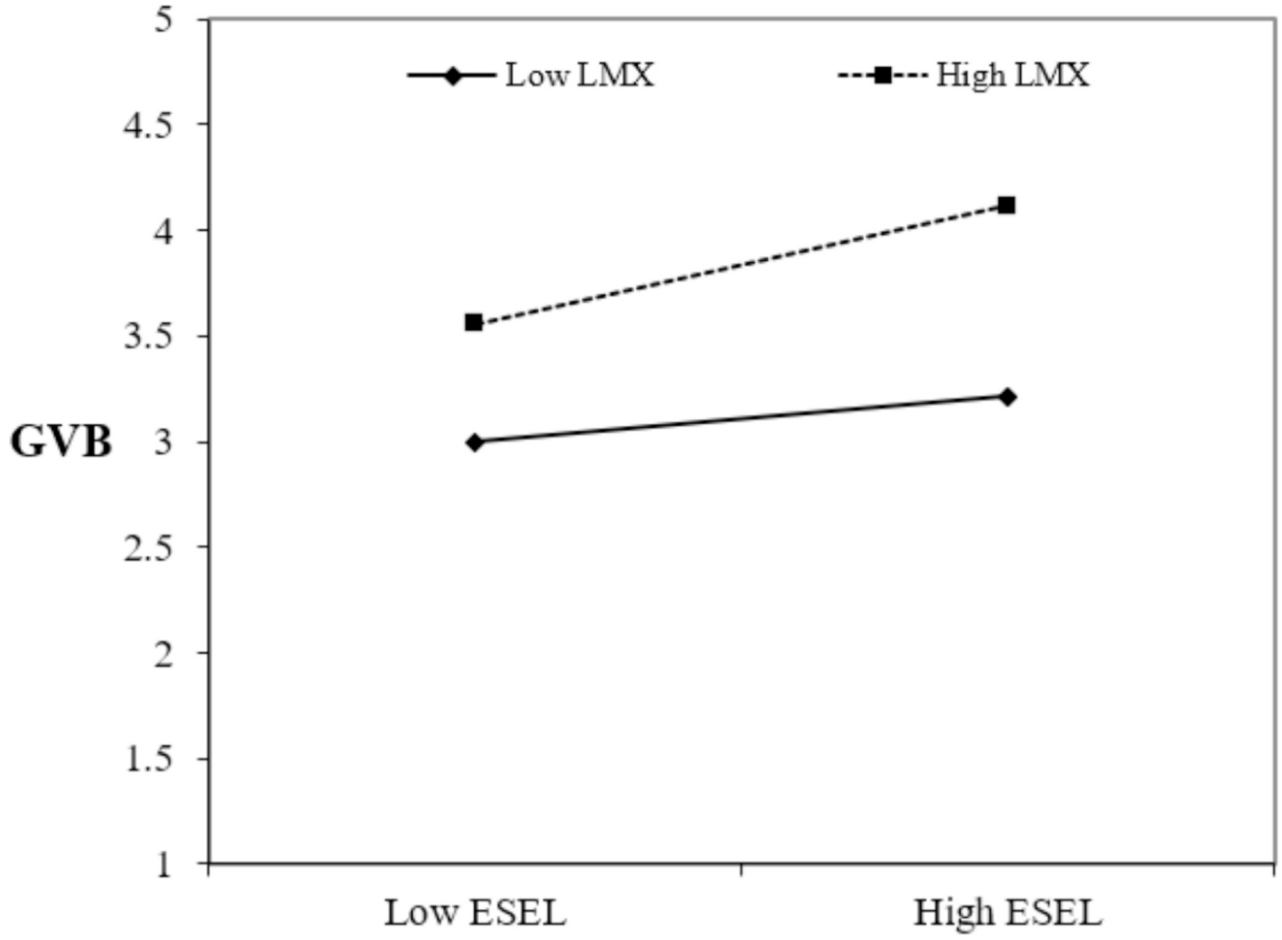


Fig. 2. ESEL & LMX interaction plot.

plotting it (Dawson, 2014). As seen in Fig. 3, ESEL was more positively related to GVB at higher levels of PGOS (slope gradient = 0.457; t = 3.836; p < .001) than the lower levels of PGOS (slope gradient = 0.215; t = 3.925; p < .001). So, hypothesis 3 further strengthened the main relationship. For hypothesis 4, we relied on the values of interaction between LMX and PGOS, the interaction between these two positively and significantly impacted the GVB (b = 0.330, p = .019), so hypothesis 4 also received full support. In addition to the individual effects of the two-way interactions (ESEL x LMX, ESEL x PGOS & LMX x PGOS), step

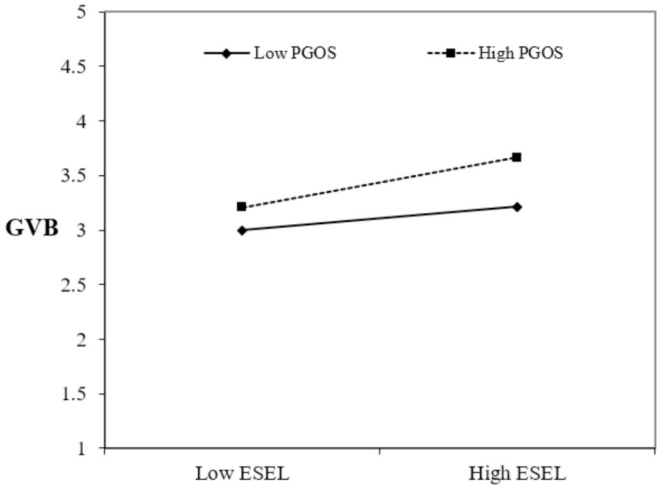


Fig. 3. ESEL & PGOS interaction plot.

three R^2 indicated >42 % variance in the overall model, which means that model 3 was at least 4.2 % better than the model 2 with predictors only.

We utilized the method devised by Dawson and Richter (2006), while analyzing the three-way interaction effects mentioned in hypothesis 5. We tested whether individual interaction slopes differed from each other, as they were hypothesized instead of finding out that those interaction slopes differed from zero. The results of moderated regression (Table 4) indicated that the 3-way interaction (i.e., ESEL x LMX x PGOS) positively and significantly influenced the GVB (b = 0.759, p = .016), and this interaction caused 43.2 % accumulated and 1.1 % more variance in comparison with model 3, which established its superiority on other models. So, in general, the hypothesis was approved.

Although the results of the moderated regression provide significant evidence of the three-way interaction, for developing a clearer understanding of the empirical support provided by the study sample to the theoretical hypotheses, the interactions were plotted following the method of Dawson and Richter (2006). The resultant pictorial representation of the three-way interaction involving ESEL, LMX, and PGOS has been illustrated in Fig. 4. As we can note from Table 5 that there was an obvious difference between slope 1 and slope 4 (b = 11.45, t = 2.67, p = .008), which meant that ESEL had its optimum impact on GVB (gradient = 17.97, t = 2.83, p = .005) when LMX and PGOS had maximum scores. In contrast, ESEL had a suboptimal impact on GVB when LMX and PGOS scored the minimum (gradient = 6.52, t = 3.15, p = .002). Thus, the overall approval of hypothesis 5 was further supported.

Next, we analyzed whether or not LMX could represent the

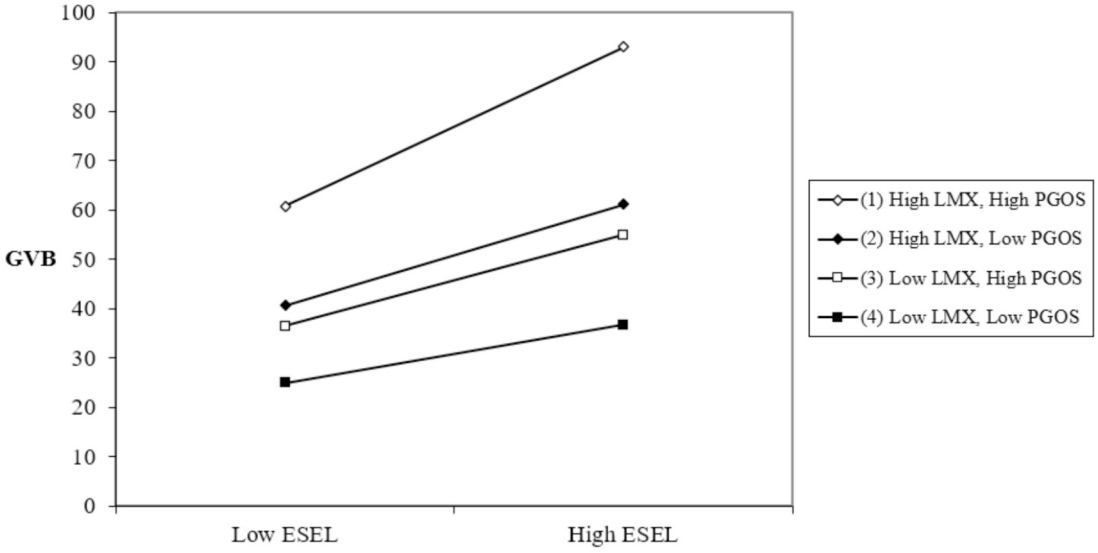


Fig. 4. 3-Way interaction plot.

Table 5
Slopes statistics and comparisons.

Slope / Pair of Slopes	Slope Gradient / Difference	t-value	p-value
Slope 1 = High LMX & High PGOS	17.97	2.83	0.005
Slope 2 = High LMX & Low PGOS	11.41	2.96	0.003
Slope 3 = Low LMX & High PGOS	10.23	3.00	0.003
Slope 4 = Low LMX & Low PGOS	6.52	3.15	0.002
Slope (1) and (2)	6.56	2.62	0.009
Slope (1) and (3)	7.73	2.62	0.009
Slope (1) and (4)	11.45	2.67	0.008
Slope (2) and (3)	1.18	2.05	0.041
Slopes (2) and (4)	4.90	2.72	0.007
Slopes (3) and (4)	3.72	2.75	0.006

organization. For this, we consulted differences in the slope gradients. We took slope 4 as the benchmark for the comparisons where both LMX and PGOS were low. We compared slope 4 with slope 3, revealing that High PGOS caused an increase/difference in slope gradient equal to 3.72 units (see Table 5). Then we compared slope 4 with slope 2, revealing that High LMX caused an increase/difference in slope gradient equal to 4.90 units (see Table 5). From this, we can conclude that an increase in LMX caused 1.18 units more gradient change than the PGOS; see the difference between slope 2 and slope 3 in Table 5.

5. Discussion

First, as we proposed in the theoretical framework, the study results indicate that ESEL significantly impacts the employees' green voice behavior, lending empirical support to our first hypothesis. This finding concurs with the previous findings that ethical leaders support their followers and listen to their voice (Zhu et al., 2022), it also supports the argument that ESEL raises awareness in employees about ethical concerns and make them courageous to speak against unethical practices, like harming the environment. The results of this research expand upon Robertson and Barling (2017) study about how environmentally specific transformational leadership drives pro-environmental employee behaviors through environmental passion. The study also supports findings from (Afsar et al., 2016; Graves et al., 2013; Robertson & Barling, 2013, 2017; Tuan, 2021) who showed that positive leadership styles led to pro-environmental employee actions in organizations. However, the current research stands apart from existing works because it focuses on ethical leadership with environmental focus (ESEL) instead of transformational leadership and investigates GVB specifically rather than general pro-environmental behaviors. Our research confirms prior work from Zeng and Xu (2020) about ethical leadership developing employee voice through trust yet we specifically studied environmental voice behavior. Also, these results concur with the findings of Nazeer et al. (2025) who validate that leaders' environmental orientation and green role modelling serve as major antecedents for GVB. While applying the RTSE, we tried to address the role of context and examined key boundary conditions of the LMX and PGOS on the relationship between ESEL and green voice behavior. These situational variables were examined as possible moderators of the relationship between ESEL and GVB. We posited that when both LMX and PGOS are low, employees would perceive their work environment as resource-constrained, whereas when both are high, they will perceive their work environment as resource-munificent. The results of our study show that in resource-constrained conditions (low LMX & PGOS), employees also constrain their resources, i.e., GVB, as they feel that doing so would compromise their relationship with their leaders. On the contrary, when employees perceive a high LMX and PGOS condition, they also become munificent in offering GVB. These findings are partially aligned with the results of Xu et al. (2021) and Epitropaki and Martin (2013) and they are further extended. Our study diverges from Xu et al. (2021) by examining environmentally specific ethical leadership and green voice behavior while they studied the effect of transformational leadership on work behaviors through positive work reflection with LMX as a crucial moderator. The research by Epitropaki and Martin (2013) revealed POS and LMX as joint moderators for leadership-outcome relationships but our study builds upon this by showing this combined effect in environmental leadership context. Findings also suggested that LMX has the potential to substitute the suboptimal PGOS, and LMX can be an overall representative of the organization (Armstrong, 2010; Credo et al., 2010). This means that leader resources can compensate for organizational resource deficiencies in environmental initiatives, which is an extension of Wilson et al. (2010) resource substitution theory.

The validated three-way relationship between ESEL, LMX and PGOS represents new findings which were previously absent from existing academic literature. This study results also differ from Thompson et al. (2020) by demonstrating resource availability as a stronger boundary condition than gender demographics in shaping organizational citizenship behaviors within the petroleum sector.

5.1. Theoretical implications

Our study has made some important contributions. First, we introduce GVB as a distinct variable. (ii) By bringing literature through RTSE, we have examined ESEL as a significant determinant of GVB (a concept not previously studied as a unique construct with leadership). We expand RTSE by using it to analyze environmental sustainability issues. Future research can take the lead from this investigation to apply this theory's principles in corporate sustainability context beyond routine organizational settings. The research shows that RTSE provides robust explanations regarding how LMX and PGOS resources affect employee risk-taking behavior measured through green voice. (iii) By integrating ESEL and LMX (as a situational influence) on ESEL, we have validated that the interaction of these two variables stimulates GVB. Our study contributes to stronger theoretical explanations of employee environmental voice through recognition of both leadership support and organizational support mechanisms. The research fills an essential void which exists in employee voice literature regarding sustainability issues. (iv) PGOS has been tested and verified as the second boundary condition on the relationship of ESEL-GVB, ours being the first study to do so (e.g., (Tan et al., 2019)). In a workplace environment perceived by employees as non-supportive in terms of social exchanges, they feel less inclined to use GVB since, in that case, their high LMX standing, being their only source of rewards and resources, will be at risk. (v) Another prime contribution of our study is the examination and confirmation of the combined effects of two boundary conditions, i.e., the three-way interaction of ESEL, LMX, and PGOS. Such integration has not been performed in past literature, particularly with ESEL and GVB variables. Although the munificent condition is desirable, when there is an ethical leader, employees try to keep a good relationship with the organization and the manager and invest efforts to further the relationship. Therefore, they invest more by passing more information / green voice to their leaders to tap more resources. The three-way interaction model highlights how various resource levels determine the effectiveness of ethical leadership in sustainability context. Our analysis demonstrates how leader-provided resources combine with organization-provided resources to create intricate effects which exceed basic main effects and two-way interaction models. This advances leadership theory by demonstrating that the impact of ESEL is not uniform, but highly dependent on the broader resource context explained by RTSE. (vi) Our study model is the first to lend empirical support to RTSE with the studied variables and in the oil and gas sector of Pakistan (an industry operating in a collectivist country where exercising GVB is extremely risky, and hence the support by ESEL and PGOS becomes even more relevant. The employees weigh the cons before speaking in a power-distant society like Pakistan and will do so only under the availability of certain resources). (vii) We also revealed that LMX could represent the organization as a whole. Understandably, constraint and munificent conditions have obvious outcomes. Still, it was interesting to discover how the moderate conditions (i.e., low LMX & high PGOS or high LMX & low PGOS) of resources would turn out. The results showed that LMX was more successful in bartering the GVB than PGOS.

5.2. Practical implications

Considering practical implications, this study would contribute to power-distant societies (e.g., Pakistan) by offering insights on developing more ethical and supportive environments for the GVB. Because power-distant communities are known for constrained economic conditions, employees' access to valuable resources is often restricted; hence, the workforce will have greater incentives to exercise GVB when they expect a 'bigger piece of the pie' on their plate instead of just dropping. Therefore, leaders should try to capture every resource and every opportunity that may maximize the business profits in the long run by implementing innovative green ideas of the workforce, and they should create conditions for fueling the prevalence of GVB. To this end, training programs aimed at developing environmental values in ethical leaders can be introduced. Also, ESEL must be trained to understand the dynamics of GVB as a resource. Incorporating strategic insights in the training program to improve the quality of organization-member relations also holds vital significance. Leaders' insensitivity to their followers' reciprocity expectations and denying the availability of resources inferences based on quality exchanges make them more ineffective than their counterparts who show sensitivity to these contingencies. Similarly, employees are also expected to be supporting their leaders/organizations. They should demonstrate more commitment by solving the environment-deteriorating organizational practices through green suggestions in an attempt to convert the moderate resource conditions into resource-munificent ones.

5.3. Limitations and future research directions

We do acknowledge the limitations of our study along with our contributions. The integration of LMX and POS has few instances in past research (e.g., (Epitropaki & Martin, 2013; Wilson et al., 2010; Xu et al., 2021)) and that too with different antecedents and resultant variables, so these two jointly or anyone of these in a combination of other variables in three-way interaction models should be tested further to determine the relevance of these or other antecedents with the GVB of employees. PGOS, however, has not been tested in combination with LMX as a boundary condition of any main variable relation. Although our time-lagged design strengthens causal inference but a research study spanning multiple rounds over extended periods would yield stronger evidence regarding ESEL, LMX, and PGOS relationships with GVB. Tracing PGOS and LMX changes over long time (e.g., (Nahrgang et al., 2009)) can determine the causal effects more robustly.

Also, since we collected data from exploration and production companies in Karachi, Pakistan, the findings of this study might not be generalizable to the service sector, other industries, and different countries. For instance, compared with the European nations, Pakistan displays a high power distant cultural orientation, which means the leaders here take top-down change-oriented initiatives and may preceive behaviors like green voice negatively (Parker et al., 2019). Hence, in low-power distant societies like Europe, the strength of the relationship of these variables may vary. Third, common method bias in the results cannot be eliminated, though we retrieved responses from the respondents by introducing time intervals (Ostroff et al., 2002) since the data was collected from a single source, i.e., by employees only, hence we expect this bias to affect the results slightly. Including leaders in the dyad to report employees' GVB will help cross-validate our study results. Obtaining archival green voice data from conference records, suggestion boxes, minutes of meetings, and emails would give a promising direction to future studies. Multiple data sources including leader ratings of employee GVB alongside objective environmental performance measures, will better eliminate common method bias even though time-lagged data collection was implemented. In light of advanced digital communication technology, we call for future research to explore employee's green voice sharing by considering social media data in addition to survey data, such as using microblog data to investigate what knowledge employees have shared on social media (Li et al., 2025).

Further, since this study examined middle managers' perspectives on GVB and other constructs which reduces the potential for generalization beyond the specific sample. Future research should apply our model to various hierarchical levels to increase external validity. Similarly, the moderation of PGOS requires further research in future studies to validate our findings and to support and generalize our theoretical framework. Future investigations should analyze additional variables which affect the relationship between ESEL and GVB. Potential moderators could include environmental values, psychological safety or team green climate etc. We also leave a question for future studies: "whether LMX is consistent in representing the organization as a whole?" or "does it produce varying results in different circumstances?" It is likely that POS

or any other substitute variable would also be incorporated in the same research for a comparative analysis.

6. Conclusion

The current research was aimed to examine the effects of environmentally specific ethical leadership on employees' green voice behavior in oil and gas organizations in Karachi, Pakistan. Study results revealed that ESEL had a significant and positive effect on GVB. The findings suggest that LMX and PGOS are somehow interlinked and show interdependence upon one another. The support the employees receive for environment-friendly decisions and implementation from the organization (PGOS) and the high-quality exchanges of ESEL with their subordinates (LMX) both moderate the relationship between ESEL and GVB. Results are suggestive of the view that employees perceive the organizations as partially responsible for resources received from the leaders; LMX was found to be more strongly impacting GVB when the followers perceived their leaders to be more munificent than their organizations. Such interdependence between LMX and PGOS recommends that both constructs are related in multiple ways, having significant practical repercussions for the organizations and work settings, especially regarding resource exchanges.

CRediT authorship contribution statement

Shanping Hu: Data curation, Conceptualization, Investigation. **Wafa Ghardallou:** Writing – review & editing, Supervision, Software. **Rebecca Kechen Dong:** Conceptualization, Writing - Review & Editing, resources, Project administration. **Rita Yi Man Li:** Visualisation, Validation, Software, Methodology, Writing - Review & Editing. **Shakira Nazeer:** Writing – original draft, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare no conflicts of interest.

Acknowledgements

Princess Nourah bint Abdulrahman University Researchers Supporting Project number (PNURSP2025R261), Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia.

Data availability

Data will be made available on request.

References

Afsar, B., Badir, Y., & Kiani, U. S. (2016). Linking spiritual leadership and employee pro-environmental behavior: The influence of workplace spirituality, intrinsic motivation, and environmental passion. *Journal of Environmental Psychology, 45*, 79–88.

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

Armstrong, M. (2010). *Armstrong's essential human resource management practice: A guide to people management*. Kogan Page Publishers.

Boiral, O. (2009). Greening the corporation through organizational citizenship behaviors. *Journal of Business Ethics, 87*, 221–236.

Boiral, O., Raineri, N., & Talbot, D. (2018). Managers' citizenship behaviors for the environment: A developmental perspective. *Journal of Business Ethics, 149*, 395–409.

Boiral, O., Talbot, D., & Paillé, P. (2015). Leading by example: A model of organizational citizenship behavior for the environment. *Business Strategy and the Environment, 24* (6), 532–550.

Botero, I. C., & Van Dyne, L. (2009). Employee voice behavior: Interactive effects of LMX and power distance in the United States and Colombia. *Management Communication Quarterly, 23*(1), 84–104.

Brower, H. H., Schoorman, F. D., & Tan, H. H. (2000). A model of relational leadership: The integration of trust and leader–member exchange. *The Leadership Quarterly, 11* (2), 227–250.

Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational Behavior and Human Decision Processes, 97*(2), 117–134.

Byrne, B. M. (2016). Adaptation of assessment scales in cross-national research: Issues, guidelines, and caveats. *International Perspectives in Psychology, 5*(1), 51–65.

Cantor, D. E., Morrow, P. C., & Montabon, F. (2012). Engagement in environmental behaviors among supply chain management employees: An organizational support theoretical perspective. *Journal of Supply Chain Management, 48*(3), 33–51.

Chamberlin, M., Newton, D. W., & Lepine, J. A. (2017). A meta-analysis of voice and its promotive and prohibitive forms: Identification of key associations, distinctions, and future research directions. *Personnel Psychology, 70*(1), 11–71.

Cheng, J. W., Chang, S. C., Kuo, J. H., & Cheung, Y. H. (2014). Ethical leadership, work engagement, and voice behavior. *Industrial Management & Data Systems, 114*(5), 817–831.

Cohen, J. (1988). Set correlation and contingency tables. *Applied Psychological Measurement, 12*(4), 425–434.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge.

Credo, K. R., Armenakis, A. A., Feild, H. S., & Young, R. L. (2010). Organizational ethics, leader-member exchange, and organizational support: Relationships with workplace safety. *Journal of Leadership and Organizational Studies, 17*(4), 325–334.

Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology, 29*(1), 1–19.

Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology, 91*(4), 917.

Detert, J. R., & Burris, E. R. (2007). Leadership behavior and employee voice: Is the door really open? *Academy of Management Journal, 50*(4), 869–884.

Donovan, S., O'Sullivan, M., Doyle, E., & Garvey, J. (2016). Employee voice and silence in auditing firms. *Employee Relations, 38*(4), 563–577.

Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A meta-analysis of antecedents and consequences of leader-member exchange: Integrating the past with an eye toward the future. *Journal of Management, 38*(6), 1715–1759.

Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology, 71*(3), 500.

Eisenberger, R., Jones, J. R., Aselage, J., & Sucharski, I. L. (2004). Perceived organizational support. *The employment relationship: Examining psychological and contextual perspectives, 206*, 225.

Elangovan, A., & Xie, J. L. (1999). Effects of perceived power of supervisor on subordinate stress and motivation: The moderating role of subordinate characteristics. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 20*(3), 359–373.

Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review*, 31–41.

Epitropaki, O., & Martin, R. (2013). Transformational–transactional leadership and upward influence: The role of relative leader–member exchanges (RLMX) and perceived organizational support (POS). *The Leadership Quarterly, 24*(2), 299–315.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G* power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(4), 1149–1160.

Foa, E., & Foa, U. (1980). Social exchange. In *Social exchange: Advances in theory and research*.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Francoeur, V., Paillé, P., Yuriev, A., & Boiral, O. (2021). The measurement of green workplace behaviors: A systematic review. *Organization & Environment, 34*(1), 18–42.

French, J. R., Raven, B., & Cartwright, D. (1959). The bases of social power. *Classics of organization theory, 7*(1), 311–320.

Gerstner, C. R., & Day, D. V. (1997). Meta-analytic review of leader–member exchange theory: Correlates and construct issues. *Journal of Applied Psychology, 82*(6), 827.

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 161–178.

Graves, L. M., Sarkis, J., & Zhu, Q. (2013). How transformational leadership and employee motivation combine to predict employee proenvironmental behaviors in China. *Journal of Environmental Psychology, 35*, 81–91.

Gurmani, J. K., Khan, N. U., Khalique, M., Yasir, M., Obaid, A., & Sabri, N. A. A. (2021). Do environmental transformational leadership predicts organizational citizenship behavior towards environment in hospitality industry: Using structural equation modelling approach. *Sustainability, 13*(10), Article 5594.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis*. Cengage.

Harman, H. H. (1976). *Modern factor analysis*. University of Chicago press.

Hayes, A. F. (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication Monographs, 85*(1), 4–40.

Henderson, D. J., Wayne, S. J., Shore, L. M., Bommer, W. H., & Tetrick, L. E. (2008). Leader–member exchange, differentiation, and psychological contract fulfillment: A multilevel examination. *Journal of Applied Psychology, 93*(6), 1208.

Hsiung, H.-H. (2012). Authentic leadership and employee voice behavior: A multi-level psychological process. *Journal of Business Ethics, 107*(3), 349–361.

Hussain, I., Shu, R., Tangirala, S., & Ekkirala, S. (2019). The voice bystander effect: How information redundancy inhibits employee voice. *Academy of Management Journal, 62*(3), 828–849.

Islam, T., Ali, G., & Asad, H. (2019). Environmental CSR and pro-environmental behaviors to reduce environmental dilapidation: The moderating role of empathy. *Management Research Review, 42*(3), 332–351.
Jada, U. R., & Mukhopadhyay, S. (2019). Empowering leadership and LMX as the mediators between leader's personality traits and constructive voice behavior. *International Journal of Organizational Analysis, 27*(1), 74–93.
Karabey, C. N., & Aliogullari, Z. D. (2018). The impact of ethical leadership on member's creativity and career success: The mediating role of leader-member exchange. *Pressacademia, 5*(3), 202–211.
Khan, M. A. S., Jianguo, D., Ali, M., Saleem, S., & Usman, M. (2019). Interrelations between ethical leadership, green psychological climate, and organizational environmental citizenship behavior: A moderated mediation model. *Frontiers in Psychology, 10*, Article 1977.
Khan, N. U., Cheng, J., Yasir, M., Saufi, R. A., Nawi, N. C., & Bazkiaei, H. A. (2022a). Antecedents of employee green behavior in the hospitality industry. *Frontiers in Psychology, 13*, Article 836109.
Khan, N. U., Cheng, J., Yasir, M., Saufi, R. A., Nawi, N. C., & Bazkiaei, H. A. (2022b). Antecedents of employee green behavior in the hospitality industry. *Frontiers in Psychology, 13*.
Lamm, E., Tosti-Kharas, J., & King, C. E. (2015). Empowering employee sustainability: Perceived organizational support toward the environment. *Journal of Business Ethics, 128*, 207–220.
LePine, J. A., & Van Dyne, L. (1998). Predicting voice behavior in work groups. *Journal of Applied Psychology, 83*(6), 853.
LePine, J. A., & Van Dyne, L. (2001). Voice and cooperative behavior as contrasting forms of contextual performance: Evidence of differential relationships with big five personality characteristics and cognitive ability. *Journal of Applied Psychology, 86*(2), 326.
Li, R. Y. M., Dong, R. K., Pu, R., & Zeng, L. (2025). How do micro-psychological and macro-socioeconomic factors influence construction safety knowledge sharing? Insights from a mixed-AI approach. *Labour and Industry*, 1–26.
Liang, J., Farh, C. I., & Farh, J.-L. (2012). Psychological antecedents of promotive and prohibitive voice: A two-wave examination. *Academy of Management Journal, 55*(1), 71–92.
Loi, R., Ao, O. K., & Xu, A. J. (2014). Perceived organizational support and coworker support as antecedents of foreign workers' voice and psychological stress. *International Journal of Hospitality Management, 36*, 23–30.
Maynes, T. D., & Podsakoff, P. M. (2014). Speaking more broadly: An examination of the nature, antecedents, and consequences of an expanded set of employee voice behaviors. *Journal of Applied Psychology, 99*(1), 87.
Morrison, E. W. (2011). Employee voice behavior: Integration and directions for future research. *Academy of Management Annals, 5*(1), 373–412.
Morrison, E. W. (2014). Employee voice and silence. *Annual Review of Organizational Psychology and Organizational Behavior, 1*(1), 173–197.
Nahrgang, J. D., Morgeson, F. P., & Ilies, R. (2009). The development of leader–member exchanges: Exploring how personality and performance influence leader and member relationships over time. *Organizational Behavior and Human Decision Processes, 108*(2), 256–266.
Nazeer, S., Naveed, S., Sair, S. A., & Khan, K. (2025). Making sustainable voices heard at the workplace. *International Journal of Ethics and Systems*.
Nguyen, T.-T.-N., Luu, T.-M.-N., & Pham, V.-D. (2019). *How ethical leadership supports voice behavior: Evidence from Vietnamese service firms*.
Niu, W., Yuan, Q., Qian, S., & Liu, Z. (2018). Authentic leadership and employee job behaviors: The mediating role of relational and organizational identification and the moderating role of LMX. *Current Psychology, 37*, 982–994.
Norton, T. A., Zacher, H., Parker, S. L., & Ashkanasy, N. M. (2017). Bridging the gap between green behavioral intentions and employee green behavior: The role of green psychological climate. *Journal of Organizational Behavior, 38*(7), 996–1015.
Nourafkan, N. J., Karatepe, O. M., & Rezapouraghdam, H. (2023). Corporate social responsibility, workplace spirituality and their effects on green promotive and prohibitive voice behaviours. *Current Issues in Tourism*, (7), 1–17.
Ostroff, C., Kinicki, A. J., & Clark, M. A. (2002). Substantive and operational issues of response bias across levels of analysis: An example of climate-satisfaction relationships. *Journal of Applied Psychology, 87*(2), 355.
Parker, S. K., Wang, Y., & Liao, J. (2019). When is proactivity wise? A review of factors that influence the individual outcomes of proactive behavior. *Annual Review of Organizational Psychology and Organizational Behavior, 6*, 221–248.
Paulet, R., Holland, P., & Bratton, A. (2021). Employee voice: The missing factor in sustainable HRM? *Sustainability, 13*(17), 9732.
Pfeffer, J., & Salancik, G. (2015). *External control of organizations—Resource dependence perspective organizational behavior 2* (pp. 373–388). Routledge.
Pfeffer, J., & Salancik, G. R. (2003). *The external control of organizations: A resource dependence perspective*. Stanford University Press.
Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879.
Robertson, J. L., & Barling, J. (2013). Greening organizations through leaders' influence on employees' pro-environmental behaviors. *Journal of Organizational Behavior, 34*(2), 176–194.
Robertson, J. L., & Barling, J. (2017). Contrasting the nature and effects of environmentally specific and general transformational leadership. *Leadership and Organization Development Journal, 38*(1), 22–41.
Scandura, T. A., & Graen, G. B. (1984). Moderating effects of initial leader–member exchange status on the effects of a leadership intervention. *Journal of Applied Psychology, 69*(3), 428.
Suganthi, L. (2019). Examining the relationship between corporate social responsibility, performance, employees' pro-environmental behavior at work with green practices as mediator. *Journal of Cleaner Production, 232*, 739–750.
Tabrizi, R. S., Karatepe, O. M., Rezapouraghdam, H., Rescalvo-Martin, E., & Enea, C. (2023). Green human resource management, job embeddedness and their effects on restaurant employees' green voice behaviors. *International Journal of Contemporary Hospitality Management, 35*(10), 3453–3480.
Tan, L. P., Yap, C. S., Choong, Y. O., Choe, K. L., Rungruang, P., & Li, Z. (2019). Ethical leadership, perceived organizational support and citizenship behaviors: The moderating role of ethnic dissimilarity. *Leadership & Organization Development Journal, 40*(8), 877–897.
Tangirala, S., Green, S. G., & Ramanujam, R. (2007). In the shadow of the boss's boss: Effects of supervisors' upward exchange relationships on employees. *Journal of Applied Psychology, 92*(2), 309.
Temminck, E., Mearns, K., & Fruhen, L. (2015). Motivating employees towards sustainable behaviour. *Business Strategy and the Environment, 24*(6), 402–412.
Thompson, P. S., Bergeron, D. M., & Bolino, M. C. (2020). No obligation? How gender influences the relationship between perceived organizational support and organizational citizenship behavior. *Journal of Applied Psychology, 105*(11), 1338.
Tuan, L. T. (2021). Effects of environmentally-specific servant leadership on green performance via green climate and green crafting. *Asia Pacific Journal of Management, 38*(3), 925–953.
Wagner, M. (2011). Environmental management activities and sustainable HRM in German manufacturing firms–incidence, determinants, and outcomes. *German Journal of Human Resource Management: Zeitschrift Für Personalforschung, 25*(2), 157–177.
Wilson, K. S., Sin, H.-P., & Conlon, D. E. (2010). What about the leader in leader-member exchange? The impact of resource exchanges and substitutability on the leader. *Academy of Management Review, 35*(3), 358–372.
Xu, X., Jiang, L., Hong, P. Y., & Roche, M. (2021). Will mindful employees benefit from positive work reflection triggered by transformational leadership? A two-study examination. *International Journal of Stress Management, 28*(1), 61.
Yates, F. (1946). A review of recent statistical developments in sampling and sampling surveys. *Journal of the Royal Statistical Society, 109*(1), 12–43.
Zeng, J., & Xu, G. (2020). Linking ethical leadership to employee voice: The role of trust. *Social Behavior and Personality: An International Journal, 48*(8), 1–12.
Zhu, H., Khan, M. K., Nazeer, S., Li, L., Fu, Q., Badulescu, D., & Badulescu, A. (2022). Employee voice: A mechanism to harness employees' potential for sustainable success. *International Journal of Environmental Research and Public Health, 19*(2), 921.