Impact of responsible leadership on sustainable performance: a moderated mediation model

Chunhui Huo
Business School, Liaoning University, Shenyang, China

Muhammad Arslan Safdar
Liaoning University, Shenyang, China and
Department of Management Sciences,
COMSATS University Islamabad – Sahiwal Campus, Sahiwal, Pakistan, and

Misbah Ahmed
Liaoning University, Shenyang, China

Abstract

Purpose – The increased interest of the industrial sector in sustainable concepts and leadership has lagged behind conceptual advancement. Leaders are increasingly being pushed to encourage sustainable performance. In order to examine the relationship between responsible leadership and sustainable performance, this research creates a model based on the logic of RL performance, with the concurrent mediation of epistemic motivation and moderating role of sustainable climate.

Design/methodology/approach – The current research analyzed a sample of 520 respondents from employees recruited from public sector organizations in Pakistan who were full-time employees in Punjab province in three waves with an interval of two weeks in each wave. To collect data, the scales are adapted from past studies that were relevant to this study. The data received from the survey questionnaire are analyzed using SEM.

Findings – The study's findings demonstrate a significant as well as positive association between RL and SP with $\beta = 0.298$ and $p < 0.001$. Further, a significant mediating impact of epistemic motivation on the relationship between RL and sustainable performance with $\beta = 0.238$ and $p < 0.001$ is also evident. Epistemic motivation is an important mediator because transparency in knowledge held massive importance to get sustainable outcomes and is predominant factor to exert his/her efforts.

Practical implications – The research shows some theoretical and practical implications. To achieve the aims of sustainable development, organizations should first encourage responsible leadership behaviors. By establishing a shared vision and goals, top management can encourage responsible leadership techniques within their jurisdiction. In order to encourage responsible leadership behaviors, organizations should seek to create capacity at both organizational and social levels. It will change employee attitudes and provide the knowledge needed to achieve sustainable development objectives.

Originality/value – This is one of the initial studies to examine the relationship between responsible leadership and sustainable performance. Further, the concept of social exchange theory is used to understand sustainable performance from a comprehensive standpoint.

Keywords Responsible leader, Green innovation, Knowledge sharing, Psychological safety, Trust in leader, Leader-member exchange

Paper type Research paper

1. Introduction

In this era, the human lifestyle is severely affected by technological advancements, uncertain climates, political instability, and financial integration. This whole scenario raises the intensity of external pressure on the public, NGOs, and the government to emphasize environmental concerns by implementing sustainable features (Afsar *et al.*, 2016; Golgeci *et al.*, 2021). According to Kim and Hall (2021), Wang *et al.* (2021), and Sancak (2023), sustainability has now emerged as a prime concern for organizations as it offers

opportunities for development, long-term growth, competitive advantages, and financial viability. Top level management and leaders in organizations are realizing the fact that addressing challenges regarding sustainable development can improve the quality of relations with their stakeholders and potentially can make them stand out in the market (Pinelli and Maiolini, 2017; Blind and Heβ, 2023; Jawaad and Zafar, 2020 stated that, it can be quite challenging to foster sustainable development as it demands broad consensus, critical decision-making, and collaborative endeavors of all pertinent stakeholder. According to Cheema et al. (2020) and Iqbal and Ahmad (2021), top-level managers in an organization can play a central role among distinct stakeholders because they are in charge of obtaining and employing essential resources, mounting suitable strategies, and pointing out the best way to accomplish sustainable development.

According to the study by Rubel et al. (2021), in order to enhance sustainable performance, the ability of an organization to dynamically achieve valuable high performance in societal as well as financial aspects is reinforced by appropriate leadership style and the ability to instill a sense of responsibility, mutual learning, and norms to foster voluntary environmental behavior in employees (Liao and Zhang, 2020; Tariq et al., 2020 Pureza and Lee, 2020). According to Dey et al. (2022) and Moreno-Monsalve et al. (2023), leadership style is significant to attain sustainable development because employees when receiving positive and fair vibes from their supervisors they act as frontline soldiers by playing an active role in developing and implementing leader's ideas and values that might significantly influence on organization's performance. In accordance with the study of (Xuecheng et al., 2022), an organization's sustainable performance can be defined as overall performance for all stakeholders and in all aspects, which is based on three factors; environmental performance, social performance, and economic performance. Current research is conducted by considering the responsible leadership style as a trigger and promoter of sustainable development in an organization.

A responsible leader according to the concept of Fernando and Fernando (2016) can improve organizational policies by encouraging moral and ethical behavior and promoting sustainable development on all fronts (Muff et al., 2020). Prior studies in responsible leadership claimed that leaders acting responsibly are the crucial drivers and key factors of an organization's effective performance (Doh and Quigley, 2014; Lin et al., 2020; Ogunyemi and Onaga, 2023). As they can stimulate employees through empowerment, inspiration, and communication (Waldman and Siegel, 2008; Curcuruto and Griffin, 2023), it encourages constructive transformation and responsible growth.

The significant role of leadership and its impact on boosting pro-social, pro-environmental, and pro-organizational behavior is excellently narrated in research work by prior scholars (Lu et al., 2019). Though, the intensity of how effective and influential a leader is also grounded on dependencies of other factors like the employee's abilities and their attitudes, along with organizational culture and climate, as well as additional contextual elements like the level of employee motivation (Mahmood et al., 2018).

The epistemic motivation of employees in an organization tends to forecast their ecological behavior that might have an ultimate impact on sustainable performance (Rai and Prakash, 2016; Albarello et al., 2023; Rijo and Waldzus, 2023). Epistemic motivation refers to the desire to acquire and retain a deep grasp of a situation using one's ideas about knowledge. It also refers to the act of gathering information. Knowledge acquisition is influenced by a learner's motivation for knowledge as an object. This research is conducted on the notion of whether responsible leadership can strengthen the sustainable performance of the organization through the mediation of epistemic motivation (Van Kleef et al., 2009).

Organizational climate is considered a constructive pillar for achieving sustainable development and growth. The sustainable performance in any organization relies on the working behavior of employees which is directly or indirectly associated with the climate of

the organization. According to Eakin *et al.* (2014), An organization's commitment to sustainability can have a fundamental impact on how its workers behave. Our current research is an attempt to examine the moderating impact of sustainable culture between RL and epistemic motivation of employees to sustain organizational performance.

Literature in extant studies assessed the understanding of sustainable performance regarding different factors and leadership styles for sustainable mechanism, i.e. sustainable leadership (Iqbal and Piwowar-Sulej, 2022), transformational leadership (Gupta and Zhang, 2020), authentic leadership (Chang *et al.*, 2020), value-based shared leadership (Pantouvakis and Vlachos, 2020), responsible leadership (Dey *et al.*, 2022). It is still believed that there exist scant and limited research on leadership-sustainable performance. The current study is extending this relationship mechanism by exploring the influence of responsible leadership upon sustainable performance through mediating and moderating the impact of epistemic motivation and sustainable culture.

The role of a responsible leader regarding distinct aspects of firm performance and need for sustainable performance is well-documented in past studies, but the connection between responsible leadership and an organization's sustainable performance is not much studied (Xuecheng *et al.*, 2022). Prior researches have listed the impact of RL on employees' perception of their organization and working behavior. Our study is contributing to the literature by emphasizing that responsible leadership is favorably correlated with the sustainable performance of an organization through the concept of motivation and organizational culture. The contribution of the current research study is discerned as firstly, several styles of leadership have been discussed with sustainable performance but the current study is an extension as it investigates how RL affects sustainable performance, through social exchange process. Secondly, prior studies lack focus on responsible leadership styles and focused on environmental strategy (Islam and Managi, 2019), environmental knowledge (Das *et al.*, 2019), and sustainable strategy (Pinelli and Maiolini, 2017) as explanatory factors. But responsible leadership is defined as maintaining and developing a sustainable relationship encompasses all stakeholders to achieve organizational goals and it covers all ethical aspects. Therefore, the current study utilizes the concept of social exchange theory to understand the implemented consideration of sustainable performance from a comprehensive standpoint, i.e. the collective significance of leadership, perspective, and impact of epistemic motivation and sustainable performance of the organization. The current model proposed that epistemic motivation played a mediating role between responsible leadership and long-term organizational performance. The sustainable climate is investigated as a moderator and tends to support the importance of responsible leadership and epistemic motivation for cultivating sustainable performance from a theoretical as well as practical perspective. The current research highlights the significance and need for leaders' responsible traits from theoretical and managerial perspective to achieve sustainable performance in an organization specifically in developing countries.

2. Literature and hypothesis development
2.1 Theoretical support
Current research employs a multi-theoretical paradigm namely social learning theory along with stakeholder theory, the main purpose is to uncover the phenomenon of how responsible leadership affects sustainable performance while taking into account the influence of employee's epistemic motivation on sustainable climate. According to Hussain *et al.* (2018) and McIvor and Bals (2021) multi-theory framework seems more appropriate to explore such phenomena since sustainable performance has numerous dimensions and its antecedents include a variety of complicated decisions and actions at various levels in the organization. Among all the various factors regarding sustainable performance, orientation of managers,

epistemic motivation, and sustainable climate play a constructive role as a pillar in this specific context. The current study is following the notion of social learning theory that when employees face ethical behavior and responsible leadership, they perceive their leader, as a role model and tend to emulate his behavior along with their credible actions and an optimistic inclination toward environmental concern (Brown *et al.*, 2005). Responsible leaders are confined to engage in distinct actions like fair decision making, maintaining ethical standards, establishing responsible behavior, and focusing on environmental compliance that aids organizations to participate in sustainable projects (Bandura, 1986; Bandura and Walters, 1977). Bandura (1969) learning theory strongly emphasis on the importance of observing, imitating, and replicating how other people's behave, feel, and react. Social learning theory actually tells us how environmental and cognitive factors affects human behavior and cognition (Carroll, 2021). It specifies that responsible leadership significantly influence the sustainable performance of its organization through actions, guidance, attitude, and belief. Additionally, according to social learning theory, responsible leaders also have their impact upon the organization's sustainable climate by building confidence and modelling their behavior (Yuriev and Sierra-Barón, 2020; Wang and Lin, 2017). Social learning theory concept explicit that a leader's responsible behavior gives rise to epistemic motivation in an organization which in turn encourages staff to take part in environmental advocacy actions like utilizing eco-friendly materials, reducing energy consumption, and motivates others to engage in sustainable practices (Duschl, 2008).

The other supporting theory of the current research study is the stakeholder theory which assumes that a company is liable to address various stakeholders' interests in all activities to guarantee effective achievement on the business front (Barter, 2011). Employees, owners, communities, and the environment are examples of key stakeholders. Secondary stakeholders include organizations representing trade and industry, governmental agencies, people involved in the supply chain, the media, and rival businesses.

To achieve proper corporate governance, social responsibility, performance, and sustainability overall that meet a variety of stakeholder expectations, responsible leaders are more dedicated to instilling sustainable standards and a sense of ownership in the firm (Paraschiv *et al.*, 2012). A responsible leader attempts to integrate the financial, environmental and social benefits while taking into consider the interests of many stakeholders. Our study emphasizes the fact that when employees receive support and encouragement from a responsible leader they tend to work while exerting extra efforts to meet the job standards and achieve the organization's sustainable goals while experiencing epistemic motivation. Employees also play a key role in carrying out the orders of leaders, thus their values must align with those of the leaders as well. As a result, it is anticipated that the sustainable culture of organizations will moderate the effect of leadership influence on employees' epistemic motivation that will ultimately appear in a positive outcome regarding sustainable performance. Therefore, responsible leadership has been considered a precursor of social, financial, and environmental performance.

2.2 Responsible leadership and sustainable performance

Previous studies have found a strong link among leadership and the factors promoting social, financial, and environmental conduct (Berkan *et al.*, 2021; Das *et al.*, 2019). However, its effectiveness depends on a variety of other variables, including the skills and attitudes of their followers, the culture and climate of the company, and other contextual elements (Gosling and Grodecki, 2020). Therefore, a more comprehensive methodology that incorporates both followers' principles and the ethical atmosphere of the firms is needed to investigate how ethical leaders' effect on sustainable performance. Employees' ecological behavior was shown to be predicted by their biosphere values, and this might eventually have an impact on how

sustainably a business performs (He *et al.*, 2021). To increase sustainable performance, leaders who uphold ethical standards that are compatible with the company ethical climate may promote workers' pro-environmental intentions and future environmental-supportive behaviors (Chang *et al.*, 2020; Xuecheng *et al.*, 2022). Though, this is established concept that RL has effects on several areas of organizational performance, but empirical studies on how RL affects long-term success of organizations are limited (Jawaad and Zafar, 2020).

2.2.1 Environmental performance. Employees who want to enhance pro-environmental conduct at work need to be led by responsible leaders (Javed *et al.*, 2020; Tanimura and Okamoto, 2013). RL is critical for an organization's ability to develop an atmosphere that fosters green innovation. Green innovation defined as technological advancement that reduce waste, water consumption, global warming, air contamination, coal, oil, energy preservation and utilization of electricity (Ahmad *et al.*, 2018; Abbas *et al.*, 2018; Chen *et al.*, 2020). Individuals' environmental conduct is a reflection of their moral convictions and strategies for exploring the interaction between human society and the wider environment while promoting sustainable practices, which are at the core of RL (Gomezelj, 2016; Zhang *et al.*, 2020a). Researchers elaborate that a responsible leader pushes organization to adopt environmental codes of conduct and management plans that address environmental protection, Participation in environmental protection is one of the primary characteristics of a responsible leader (Sharma *et al.*, 2021). Organizations implement various ideas for environmental protection such as green innovation and sustainable performance to meet market and environmental competition (Abbas *et al.*, 2018).

2.2.2 Social performance. Numerous researchers state that leaders must produce, distribute, and export wisdom, courage, and respect to internal and external stakeholders, which includes people-centered activities aimed at enhancing society's well-being, the environment's well-being, and maintaining peace in the areas where businesses operate. It will help to achieve organizational goals. That's why; organizations are accountable for their contributions to the society. Maak (2007) and Adedoyin and Soykan (2020) believe that today's organizations must maintain a social agenda with regards to their surrounding challenges (such as unemployment, environmental awareness, and Human rights violations), and play a critical part in addressing and regulating those challenges (Usman *et al.*, 2020). Authors professed that those organizations which have great supremacy and extensive network linkages should contribute more to the benefit of the societies in which they operate (Scherer and Voegtlin, 2020). RL deliberates not only ethical concerns, but also how to form connections with stakeholders and make strategic decisions (Berkan *et al.*, 2021).

2.2.3 Economic performance. Now a days, organizations measure their performance differently. In the past, organizations frequently measured their performance using their market position, assets, and liabilities. Businesses are now perceiving positive changes by striking a balance between their financial performance and their environmental and social performance; this phenomena is known as sustainable performance (Singh *et al.*, 2016; Zhang *et al.*, 2020b). Sustainable performance of any organization is measured in context of society, economy, and environment concurrently. Evaluation and measurement of a company's performance for all stakeholders and across all aspects constitute its sustainable performance. There is no such limits to evaluate sustainability, it can be measured by considering both upstream and downstream stakeholders (Muff *et al.*, 2020). In this regard, this is hypothesized that responsible leadership can play a pivotal role to achieve sustainable performance.

H1. Responsible leadership has a significant impact on Sustainable performance

2.3 Mediating role of epistemic motivation
In the past few years, economic globalization, environmental sustainability, employee diversification, and organizational networking have gained prominence and massive

attention among scholars and practitioner (Han *et al.*, 2019). According to Miska *et al.* (2014) and Gimenes and Souza Piao (2023), leaders must consider both corporate social responsibility and shareholder return to create successful firms. Han *et al.* (2019) and Haider *et al.* (2022) explicitly stated that a potent answer to the many demands and challenges of the complex stakeholder society is RL. As Zhang *et al.* (2022) mentioned RL is a value-oriented and ethical-based relationship among leaders and stakeholders of an organization who are interlinked by a shared purpose and common sense of meaning. Responsible leaders through their ethical and responsible behavior give rise to the level of motivation of their employees which results enhance their commitment to achieving sustainable value creation (Maak and Pless, 2006). There exist different levels of motivation for employees but epistemic motivation is considered one of the most valuable ones as it is affiliated with the desire to acquire a thorough and deep understanding. Epistemic motivation is associated with the process of determining information depth and whether a person exhibits high epistemic motivation or low epistemic drive has an impact on how systematic or heuristic their information processing is (Amabile and Pratt, 2016).

On the grounds of extant findings, we suppose that the influence of responsible leadership upon sustainable performance is strengthened by epistemic motivation (Ben-Ami *et al.*, 2020). Our particular hypotheses are additional informed by Forgas' (1995) affect infusion model (AIM), according to which an individual's information processing approach determines how much affective states affect judgments and decisions (Calic *et al.*, 2018). Based on such consideration it is also predicted that the relative influence of RL on employees will increase the intensity of their epistemic motivation because the presence of RL can lead the employees to process the task-relevant implications and to do so they are required to gain in-depth knowledge (Abbas *et al.*, 2018; Cheema *et al.*, 2020).

Due to the intricacy of the information, everyone is susceptible to poor outcomes, though different people react differently to it (Emich and Vincent, 2020). For instance, people who have consolidated preference, and those who have an ideal point, they can manage complicated information better than those who do not have any participation, who encourages the use of better information processing techniques (Golgeci *et al.*, 2021; Wang and Lin, 2017). Investigating when information complexity has negative impacts is crucial. In the present study, we investigate who perceives information complexity to be more distressing. As a mediating factor for the impact of complicated knowledge, we propose epistemic motivation (Hahn and Knight, 2021; Iqbal and Ahmad, 2021).

The role of epistemic motivation in the processing of information has been investigated in a number of different methods. According to persuasion research, for instance, people with greater levels of epistemic motivation and Need for Cognition (NFC) are more persuaded by the worth of arguments and depend less on their number. They are also less prone to specific framing errors (Harvey and Mueller, 2021).

According to earlier study, individuals with strong epistemic drive are more likely to seek out knowledge under unclear circumstances and absorb information more thoroughly overall. As a result, prior studies on complicated decision-making has oftenly examined the effect of epistemic motivation on information search, demonstrating that people with greater levels of epistemic drive prefer to seek for more information (Leung *et al.*, 2018). But frequently, even when people are not searching for sophisticated information, they are presented with it. For instance, catalogues for computers, cameras, and cellphones offer a vast quantity of information in the form of options and qualities (Miron-Spektor and Paletz, 2020). Critical analysis and laborious information processing are discouraged by low epistemic motivation. Therefore, encountering more knowledge in the form of qualities likely to exacerbate the subjective sense of pain when epistemic motivation is low (Abbas *et al.*, 2018). High epistemic incentive, on the other hand, promotes deliberate and careful information processing that promotes and helps in sustainable performance for individual

and organization (Zhang *et al.*, 2020a). As a result, having too little knowledge may be perceived as inadequate when epistemic motivation is strong, but having more information may appear beneficial and desired and be less likely to make a decision uncomfortable that can affect sustainable performance linked with organizational performance. Either too simple or too complicated information may leave people unsatisfied (Emich and Vincent, 2020; Golgeci *et al.*, 2021). The degree to which information is seen by an individual as being either too simple or too complicated relies on a variety of variables, including the nature of the choice and the particular options and features (Zhang *et al.*, 2020b). We concentrate on the mediating role of epistemic motive in this research. It is proposed that association between principles of ethical leadership and an organization's long-term success will be mediated by epistemic motivation. Companies are becoming more conscious of the prerequisite to include social responsibility and sustainability into their routine business operations. This is a response to outside influences such as societal concerns, governmental regulations, or competitive advantages that demand more environmentally friendly practices and commercial tactics (Zhang *et al.*, 2020a). Nevertheless, as sustainability performance initiatives need for long-term actions and changes to business processes, firms frequently struggle to put them into practice. Therefore, in many instances, the shift towards greater sustainability and corporate social responsibility is simply accomplished by new language and marketing strategies (Ahmad *et al.*, 2018). To put it another way, it involves "greenwashing." However, since the actual incorporation of related actions into the production of value is excluded, green washing does not satisfy the genuine requirements for sustainability and CSR (Xuecheng *et al.*, 2022; Ahmad *et al.*, 2018; Abbas *et al.*, 2018). Consequently, managers must embrace sustainability and CSR, as well as really begin and drive appropriate process improvements and initiatives, in order to adequately handle ecological and social challenges.

H2. Epistemic motivation significantly mediates relationship between Responsible leadership and Sustainable performance

2.4 Moderating role of sustainable climate

Leaders today must contend with a self-motivated, fast-paced, complicated, and fiercely viable business environment in the wake of economic globalization. This climate calls on them to priorities corporate social responsibility in addition to financial performance (Afsar *et al.*, 2016). By choosing to emphasize the importance of sustainable principles and priorities and to raise staff understanding of environmental responsibility, responsible leaders create an example for their followers (Afsar *et al.*, 2020). The needs and interests of their staff are also taken into account by responsible leaders, who may care about their professional and personal development or promote a collaborative and sustainable work environment (Agudelo and Cortes-Gómez, 2021). By interacting with the workforce, responsible leadership communicates pertinent information, and through observation and imitation, the workforce eventually internalizes the leadership's ideals (Akkalatham and Taghipour, 2021).

A person's efforts and ethical convictions to stabilize the relationship between nature and society, while advancing sustainable management, are reflected in their pro-environmental conduct, which is congruent with the fundamental principles of responsible leadership (Al-Amin *et al.*, 2021). Responsible leader participate in those actions that protect the environment because he is acquiring fundamental qualities of responsible leader. That is to say, competent leadership successfully enhances sustainable environment through the role model impact (Zhang *et al.*, 2020b). Responsible leaders may engage in voluntary extra-role conduct connected to a sustainable environment. Leadership's commitment for environmental preservation produces examples for employees in decisive interpersonal interactions between subordinates and leadership (Afsar *et al.*, 2020). Therefore, RL

integrates social responsibility and leadership, considers the needs of various stakeholders, and seeks to benefit the economy, society, and environment. This is consistent with the notion of pro-environmental behaviors (Abbas *et al.*, 2018).

Consequently, it is logical to assume that responsible leadership upholds moral principles which are preoccupied with its environmental responsibilities, works to find a balance nature and society, and inspire employees to behave in ways that are beneficial to the environment through management strategies and personal examples (Ahmad *et al.*, 2018).

H3. Sustainable climate moderates the relationship between responsible leadership and epistemic motivation.

Based on the above discussion, the following theoretical model (see Figure 1) is developed to test the hypotheses.

3. Method

3.1 Sample and procedure

The data for this study was collected from full-time employees working in the public sector organizations of Punjab province Pakistan. Researchers contacted HR managers of targeted organizations and shared the objectives of present study. The HR managers shared the list of employees along with their contact details. We gathered data for our research from employees along with their direct supervisors. Based on their willingness to engage as a participant in our study, we provided them with a survey link in three distinct waves over three weeks started from April to May 2020. This approach was performed to lower the risk of Common Method Variance (CMV) and participant fatigue (Podsakoff *et al.*, 2003).

At time 1, employees were requested to provide demographic information as well as data on the supervisor's responsible leadership and sustainable climate. At time 2, after three weeks, we asked the same employees to assess epistemic motivation and employees completed their survey. After three weeks intervals at time 3, we distributed the survey questionnaire to the supervisors of employees who had finished the questionnaire at T1 and T2 to assess sustainable performance. Out of 767 participants we received 520 final respondents with an accurate response rate of 67.96%. To see if there was a non-response bias, the demographics of participants who provided complete information was compared to those who only provided partial information. Resultantly, we did not find any significant difference, indicating that our data is free of response bias.

3.2 Measures

For the measurement of variables, five-point Likert scale was used (where "strongly disagrees = 1" and "strongly agree = 5"). For RL, we adopted instrument by Voegtlin (2011).

Figure 1.
Proposed framework
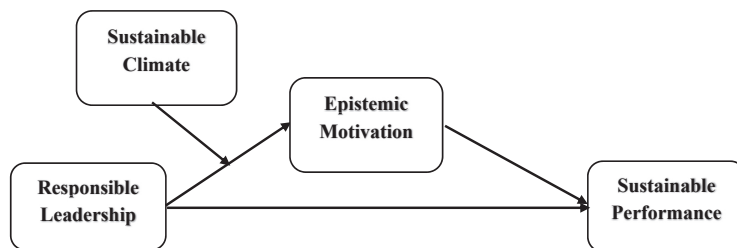
Source(s): Figure by authors

The sample question is, "*my direct supervisor involves the affected stakeholders in the decision-making process*es". The scale of sustainable performance is adopted from Lee and Ha-Brookshire (2017). The three elements of the 8-scale for sustainable performance are financial performance, social performance, and environmental performance. The sample question for environmental performance is, "I am aware that my company has the initiative to reduce, reuse, and recycle". The sample question for environmental performance is, "*My Company has the policy to improve its energy efficiency*". The sample question for social performance is, "I am aware that my company has the policy to strive to be a good corporate citizen". To measure epistemic motivation 4-item scale is adapted (De Dreu and Carnevale, 2003). The sample question is "I like to have the responsibility of handling a situation that requires a lot of thinking". Sustainable climate is measured on 5-item scale adapted by (Schönborn *et al.*, 2019). The sample question for the sustainable climate is "over the past 3 years we have achieved all our goals in full". The Cronbach alpha (α) for all variables was above 0.8, which is acceptable (Cortina, 1993).

3.3 Analytical strategy
In the current research, SPSS 25.0 and AMOS were utilized to analyze the data. The current study also employed bootstrapping technique in SPSS 25. A measurement model (Confirmatory Factor Analysis) is developed to examine the discriminant and convergent validity of variables used in present research. Composite reliability and average variance extracted are also measured. Following (Hair *et al.*, 2010) the significant and acceptable value of AVE is exceeding 0.50 and of CR is exceeding 0.70. In analysis structural model developed to examine the hypothesis along with the calculation of coefficient values, t-statistics, *p*-values, and confidence interval.

3.4 Results
Almost 767 respondents were selected and the questionnaire survey was distributed through links. 520 (67.96%) accurate responses were received and utilized for data analysis. Out of a total of 520 participants, 287 (55.2%) respondents were male and remaining 233 (44.8%) were female. All respondents were categorized in age group of five brackets. The first age group lies in 20–24 and participants who fall in this bracket were 71. The second age bracket consists of 25–29 with 132 participants lying in this category. 240 participants with a 46% ratio fall between age group of 30–34 years. Similarly, 35–39 age group consisted of 55 participants, which is 10.6%. On the other hand, only 32 respondents belonged to 40 years and above age group. Education level distribution of employees lies between bachelors, masters, and others with the percentage of 44.8%, 33.46%, and 21.7%. The working experience of respondent's range is 157 between t- 5 years with a percentage of 30.2%, the largest group of 236 respondents lies between 5 and 10 years' experience with the percentage of 45.45% and the remaining 127 respondents with the percentage of 24.4% had work experience of more than 10 years of experience. Detailed information on participants is mentioned below in Table 1.

First, data screening was done to identify the outlier's abnormal response, missing values, common method variance technique, and test of differences. The factor analysis (exploratory) was conducted to check common method bias. The highest correlation figure, 36.40% demonstrated that there is no common method bias issue.

Table 2 indicated that all factor values are greater than 0.5 which is an acceptable range and composite reliability is greater than 0.80, which ensure the adequate reliability of each item (Hair *et al.*, 2010). A thorough review of literature helped to ensure the size of the study's content validity. All of the factors' loadings in the confirmatory factor analysis are greater than 0.50, indicating convergent validity (Chau, 1997). Hair *et al.* (2010) state that AVE greater

Demographics	N	%
Gender		
Male	287	55.2
Female	233	44.8
Total	*520*	*100*
Age (years)		
20–24	71	13.65
25–30	132	25.38
31–35	240	46.1
36–39	55	10.57
40 and above	22	4.2
Total	*520*	*100*
Education		
Bachelors	233	44.83
Masters	174	33.46
Other	113	21.7
Total	*520*	*100*
Experience		
1–5 years	157	30.2
5–10 years	236	45.3
Above 10 years	127	24.1
Total	*520*	*100*
Position in firm		
Senior managers	37	15.88
Department Managers	69	29.61
Section Managers	54	23.18
Non- managerial employees	73	31.33
Total	*520*	*100*
Source(s): Table by authors		

Table 1.
Demographic characteristics of respondents

than 0.50 and composite reliability greater than 0.70 are approved. Tolerance and variance inflation factors (VIFs) were used to assess multicollinearity. When the tolerance of "f" is less than 0.2 or the VIF value is greater than 4.0, means there exists a problem with multicollinearity (Hair *et al.*, 2010).

Hypothesized results and model fitness was assessed by using AMOS. According to Hair *et al.* (2010), we constructed the model fitness around several statistical indices, including CFI, TLI, and χ^2 hence findings are displayed in Table 3. The CFI and TLI lie between 0.90 and 1.00 which are considered a good fit index, whereas RMSEA is deemed as acceptable and a good fit as they are less than 0.05 and between 0.06 and 0.08. The findings of results narrated (see Table 3) demonstrate the following fit indices: RMSEA = 0.068; χ^2 = 187.843; CFI = 0.972; χ^2/df = 3.415; TLI = 0.961, which confirmed according to (Hair *et al.*, 2010), that fitness values lie between the recommended ranges.

In Table 4, mean, standard deviation, and correlation is indicated. Results show that gender is not significantly associated with RL, SP, EM, and SC, while age is significantly interlinked with RL and SP but insignificant with EM and SC. Education is significantly affiliated with all variables; RL, SP, EM, and SC, which additionally results in the analysis uncovering that experience is significantly connected with RL and SP, but the relationship is insignificant with EP and SC. Additionally, all variables are significantly associated with each other at $p < 0.01$ level, and all the values are correlated significantly with r = 0.331 and

Variables	Items	Factor loading	CR	(AVE)	VIF
Responsible Leadership	RL (1)	0.850	0.928	0.723	2.736
	RL (2)	0.852			2.898
	RL (3)	0.824			2.537
	RL (4)	0.864			2.878
	RL (5)	0.860			3.091
Epistemic Motivation	EM (1)	0.831	0.915	0.684	2.246
	EM (2)	0.805			1.98
	EM (3)	0.832			2.109
	EM (4)	0.848			2.4
Sustainable Culture	SC (1)	0.773	0.938	0.657	3.373
	SC (2)	0.836			2.619
	SC (3)	0.821			2.619
	SC (4)	0.807			2.387
	SC (5)	0.811			2.395
Sustainable Performance					
Env_performance	EP (1)	0.779	0.949	0.651	3.21
	EP (2)	0.811			2.657
	EP (3)	0.850			3.263
Fin_performance	FP (1)	0.849			3.233
	FP (2)	0.783			2.657
	FP (3)	0.817			4.345
Social_performance	SP (1)	0.808			3.482
	SP (2)	0.795			3.263

Note(s): "CR = Composite Reliability", "α = Cronbach Alpha", "AVE = Average Variance Extracted", "VIF = Variance Inflation Factors"
Source(s): Table by authors

Model	χ^2	Df	χ^2/df	CFI	TLI	RMR	RMSEA
Model 3: Three-factor model	187.843	55	3.415	0.0972	0.961	0.070	0.068
Model 2: Two-factor model	595.583	129	4.617	0.935	0.923	0.069	0.083
Model 1: One- factor model	1723.945	330	5.224	0.896	0.881	0.084	0.090

Note(s): ***$p < 0.001$; N = 520; "RMSEA = root-mean-square error of approximation", "CFI = comparative fit index", "TLI = Tucker–Lewis's index", "RL = Responsible leadership", "SP= Sustainable performance", "EP = Epistemic motivation", "SC= Sustainable climate"
Source(s): Table by authors

Factor	Mean	SD	1	2	3	4	5	6	7	8
Gender	1.45	0.498	1							
Age	2.66	0.982	−0.031	1						
Education	3.22	0.670	0.111*	0.153**	1					
Experience	2.84	0.873	−0.088*	0.815**	0.103*	1				
RL	2.47	1.03	0.057	−0.243**	0.125**	−0.217*	1			
EM	2.16	0.89	0.037	−0.060	−0.157**	−0.086	0.331**	1		
SC	2.17	0.878	0.071	−0.034	−0.105*	−0.046	0.328**	0.885**	1	
SP	2.55	0.946	0.050	−0.225**	0.102*	−0.215**	0.891**	0.424**	0.452**	1

Note(s): "*$p < 0.05$; **$p < 0.01$", "N = 520"; "SD = standard deviation"
Source(s): Table by authors

$p < 0.01$. Sustainable climate and epistemic motivations also display a correlation with $r = 0.885$ and $p < 0.01$) and sustainable performance appears to be positively correlated with all other constructs.

Table 5 demonstrated the data regarding hypothesis testing which demonstrates that there is a significant as well as positive association between RL and SP with $\beta = 0.298$ and $p < 0.001$, which means that the results supported hypothesis H1. There also exists a significant mediating impact of epistemic motivation on the relationship between RL and sustainable performance with $\beta = 0.238$ and $p < 0.001$, which support the mediation of epistemic motivation between RL and SP and accepted hypothesis 2. Moreover, on the grounds of prior literature, we assume that a sustainable climate can moderate the relationship between RL and EM. Overall results display partial mediation, whereas Table 6 explains the direct and indirect effect of RL in SP, which is 0.298 and 0.238 respectively.

Table 7 displays the standard error value along with bootstrap confident interval associated with moderation conditional indirect effect of sustainable climate. The indirect conditional effect of sustainable climate is significantly higher and stronger (0.1146) and significantly lower and less strengthen (0.0177), which supported the hypothesis 3.

4. Discussion
Current research paper aimed to reveal the worth of responsible leadership and its impactful effect on sustainable performance. Using the concept of stakeholder theory and social

Hypothesis	Coefficient	T-value	p-value	LLCI	ULCI
RL→SP	0.298***	5.27	0.000	0.187	0.409
RL→EM→SP	0.238***	4.706	0.000	0.152	0.325
RL→SC→EM	0.063***	2.798	0.005	0.107	0.019

Table 5. Hypothesis testing

Note(s): "LLCI = Lower-level confidence interval"; "ULCI= Upper-level confidence interval"; "SD = Standard Deviation". ***$p < 0.001$; "RL = Responsible leadership"; "SP= Sustainable performance", "EM = epistemic motivation"; "SC= Sustainable climate"
Source(s): Table by authors

Effect	t	p	LLCI	ULCI
0.298 (Direct effect)	5.26	0.000	0.187	0.409
0.238 (Indirect effect)	4.705	0.000	0.152	0.325

Table 6. Direct and indirect effect of RL on SP

Note(s): "LLCI = Lower-level confidence interval"; "ULCI= Upper-level confidence interval"; "SD, Standard Deviation"
Source(s): Table by authors

Moderator value	Effect	Bootstrap SE	Bootstrap LLCI	Bootstrap ULCI
1.500	0.002	0.022	−0.045	0.041
1.750	0.018	0.019	0.020	0.056
3.000	0.115	0.029	0.057	0.172

Table 7. Indirect Conditional Effect (moderation effect of SC between RL and SP)

Note(s): "LLCI = Lower-level confidence interval"; "ULCI= Upper-level confidence interval"; "SE, Standard error"; "Level of Confidence = 95%", "Number of bootstrap samples = 520"
Source(s): Table by authors

learning theory, research found that responsible leadership can significantly influence the sustainable performance of organization along with the mediating and moderating impact of epistemic motivation and sustainable culture. Consistent with findings and hypothesis, we found that RL exerts optimistic and direct influence on sustainable performance of organization. Moreover, epistemic motivation successively transmits the impact of RL on organization's sustainable performance. Our study is contributing in responsible leadership literature by demonstrating that, the environmental conduct of an individual is a strong reflection of its moral conviction along with strategies to explore the environment interaction by promoting sustainable practices which is the central idea of RL. In line with previous studies (Liao and Zhang, 2020) our research also supports and highlighted the fact that responsible leadership contains characteristics that makes it enable to foster sustainable activities in its employees. In current research, we analyzed the significant mechanism by which responsible leadership traits in a firm drives that firm's engagement towards sustainable performance specifically by emphasizing the role of epistemic motivation. By utilizing the data collected from employees and leaders belongs to public sector organizations we revealed a motivational and cultural mechanism to shed light on how a leader with responsible traits can raise sustainable actions in an organization by encouraging its employees. In the present world the customers and organizations are becoming more concerned about environmental protection because environmental pollution formed by businesses not only rooted irreversible damages towards environment in fact it also results in serious economic fatalities for the firms. So, pollution regarding environment has been a focal point and significant concern in many research domains. That's why, the demand for renewable energy is increasing in the world (Guchhait and Sarkar, 2023).

Advancing through the lens of responsible leadership, our study delineates the factors (epistemic motivation and sustainable cultural) which boost up the process of developing and cultivating sustainable performance in organization. And in doing so understanding regarding influence of responsible leadership can be augmented in general (Maak and Pless, 2006). In relevancy of leadership with sustainable performance, previous scholars explicit in their studies that ethical leadership has significant influence on corporate sustainability (Dey et al., 2022). And according to (Sarkar, 2016) responsible leadership arises from overlap of ethics which means that RL has ability to foster organization's performance by encouraging the stakeholders and employees to focus on environmentally friendly products and services. It leads to social safety, mental health and harmony (Guchhait and Sarkar, 2023). Therefore, it can be stated that in accordance with stakeholder theory, as a creator of stakeholder's network, responsible leaders serve as visionaries and coaches in their corporation to ensure that whether the organization is accomplishing shared objectives that are consistent with its mission (Maak, 2007; Maak and Pless, 2006; Sarkar et al., 2023). Consequently, managers who choose to implement responsible leadership style may employ a significant impact on organization's sustainable performance. The same is validated by Davoudi et al. (2023) that green supply chain management (environment as aspect of sustainable performance) has positive effect on bargaining and retail prices.

The consequences also expose that RL is related with robust certainty that it can aid in providing better understanding regarding declining position of organization along with their leaders as beheld by society as a whole (Akoroda et al., 2019; Pless and Maak, 2012). According to current study RL have potential to incline their employees towards epistemic motivation to acquire greater knowledge and organizational growth by responsible leaders and employees thus lead to massive consideration being paid on the true concept of RL and SP. Such a relationship of simultaneous influence is worth scrutinizing as researchers and scholars have indicated that RL is essential but it alone is not sufficient enough to improve performance of worker (Markovic and Bagherzadeh, 2018). In this scenario, current study also employed the mediation impact of epistemic motivation between RL and SP and its

finding narrated that in the existence of responsible leadership, employee's epistemic motivation rises which enhance their comfort level in performing their duties and encourage them to gain thorough and impactful knowledge (Rai and Prakash, 2016).

Epistemic motivation can make an employee expert in his area so this practice goes well when a leader is seeking ways to inject responsible behavior to grasp the results that supports sustainability in firm. So, the prominence of responsible leadership in organizational context and knowledge-based domain cannot be overstated (Lin *et al.*, 2020). Findings of this study address a gap of identifying a knowledge-based pathway between the responsible leadership's traits and its impact on green innovation. Findings from current research expand the prior studies and highlight the role of epistemic motivation in transferring the sustainability concept in to reality.

Moreover, current study also investigated the moderation impact of sustainable culture in organizations between responsible leadership and epistemic motivation. Results derived from our research directs a path to managers that responsible leadership traits when pair up with sustainable culture, makes a healthy combination for an organization to achieve its goals. In line with social learning theory, it is contended that employee's behavior is affected by organizational culture and leader's attitude (Brown and Treviño, 2006). The priority of a responsible leader is to elevate their employee's skills to enhance the chance of successfully navigating their organization through myriad of challenges which is a compulsory phase at some extent. When employees interact in sustainable culture, they indulge themselves in risk taking and extra role behavior to meet sustainability requirement of their organizations by strengthening epistemic motivation which will eventually bring effective result.

5. Conclusion
Constructed on social exchange theory and social learning theory, current research thoroughly emphasizes on the factors that can foster sustainability. This study has investigated the influence of responsible leadership on sustainable performance through mediation of epistemic motivation. Further current research also examined the moderating impact of sustainable climate between responsible leadership and mediator.

This study concluded that relationship building is a significant and worthy process to incorporate sustainable performance in organizations. Sustainable performance is business approach that helps organizations to gain reputational and competitive advantages. Our research explicit that responsible leadership is a positively correlated with environmental awareness strategies of organizations who are concerning sustainability as their outcomes. This relationship of RL and SP is further investigated through mediation and the findings reveal that epistemic motivation is an important mediator because transparency in knowledge held massive importance to get sustainable outcomes. Current study investigated the mediation impact of epistemic motivation and hence revealed the fact that an epistemic motivation state of an employee is predominant factor to exert his efforts. Our study provides insight to the managers that factors regarding motivational and cultural concerns should not be overlooked. So, to strengthen the RL in organization which in result help in attaining sustainability outcomes, such values should be stated in the form of leadership development, training, and promotion decisions. Moreover, a culture of sustainability should be established by promoting activities that stimulates epistemic motivation of employees. Theoretically our study is a contribution to existing literature regarding RL and sustainability, where this topic is attention grabbing for scholars in order to find stimulating factors. Its use in relation to sustainable performance has been rare up until this point. Our study is a theoretical contribution towards sustainability of organizations in association with leadership impact.

For owners, practitioners, and politicians, the recent research has some practical implications. To achieve the aims of sustainable development, organizations should first

encourage responsible leadership behaviors. The implementation of responsible leadership is examined in the current study from a more comprehensive angle. By establishing a collective vision and goals, acting as a revolutionary agent, comprehending the necessities of stakeholders, speaking clearly and transparently, and taking a service-oriented stance, top management can endorse responsible leadership practices within their jurisdiction. In direction to encourage responsible leadership behaviors, organizations should seek to create capacity on both the organizational and social levels. Organizations that invest in capacity building can change employee attitudes and provide the knowledge needed to achieve sustainable development objectives.

5.1 Limitations and future directions
This research also included some limitations that demands considerations in imminent research. Firstly, previous research examined the effects of leadership from a variety of perspectives, including ethical, sustainable, transformational, and servant. In order to sanction the most important role of the particular leadership style in sustainable development, a comparison study is required. Secondly, our research only covers middle and top level managers and employees however to acquire a more precise picture of this framework future studies should also include lower-level members like production line employees. Thirdly, the population of current study is geographically limited only in Pakistan where every country has different culture so future researchers should also investigate this relationship in other countries to generalize the he findings on these variables. Fourthly, imminent researchers can investigate the impact of other effecting variables between RL and SP like identification with organization, organizational culture, motivational environment, environmental locus of control, shared vision. Lastly, given the importance to sustainable business in today's environment, we encourage future researchers to examine the impact of other leadership styles or alternative mechanisms that can support or facilitate sustainable performance.

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Corresponding author

Muhammad Arslan Safdar can be contacted at: arslansafdar@cuisahiwal.edu.pk