Leading with Less, Achieving More: Sustainable Leadership and Performance through the Dual Lens of Open Innovation and Entrepreneurial Bricolage

Shabeeb Ahmad Gill[*], Yasir Tanveer[†]

Abstract

This study examines whether open innovation mediates the association between sustainable leadership and sustainable performance and whether entrepreneurial bricolage conditions that association. We analyzed survey data from 450 managers in Pakistan's fertilizer manufacturing industry using structural equation modelling in IBM AMOS and SPSS, with 5,000 bootstrap resamples. The estimates indicate positive associations between leadership innovation and leadership performance, indirectly mediated by open innovation. Conditional indirect estimates increase at higher bricolage levels. The study contributes by integrating leadership, external knowledge collaboration, and resource recombination within a conditional process framework in a resource-intensive manufacturing setting. Interpretation is limited by nonprobability recruitment and concerns about bricolage measurement. The findings suggest that managers should coordinate sustainability priorities with innovation implementation and responsible resource use.

Keywords: sustainable leadership; open innovation; entrepreneurial bricolage; sustainable performance.

Introduction

In today's volatile, uncertain, complex, and ambiguous (VUCA) environment, organizations are increasingly required to achieve sustainable performance while adapting to rapid environmental and technological changes (Czako et al. 2023). Today, organizations need integrated capability systems that combine leadership, innovation, and adaptive resource use. To

[*] Corresponding Author, PhD Scholar Lyallpur Business School, Government College University, Faisalabad, Email Address: drshabeebgill@gmail.com

[†] PhD, Assistant Professor Lyallpur Business School, Government College University Faisalabad, Email: yasirtanveer@gcuf.edu.pk

Affiliation:

address this phenomenon, what is required is that the leaders of the organization should take an integrative approach that accepts the natural trade-offs that arise from competing claims (Znidarsic et al. 2021). Sustainable performance (SP) has emerged as a more holistic concept that balances the organization's performance on the economic, environmental, and societal fronts, commonly known as the "triple bottom line" (TBL), and has been identified as an emerging threat (Aftab, Abid, et al., 2022a).

Sustainable performance, in management sciences, symbolizes the capability of an organization to make profits while working towards minimizing adverse ecological footprints, along with the creation of societal value (Piwowar-Sulej and Iqbal 2023a). As stated differently, social, financial, and environmental factors are incorporated into business strategies related to sustainable growth (Eustachio, Caldana, and Leal Filho 2023). Sustainable Leadership (SL) can be defined as an approach that prioritizes long-term success and resilience, both for the organization and society (Iqbal et al. 2020a). Specifically, the sustainable leadership style involves decision-making that considers social, environmental, and economic factors to maintain and improve conditions for future generations, taking into account constraints (Chen, Li, and Shahid 2024; Katou and Gianni 2026) .

For managers in large-scale manufacturing (LSM), the practical question is how to implement sustainability priorities when access to additional resources is constrained (Murad et al. 2025; Wu et al. 2024a). The proposed framework connects leadership priorities with external knowledge collaboration and the recombination of available resources (Piwowar-Sulej and Iqbal 2023a). In fertilizer manufacturing, this framework directs attention to the managerial processes through which economic, environmental, and social objectives are pursued together (Emirza and Katrinli 2022; Yu and Zhu 2022). A direct-effect explanation emphasizes leadership priorities, whereas a mediated explanation assigns an implementation role to open innovation (OI) and entrepreneurial bricolage (EB) mobilization (Quansah et al. 2022).

The present study examines these explanations jointly by testing open innovation as a mediator and EB as a boundary condition (Liu et al. 2022; Xu et al. 2024). It specifically examines whether resource recombination changes the direct leadership-performance association and the indirect association through OI among managers in Pakistan's fertilizer manufacturing industry

(Jacob Nsiah-Sarfo et al., 2023). Shirokova et al. (2026) examine bricolage, organizational ambidexterity, and entrepreneurial leadership in Russian small and medium-sized enterprises. These studies motivate a mechanism-based explanation, but their constructs and empirical settings differ from the present fertilizer-industry model. This study proposes OI and EB as distinct components of the leadership-performance relationship.

This study aims to integrate the concepts from the Upper Echelons Theory (UET) (Hambrick & Mason, 1984) and the Systems-Approach Theory (SAT) on how sustainable leadership, a high-level management trait, is related to sustainable performance at the organizational level. Upper echelons theory explains why senior managers' values and interpretations may shape strategic priorities and organizational outcomes (Yu, Ma, and Song 2022). Applied here, it provides a rationale for associating sustainable leadership with sustainability-oriented decisions and external collaboration. General systems theory highlights the interdependence among leadership, innovation processes, resource use, and organizational outcomes. Together, these perspectives motivate the proposed framework: leadership provides strategic direction, open innovation offers a knowledge-based mechanism, and bricolage conditions implementation by leveraging available resources (Khaddage-Soboh et al., 2024).

This study has three objectives: to examine the association between sustainable leadership and sustainable performance; to assess the indirect association through open innovation; and to determine whether entrepreneurial bricolage conditions the direct association and the indirect association through open innovation. Its proposed contribution is the joint examination of open innovation as a mediator and entrepreneurial bricolage as a moderator of the direct leadership-performance association and the innovation-mediated association. Its empirical scope is managers in Pakistan's fertilizer manufacturing industry. The contribution is therefore a specific mechanism and context extension, rather than the claim that leadership, innovation, or bricolage has not previously been associated with performance.

The following sections develop the theoretical framework and hypotheses, describe the research design and analytical procedures, present the results, and discuss their theoretical and managerial implications. The paper concludes with limitations and directions for future research.

Literature Review and Hypothesis Development

Sustainable Leadership and Sustainable Performance

Sustainable Leadership has also become an important paradigm of leadership that has incorporated economic viability into it, besides incorporating responsiveness into it (Avery and Bergsteiner 2011; McCann and Holt 2010). In contrast to traditional ways of leading that focused only on economic gains, sustainable leadership has focused on intergenerational justice, justice for stakeholders, or resilience (Hughes and Davis 2025; Elhuni and Ahmad 2017). From a theoretical standpoint, the UET represents a robust base for analyzing the impact of sustainable leadership in organizations (Hambrick & Mason, 1984).

The UET assumes that the strategies and results in organizations are a reflection of the value systems, cognitive styles, and decision-making approaches of the organization's top leadership (Ullah Khan et al. 2023). Leadership with a sustainability perspective is more likely to promote responsible environmental behavior, as well as a long-term approach to creating value, which cumulatively improves sustainable performance (Katou and Gianni 2026). Notwithstanding this emerging evidence, there is inconsistent empirical research that has investigated this issue for large-scale and resource-heavy sectors in emerging countries (Borah, Iqbal, and Akhtar 2022a).

H1: Sustainable leadership has a significant and positive effect on sustainable performance.

Sustainable Leadership on Open Innovation

Open innovation, defined as the intentional inflow and outflow of knowledge to fuel innovation and build markets for the use of innovation externally, has emerged as one of the most important strategic assets of organizations pursuing operations in environments that are dynamically changing and resource-constrained (Chesbrough, 2003). Leadership is critical in influencing the openness of an organization towards innovation, while sustainable leaders are more likely to be open to sharing knowledge and collaborating across organizations because of their focus and long-term perspective (Iqbal and Ahmad 2021). Sustainable leaders create an organizational environment that is open to innovation because of the traits of trust, facilitating an environment for the adoption of open innovation (Wong et al. 2022).

Using the concept of Upper Echelon Theory, the values of sustainability demonstrated by leadership are believed to shape strategic decisions on the aspects of innovation, openness, and external engagement (Jimoh 2025). Additionally, SAT supports this phenomenon by considering the organization as an open system that operates within the context of the overall socio-economic systems, including the natural environment (Regmi, Zhang, and Zhang 2023).

H2: Sustainable leadership has a significant and positive effect on open innovation.

Open Innovation as a Mediator

Innovation has long been identified as an important determinant of the performance of organizations (Chen et al. 2022). More current scholarly thought has inferred this relationship to extend to sustainability performance as a result of the practices of sustainable leaders (Jimoh 2025) since innovation, especially open innovation, helps companies create environmentally responsible processes, socially responsible products, and cost-saving processes (Khan et al. 2022a). Open innovation helps organizations tap into knowledge resources and innovation solutions from a variety of sources, adding to their sustainability performance (Cheng et al. 2023; Hebaz et al. 2024).

This is especially important within resource-intensive sectors, where organizations need to adjust to pressures from regulations, environmental restrictions, and social demands regularly (Kinnunen et al. 2022). The Systems Approach Theory proposes that organizations with open attitudes towards gaining knowledge from outside the business environment are most likely to succeed at attaining system efficiency, along with system-wide sustainability levels (Robertsone and Lapiņa 2023). Notwithstanding, empirical evidence on the open innovation performance relationship has had mixed results (Yadegaridehkordi et al. 2023). While some found openness positively affecting the environment and financial performance, some emphasized that high levels of openness can lead to shortcomings in coordination costs, or rather, openness not being strategically aligned (Cheng et al. 2023).

H3: Open innovation mediates the relationship between sustainable leadership and sustainable performance.

Entrepreneurial Bricolage as a Moderator

Entrepreneurial bricolage is the process of creatively rearranging existing resources in response to new challenges and opportunities, especially when resources are scarce (Senyard et al. 2014a). Bricolage emphasizes improvisation, flexibility, and "making do" rather than relying on new or abundant resources. In these settings, leadership effectiveness may vary across firms, and entrepreneurial bricolage can moderate how leadership strategies influence performance results (Tanveer 2025). While sustainable leadership provides vision and direction for the future, bricolage depends on the organization's ability to implement that vision using existing resources (Wang et al. 2022).

Entrepreneurial bricolage may change the association between sustainable leadership and performance because it affects how managerial priorities are translated into action using available resources (Shen and Chen 2025). The proposed moderation of the open innovation association concerns implementation rather than the acquisition of knowledge alone (Lee and Herrmann 2026). Entrepreneurial bricolage is expected to strengthen this translation by enabling resource recombination. The indirect association between sustainable leadership and performance through open innovation is therefore expected to be stronger at higher levels of bricolage.

H4: Entrepreneurial bricolage moderates the direct relationship between sustainable leadership and sustainable performance, such that the strength of this relationship varies across different levels of entrepreneurial bricolage.

Moderated Mediation of Open Innovation through Entrepreneurial Bricolage

Although sustainable leadership can have a direct effect on sustainable performance, it usually occurs indirectly through other mechanisms in the organization (Nabeel Siddiquei et al. 2025). Open innovation is one of these mechanisms as a means of extracting sustainable innovation results based on the sustainable leadership vision of the company (Jimoh 2025). Yet, only emphasizing innovation is not a panacea to achieve sustainable performance, especially when this occurs in a setting of limited resources (Cai et al. 2022).

Entrepreneurial bricolage is an important boundary condition for achieving this. In this sense, bricolage facilitates and strengthens the transformation of innovation into a sustainable

outcome (Senyard et al. 2014a). Upper echelon theory explains sustainable leadership in innovation strategies, whereas systems approach theory explains how bricolage achieves a sustainable adaptation-innovation system (Rosenzweig et al. 1972). Accordingly, the indirect effect of sustainable leadership on sustainable performance via open innovation may differ across entrepreneurial bricolage profiles.

H5: Entrepreneurial bricolage moderates the indirect effect of sustainable leadership on sustainable performance through open innovation, such that the mediating role of open innovation is conditional upon the level of entrepreneurial bricolage.

The hypotheses distinguish three analytical elements: the direct leadership performance association, the indirect association through open innovation, and variation in these associations with entrepreneurial bricolage. The framework therefore treats leadership, external collaboration, and resource recombination as related but distinct components of sustainability management. Empirical support depends on valid measurement and coherent estimation of the proposed conditional process.

Conceptual Model

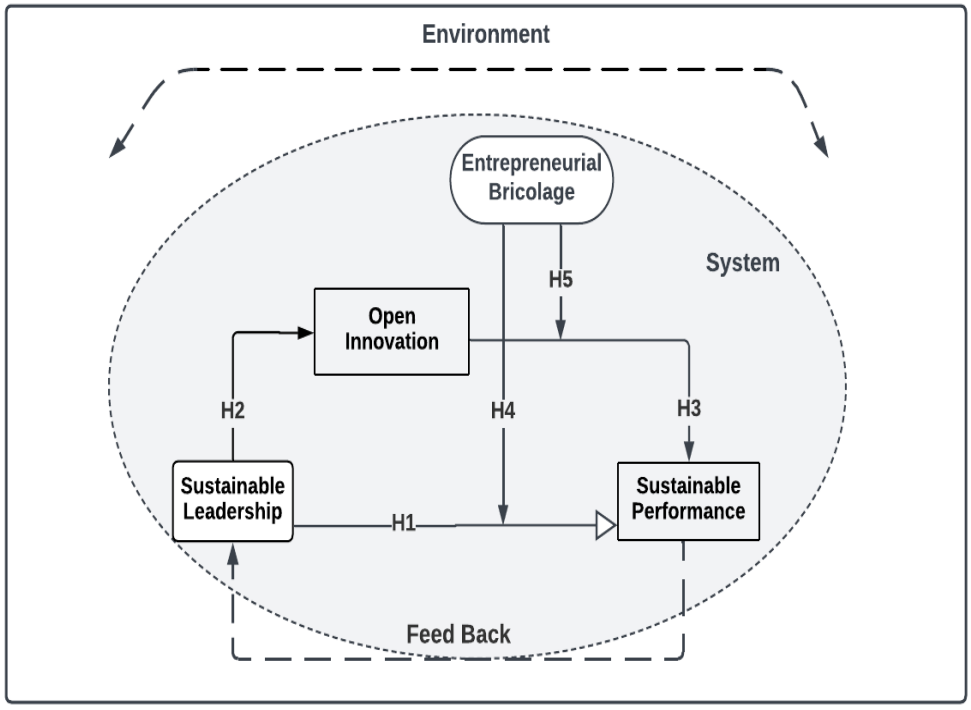


Figure 1: Conceptual Model

Methodology

Research Philosophy

This cross-sectional study uses a deductive methodology, in which hypotheses are formulated based on well-established theoretical constructs, namely Upper Echelons Theory and Systems Approach Theory. Although the research is applied, its purpose goes beyond problem-solving and focuses on theory testing by empirically verifying a moderated mediating model in a resource-driven industrial setting (Salkind, 2010; Sekaran & Bougie, 2016).

Sampling Technique

Population of this study consisted of managerial-level executives working in the fertilizer manufacturing sector in Pakistan, which is a strong component of Pakistan's LSM. As per the official information of the organization, a total of 49,300 managerial-level employees are directly linked to the fertilizer industry. And, there are 5700 employees who have been working in executive managerial positions (middle and senior management) in the fertilizer industry. Because of this, the current research was conducted on 5700 employees at managerial levels at different positions.

Sample Design

Sample selection eligible respondents included middle and senior level managers employed in the participating fertilizer manufacturing companies in Pakistan. The human resource and administrative departments of fertilizer manufacturing firms identified the targeted employees; these were then randomly distributed access to on-line questionnaires. This sampling process, in, and of itself, dictates random sampling within managerial levels. The final sample of analyzed respondents stood at 450. While a fixed respondent: item ratio is no guarantee of sample-size adequacy, adequacy for this structural equation model is contingent upon the model's complexity, the indicator quality, number of missing data, and the accuracy and statistical power for the interaction and indirect-effect estimates. The number of invitations is a measure of recruitment effort and not a statistical maximum.

Sample Size

In keeping with the quantitative research design, data was obtained via an online structured questionnaire, circulated electronically to respondents using Google Forms (Jaiswal 2024). Links to the questionnaire were distributed to a randomly selected population of middle and senior level managers within fertilizer manufacturing companies. A total of 690 paperless survey questionnaires was distributed to prospective individuals, which represents the maximum estimate of the potential sample size calculated for multivariate analysis. A total of 512 questionnaires were returned by eligible managers, a response rate of 74.2%. A total of 62 questionnaires were eliminated during the screening process (12.1%), and the remaining final sample size included 450 questionnaires, a response rate of 65.2%.

A total of 450 valid data were obtained for the final analysis. The final sample size is 450, which was used in the study, with the unit of analysis being an individual at the managerial level. Consider note that the attained sample size just gives estimation to the degree of precision warranted by model identification, convergence, and sensitivity analysis. It is not necessarily considered a strong indicator of measurement validity or generalizability to the population (Hox and Boeije 2005).

Measurements Scales

The constructs were all operationalized using the measures of some standardized scales and measured on a five-point Likert scale (1= "strongly disagree" 5= "strongly agree"; suitable for behavioral and organizational research (Norman 2010). The items were modified to fit this study's context, but the conceptual definitions were maintained.

Table 3.1:
Instrument

Variable name	Items	Scale	Reference
Sustainable Leadership	15	Five-point Likert	(Q. Iqbal, Ahmad, & Halim, 2020b; McCann & Holt, 2010)
Open Innovative	10	Five-point Likert	(Huang, 2022; Latifi et al., 2021)
Entrepreneurial Bricolage	08	Five-point Likert	(Senyard et al., 2014)
Sustainable Performance	13	Five-point Likert	(Elhuni & Ahmad, 2017)

Source: Self-generated

Ethical Considerations

Participants received information about the study purpose, participation requirements, confidentiality arrangements, and the voluntary nature of participation. They were given sufficient time, and their data and opinions were kept confidential.

Results

The study relied solely on primary data to answer the research questions (Ab Hamid, Sami, and Mohmad Sidek 2017). The study used IBM SPSS and AMOS to analyze the gathered data (Al-Refaie 2015; George and Mallery 2016). Additionally, Microsoft Excel supported data assessment and operational procedures. The StatWiki toolset provides techniques for analyzing null anomalies, cleaning, and screening data (Gaskin 2012).

Table 4.1:

Confirmatory factor analysis for the measurement model

Factors	Items	1	2	3	4	CR	AVE
Sustainable Leadership	SL1	.771				0.94	0.50
	SL2	.683					
	SL3	.656					
	SL4	.608					
	SL5	.688					
	SL6	.751					
	SL7	.702					
	SL8	.764					
	SL9	.694					
	SL10	.608					
	SL11	.693					
	SL12	.724					
	SL13	.739					
	SL14	.688					
	SL15	.669					
Open Innovation	OI1		.802			0.94	0.61
	OI2		.783				
	OI3		.732				
	OI4		.684				
	OI5		.718				
	OI6		.770				
	OI7		.794				
	OI8		.775				

	OI9		.731				
	OI10		.751				
	EB1			.746			
	EB2			.698			
	EB3			.599			
	EB4			.598		0.82	0.36
Entrepreneur	EB5			.654			
Bricolage	EB6			.677			
	EB7			.673			
	EB8			.639			
	SP1				.771		
	SP2				.781		
	SP3				.729		
	SP4				.717		
	SP5				.711		
	SP6				.740	0.95	0.59
Sustainable	SP7				.765		
Performance	SP8				.704		
	SP9				.675		
	SP10				.719		
	SP11				.782		
	SP12				.715		
	SP13				.756		
Eigen value		15.27	3.54	3.29	4.17		
Kaiser-Meyer-Olkin (KMO)					.965		
Bartlett's Test of Sphericity					.000		
Rotation Sums of Squared Loadings					70.121		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 6 iterations.
Source: self-generated.

Measurement Model Assessment

To assess the reliability, validity, and accuracy of the instruments used in the research, the study employed Confirmatory Factor Analysis (CFA). Consistent with prior recommendations, stable factor loadings and negligible improvement in model fit provide convergent evidence that CMV is not a pervasive concern in this study. To assess the robustness of the findings, we conducted several additional analyses. First, we estimated alternative models, including reversed causal structures, and found that these models fit worse than the

hypothesized model. Second, variance inflation factors (VIFs) were within acceptable limits, indicating that multicollinearity is not a concern. The fit of the specified model is evaluated through a number of goodness-of-fit tests, which are categorized into absolute, incremental, and parsimonious fit.

The data demonstrate excellent fits, as they exceed the established.95 threshold for excellence about the specified indices, including GFI (.921), CFI (.966), TLI (.966), and others like RMSEA (.040), respectively (Hu and Bentler 1999). While the Normed Chi-Square (chi^2/df = 4.044) remains within the acceptable limit of 5 or less, the overall agreement among these indices confirms that the measurement model exhibits the required statistical validity to proceed with structural path analysis (Anderson and Gerbing 1988).

Construct Reliability and Validity

Reliability and validity analysis of the measurement model are reported in Table 4.1. Cronbach's alpha and the Composite Reliability (CR) were calculated to evaluate internal consistency within the model, and all constructs met the suggested value of.70, which demonstrated that the measurement tool had a high reliability and stable measurement tool (Chin 1998). The convergent validity of the measure was well established because the AVE value of the constructs was, in most cases, higher than the recommended.50 and the CR value confirmed the cohesiveness of the items (Rosenbach et al. 2009). Finally, discriminant validity was evaluated using the Fornell-Larcker criterion (Fornell and Larcker 1981).

As shown on the diagonal of Table 4.2, the square root of the AVE for each construct (in parentheses) exceeds its highest correlation with any other construct. This confirms that each latent variable in the study- sustainable leadership, sustainable performance, and open innovation- is statistically distinct and represents a unique phenomenon. EB shows weak convergent validity, indicating a heterogeneous construct, but we retain it because of its theoretical relevance and acceptable reliability. Entrepreneurial bricolage is inherently a formative-like, behaviorally diverse construct that captures heterogeneous improvisational activities. As such, lower AVE values may reflect the breadth of behaviors represented rather than poor measurement. This is consistent with prior research on complex

organizational capabilities, where internal consistency remains acceptable while shared variance is comparatively lower.

Table 4.2:

Discriminant validity and correlations

Construct	Items	α	CR	AVE	(1)	(2)	(3)	(4)
(1) SL	15	.93	0.94	0.50	(0.707)			
(2) SP	13	.94	0.95	0.59	.512**	(0.768)		
(3) OI	10	.94	0.94	0.61	.462**	.543**	(0.781)	
(4) EB	8	.81	0.82	0.36	.001	-.041	-.013	(0.600)

Note: Cronbach's Alpha >= 0.70; Composite Reliability >= 0.70; Average Variance Extracted (AVE)>= 0.50;
Fornell–Larcker √AVE > inter-construct correlations
Source: self-generated.

Structural Model Assessment

Structural equation modeling is a statistical method for testing and validating theoretical models of relationships between latent variables and observed indicators, as illustrated in Figure 2 (Anderson and Gerbing, 1988). Assessing the significance and strength of these effects helps to determine the underlying relationships between variables in the model. The most complex segment of our proposed model is the mediated moderation analysis of open innovation and entrepreneurial bricolage, based on the study's theoretical framework; SEM allows us to explore mediation, indirect effects, and moderation and interaction effects within the structural model.

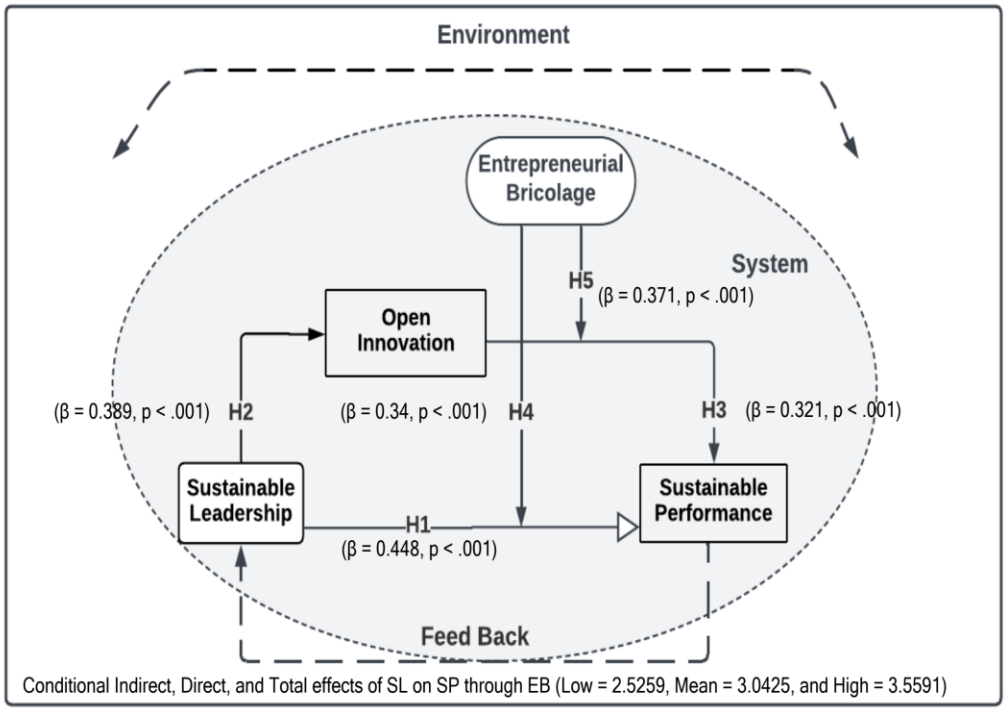


Figure 2: Structural Model

Taking into consideration that the complexities of Model 15 are above and beyond the capability of the native automation in IBM AMOS, a user-defined estimand (syntax-based machine language) was defined to execute the model in a single iteration, in line with the model-related approach of (Jiatong et al. 2021), as stated and tested in their studies of (Gill et al. 2021, 2024). Specifically, it aimed to determine the index of moderated mediation, as well as the conditional, direct, and total effects of SL on SP at three levels of EB (Low=2.5259, Mean=3.0425, and High=3.5591), using 5,000 bias-corrected bootstrap samples for the 95% confidence interval.

Table 4.3:
Structural Path Estimates (Direct Effects) & Conditional Effects (One-shot Model)

Hypothesis	Path	Estimate (β)	S.E.	t-value	p-value	Decision

H1	SL → SP	0.448	0.051	8.847	< .001	Supported
H2	SL → IO	0.389	0.050	7.747	< .001	Supported
H3	SL → OI → SP	0.321	0.048	6.643	< .001	Supported
H4	SL × EB → SP	0.371	0.043	8.650	< .001	Supported
H5	OI × EB → SP	0.340	0.043	7.957	< .001	Supported

Note: SL=Sustainable Leadership; OI=Open Innovation; EB=Entrepreneurial Bricolage; SP=Sustainable Performance; β=Standardized Coefficient Estimates; SE= Standard Error; p= level of significance; Label= Syntax; Bootstrapping=5000; CI=confidence of interval 95%.

Source: self-generated.

As shown in the standardized hypothesis testing Table 4.3, sustainable leadership exerted a significant positive influence on open innovation ($\beta = 0.389$, $p < .001$). Additionally, the direct path from SL to sustainable performance was positive and robust ($\beta = .448$, $p < .001$). The study also explored the interaction effects of entrepreneurial bricolage. The baseline effect of open innovation on sustainable performance was positive (= 0.321, p.<.001), and this relationship was A lot moderated by entrepreneurial bricolage (EB) (= 0.371, p <.001). This interaction suggests that as entrepreneurial bricolage increases, the positive relationship between open innovation and sustainable performance strengthens. In the same way, the direct effect of sustainable leadership (SL) on sustainable performance (SP) was moderated by EB (= 0.34, p <.001). Meaning although sustainable

leadership strongly influences performance, its relative impact grows in contexts with high levels of entrepreneurial bricolage.

Table 4.4:
Conditional direct, indirect, and total effect of sustainable leadership on sustainable performance through open innovation & entrepreneurial bricolage

Effect Type	Level of Moderator (EB)	Est. (β)	Percentile 95%		p-value	Result
			LLCI	ULCI		
Index of Mod. Mediation	—	0.090	0.044	0.143	< .001	Significant
Conditional Indirect Effect	Low (2.53)	0.140	0.086	0.206	< .001	Supported
	Mean (3.04)	0.186	0.132	0.252	< .001	Supported
	High (3.56)	0.233	0.171	0.309	< .001	Supported
Conditional Direct Effect	Low (2.53)	0.508	0.386	0.643	< .001	Supported
	Mean (3.04)	0.366	0.243	0.499	< .001	Supported
	High (3.56)	0.225	0.069	0.373	< .006	Supported
Total Effect	Low (2.53)	0.648	0.536	0.770	< .001	Supported

Note: Bootstrapping sample size=5000; β=Standardized estimate.
Source: self-generated.

The detailed results of conditional direct, indirect, and total effects are presented in Table 4.4. The index of moderated mediation (0.090, 95% bias-corrected percentile bootstrap CI [0.044, 0.143]) indicates that the entire mediational pathway is conditional on the strength of the moderator variable. In particular, the conditional indirect effect of sustainable leadership on

sustainable performance increased with EB level from 0.140 with low EB to 0.233 with high EB. The total effect was still significant at every level of the moderator, although it peaked at low levels of entrepreneurial bricolage (0.648). The results imply that sustainable leadership and open innovation are key, but the nature of the organization is a facilitator, allowing for their cumulative effects.

Discussion

This research paper investigates the role of sustainable leadership in Pakistan's fertilizer industry's sustainable performance, open innovation as the moderation mediator, and entrepreneurial bricolage as a mediating role. The results strongly support the theoretical model, yielding several insightful perspectives concerning leadership's translation into sustainability in relation to resource-intensive sectors, which are both resource-constrained and energy-intensive (Agyabeng 2025; Mfarrej et al. 2025a).

The results verify the positive and significant influence of sustainable leadership on sustainable performance and support Hypothesis H1 (Borah, Iqbal, and Akhtar 2022b). This resonates with the earlier studies, which suggested that leaders with the characteristics of adopting sustainability considerations in all organizational decisions increase the likelihood of sustainable organizational performance (Avery and Bergsteiner 2011; Iqbal and Piwowar-Sulej 2022). Against the background of the fertilizer market and the current challenging regulatory, environmental, and resource scarcities, sustainable leadership has been an essential catalyst for sustainable performance (Alim et al. 2023; Hughes and Davis 2025).

Sustainable leadership leads to a significant positive effect on open innovation and therefore supports Hypothesis H2 (Chesbrough and Bogers 2014). The result validates the open innovation model proposed by (Moradi et al. 2021b) and the view that studying open and sustainable leaders positively influences them in external boundary-spanning activities, such that open leaders in emerging economies can hugely benefit from new technologies, environmental, and process innovations through this approach, since emerging economies lack internal R&D sources and capabilities (Huang et al. 2013).

One area that emerged as highly significant and theoretically fascinating concerns the base case between open

innovation and sustainability, which seemed attributable to a stronger association due to the interaction of entrepreneurial bricolage (Shen and Chen 2025). Although it challenges the prevailing assumption of a uniformly positive impact of open innovation, Hypothesis H3 acknowledges the realities of implementation costs, coordination complexity, and capability misalignment often present in open innovation contexts. Open innovation practices in fertilizer manufacturing, a heavily manufacturing sector, may also have short-term effects on financial, management, or absorptive capacity that may influence sustainability unless resource practices are adopted to offset these impacts (Baker and Nelson 2005; Iqbal, Ahmad, and Halim 2020b).

This is counter-intuitive, and the research addresses the puzzle with the substantive contribution of 'Entrepreneurial Bricolage' as the moderating variable. The findings show that 'Entrepreneurial Bricolage' has a substantial amplifying effect on the positive relationship between open innovation and sustainable performance, verifying Hypothesis H5, as the effect of OI on SP becomes progressively more positive as 'Entrepreneurial Bricolage' increases, showing that firms and institutions possessing the ability for creative recombination of existing resources have a better chance of achieving actual benefits in the form of sustainability outcomes from open innovation inputs, and this complements the bricolage concept as described: "do more with less" (Baker and Nelson 2005).

By contrast, however, the relationship between sustainable leadership and entrepreneurial bricolage highlights a substitution effect rather than mere complementarities. This is Hypothesis H4: sustainable leadership preserves its positive direct effect on SP at all levels of EB, but as entrepreneurial bricolage becomes more prominent, this effect lessens. This result indicates that in contexts where entrepreneurial bricolage becomes more central, sustainability results become less dependent on centralized control and more on decentralized innovation and improvisation in response to day-to-day challenges and problems. Here, rather than challenging leadership theory, it instead informs or specifies it, showing that its more regularized, direct effect becomes more of an indirect effect, via innovation systems, in contexts where organizational entrepreneurial bricolage excellence is more developed (Hughes and Davis 2025; Mfarrej et

al. 2025c; Nguyen-Van, Le, Nguyen, et al. 2025; Piwowar-Sulej and Iqbal 2023b).

Consequently, the moderated mediation index confirms that entrepreneurial bricolage moderates the indirect relationship between sustainable leadership and sustainable performance through open innovation. The conditional indirect effect increases from low to high levels of EB, supporting the idea that leadership-driven innovation leverages sustainability, depending on an organization's ability to harness available resources through entrepreneurship. Taken together, the study presents an intricate system in which leadership influences strategic orientation, open innovation shapes that strategy, and entrepreneurship influences implementation efficiency to achieve sustainability.

Theoretical and Practical Contributions

Theoretical Implications

The study offers several significant theoretical contributions to existing knowledge streams of sustainable leadership, innovation, entrepreneurship, and performance. The first step is to integrate upper echelon theory and systems approach theory to establish an empirically verified model to hypothesize that both organization's system processes and leader cognition matter for sustainable performance (Rosenzweig et al. 1972; Ullah Khan et al. 2023).

First, the paper establishes sustainable leadership as a high-impact input that energizes the processes of innovation and resource re-combination to bring about desired outcomes, which supports non-direct-effect theories of leadership. Second, the paper expands on open innovation theory by emphasizing its contingent effect in resource-constrained manufacturing settings. The leadership-performance link, as the authors have conceptualized, is consistent with the mechanism-based view considered by Khan et al. (2025), except that open innovation, rather than organizational learning, is proposed as the intervening construct. This finding is consistent with the focus on implementation processes shared by the two models but not consistent with the assumption that the two models are interchangeable (Shen & Chen 2025).

Practical Implications

In practice, the impacts are straightforward and can provide managers, senior managers, and executives, and policy-makers in

resource-based organizations facing sustainability challenges, with some practical guidance. First, the investigation revealed the importance of sustainable leadership: making the future vision sustainable; focusing on stakeholders; legitimizing sustainability behaviours. Second, managers can manage or improve sustainability by starting with aligning sustainability priorities to specific innovation projects, actors, and performance indicators; judging collaborating external parties based on contributions to environmental, social, and financial goals, rather than on collaborations; experimentation across boundaries and resource sharing to adapt external knowledge to existing operation using cross-functional teams; resource recombination within existing safety, quality, and environmental controls; industry associations and related public agencies can provide joint technical learning or university-industry links, with effect to be evaluated separately.

Third, we compare the substitution effect of bricolage on leadership and bricolage to imply that leaders are expected to transition from controllers to enablers. In high-bricolage cases, the performance of leaders is related to the enablers of adaptability and learning orientation. Lastly, for policymakers and regulators, the findings suggest that sustainability-related policy programs, at the firm level, should focus not only on standards compliance and technology adoption, but also on innovation clusters and university-industry linkage, by which firms' bricolage capability and the return of sustainability leadership and innovation can be improved.

Limitations and Future Research Directions

Still, even though this study makes an important contribution, there are a few limitations, which can be improved in future studies. Organizational intermediaries recruited participants that were more easily accessible, available, or willing to participate in the study. Probabilities of selection were not calculated, which limits the generalization of the population. This study follows the cross-sectional research design. That means a cause-effect relationship cannot be inferred. The survey did not collect the organizational covariates required to adjust for differences in firm size, age, ownership, or technological capacity. Omitted-variable confounding therefore remains a limitation.

The empirical setting is limited to the fertilizer industry, which may reduce the study's external validity. Although the AVE for entrepreneurial bricolage falls below the recommended

threshold, multiple indicators (CR, loadings, discriminant validity, and robustness checks) support its adequacy; however, future research should refine its measurement to strengthen convergent validity. Replications in other resource-demanding industries, such as cement, textiles, energy, or chemicals, in emerging and developed countries might improve external validity. Using self-reported data may introduce statistical inaccuracies. Future studies might use objective performance measures or other data types, such as archival data or responses from multiple sources.

Conclusion

This paper investigates sustainable leadership, open innovation and entrepreneurial bricolage in conditional process approach context in the fertilizer manufacturing industry of Pakistan. The study extends the literature by differences between strategic leadership and innovation implementation, the recombination of resources and recognition of the methodological limits to inference using survey data. Combined reconciled statistical estimates and validated measures are required.

References

Ab Hamid, M. R., W. Sami, and M. H. Mohmad Sidek. 2017. "Discriminant Validity Assessment: Use of Fornell & Larcker Criterion versus HTMT Criterion." *Journal of Physics: Conference Series* 890:012163. doi:10.1088/1742-6596/890/1/012163.

Aftab, Junaid, Nabila Abid, Huma Sarwar, and Monica Veneziani. 2022. "Environmental Ethics, Green Innovation, and Sustainable Performance: Exploring the Role of Environmental Leadership and Environmental Strategy." *Journal of Cleaner Production* 378. doi:10.1016/j.jclepro.2022.134639.

Agyabeng, Anthony Nkrumah. 2025. "The Future of Leadership: Can 'Transfor-Sactional' Management Drive Sustainable Success?" *Sustainable Futures* 10. doi:10.1016/j.sftr.2025.101397.

Alim, Wajid, Amjaad Ali, and Amna Shafiq Minhas. 2023. *Impact of Leverage on the Firm Performance: A Case of Fertilizers Sector of Pakistan*. https://www.researchgate.net/publication/371491575.

Al-Refaie, Abbas. 2015. "Effects of Human Resource Management on Hotel Performance Using Structural Equation Modeling." *Computers in Human Behavior* 43:293–303. doi:10.1016/j.chb.2014.11.016.

Anderson, James C., and David W. Gerbing. 1988. "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach." *Psychological Bulletin* 103(3):411–23. doi:10.1037/0033-2909.103.3.411.

Avery, Gayle C., and Harald Bergsteiner. 2011. "Sustainable Leadership Practices for Enhancing Business Resilience and Performance." *Strategy & Leadership* 39(3):5–15. doi:10.1108/10878571111128766.

Baker, Ted, and Reed E. Nelson. 2005. "Creating Something from Nothing: Resource Construction through Entrepreneurial Bricolage." *Administrative Science Quarterly*. doi:10.2189/asqu.2005.50.3.329.

Borah, Prasad Siba, Shuja Iqbal, and Shamim Akhtar. 2022a. "Linking Social Media Usage and SME's Sustainable Performance: The Role of Digital Leadership and Innovation Capabilities." *Technology in Society* 68. doi:10.1016/j.techsoc.2022.101900.

Cai, Di, Haiyue Wang, Li Yao, Mingyu Li, and Chenghao Men. 2022. "A Relational Identification Perspective on Why and When Servant Leadership Foster Employees' Extra-Role Customer Service." *Leadership and Organization Development Journal* 43(5):705–18. doi:10.1108/LODJ-10-2021-0450.

Chen, Aixia, Ling Li, and Waseem Shahid. 2024. "Digital Transformation as the Driving Force for Sustainable Business Performance: A Moderated Mediation Model of Market-Driven Business Model Innovation and Digital Leadership Capabilities." *Heliyon* 10(8). doi:10.1016/j.heliyon.2024.e29509.

Chen, Silu, Yanghao Zhu, Wenxing Liu, Jianghua Mao, and Kai Gao. 2022. "Striving for the Bottom Line: The Impact of Supervisor Bottom-Line Mentality on Employees' Work Effort and Helping Behavior." *Leadership and Organization Development Journal* 43(6):817–34. doi:10.1108/LODJ-09-2021-0432.

Cheng, Jie, Harcharanjit Singh Mahinder Singh, Yi Cheng Zhang, and Shan Yong Wang. 2023. "The Impact of Business Intelligence, Big Data Analytics Capability, and Green

Knowledge Management on Sustainability Performance." *Journal of Cleaner Production* 429. doi:10.1016/j.jclepro.2023.139410.

Chesbrough, Henry, and Marcel Bogers. 2014. "Explicating Open Innovation: Clarifying an Emerging Paradigm for Understanding Innovation Keywords." *New Frontiers in Open Innovation*.

Chin, Wynne W. 1998. "The Partial Least Squares Approach for Structural Equation Modeling." in *Modern methods for business research*.

Czakó, Katalin, Csilla Polster, Santi Setyaningsih, and Tihana Vasic. 2023. "The Role of the Environment in Entrepreneurial Propensity of Youngsters' Business Ideas." *Journal of Innovation and Entrepreneurship* 12(1):7. doi:10.1186/s13731-023-00275-2.

Elhuni, Redha M., and M. Munir Ahmad. 2017. "Key Performance Indicators for Sustainable Production Evaluation in Oil and Gas Sector." *Procedia Manufacturing* 11:718–24. doi:10.1016/j.promfg.2017.07.172.

Emirza, Sevgi, and Alev Katrinli. 2022. "Great Minds Think Alike: Does Leader-Follower Similarity in Construal Level of the Work Enhance Leader-Member Exchange Quality?" *Leadership and Organization Development Journal* 43(2):181–95. doi:10.1108/LODJ-04-2021-0169.

Eustachio, João Henrique Paulino Pires, Adriana Cristina Ferreira Caldana, and Walter Leal Filho. 2023. "Sustainability Leadership: Conceptual Foundations and Research Landscape." *Journal of Cleaner Production* 415. doi:10.1016/j.jclepro.2023.137761.

Fornell, Claes, and David F. Larcker. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error." *Journal of Marketing Research* 18(1):39. doi:10.2307/3151312.

Gaskin, J. 2012. "Common Method Bias Using Common Latent Factor." *Gaskination's Statistics, Available at: Http://Youtube. Com/Gaskination (Accessed January 22, 2012)*.

George, Darren, and Paul Mallery. 2016. *IBM SPSS Statistics 23 Step by Step: A Simple Guide and Reference*. Routledge.

Gill, Shabeeb Ahmad, Nelly Bencheva, Selcuk Karayel, and Muhammad Usman. 2021. "Does Entrepreneurial Self-Efficacy Moderate Effects of Cognitive Flexibility and

Entrepreneurial Alertness on Entrepreneurial Intentions?" *Entrepreneurial Business and Economics Review* 9(3):25–41. doi:10.15678/EBER.2021.090302.

Gill, Shabeeb Ahmad, Amber Raza, Kiran Farooq, Mohyi Aldin Yaqob Abu Alhoul, Ali Saleh Alshebami, and Salem Handhal Al Marri. 2024. "Effects of People Equity and Entrepreneurial Orientation on Firm Performance: The Mediation Role of Social Capital." *Journal of the Knowledge Economy*. doi:10.1007/s13132-024-01842-y.

Hambrick1984UpperEchelons__TheOrganizationasaReflectionofItsTopManagers. n.d.

Hebaz, Ali, Salah Oulfarsi, and Abdelhak Sahib Eddine. 2024. "Prioritizing Institutional Pressures, Green Supply Chain Management Practices for Corporate Sustainable Performance Using Best Worst Method." *Cleaner Logistics and Supply Chain* 10:100146. doi: 10.1016/j.clscn.2024.100146.

Hox, Joop J., and Hennie R. Boeije. 2005. "Data Collection, Primary versus Secondary."

Hu, Li-tze, and Peter M. Bentler. 1999. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives." *Structural Equation Modeling: A Multidisciplinary Journal* 6(1):1–55. doi:10.1080/10705519909540118.

Huang, Hao Chen, Mei Chi Lai, Lee Hsuan Lin, and Chien Tsai Chen. 2013. "Overcoming Organizational Inertia to Strengthen Business Model Innovation: An Open Innovation Perspective." *Journal of Organizational Change Management*. doi:10.1108/JOCM-04-2012-0047.

Hughes, James, and Kate Davis. 2025. "Strategic Leadership for Sustainable Innovation in Primary Education: A Case Study of Forest School Integration." *International Journal of Educational Management* 39(7):1756–73. doi: https://doi.org/10.1108/IJEM-05-2025-0369.

Iqbal, Qaisar, and Noor Hazlina Ahmad. 2021. "Sustainable Development: The Colors of Sustainable Leadership in Learning Organization." *Sustainable Development* 29(1):108–19. doi:10.1002/sd.2135.

Iqbal, Qaisar, Noor Hazlina Ahmad, and Hasliza Abdul Halim. 2020a. "How Does Sustainable Leadership Influence Sustainable Performance? Empirical Evidence From

Selected ASEAN Countries." *SAGE Open* 10(4). doi:10.1177/2158244020969394.

Iqbal, Qaisar, and Katarzyna Piwowar-Sulej. 2022. "Sustainable Leadership in Higher Education Institutions: Social Innovation as a Mechanism." *International Journal of Sustainability in Higher Education* 23(8):1–20. doi:10.1108/IJSHE-04-2021-0162.

Jacob Nsiah-Sarfo, Dominic, Daniel Ofori, and Daniel Agyapong. 2023. "Sustainable Procurement Implementation among Public Sector Organisations in Ghana: The Role of Institutional Isomorphism and Sustainable Leadership." *Cleaner Logistics and Supply Chain* 8. doi: 10.1016/j.clscn.2023.100118.

Jaiswal, Abhishek. 2024. "Chapter 5 - Google Form." Pp. 331–78 in *Open Electronic Data Capture Tools for Medical and Biomedical Research and Medical Allied Professionals*, edited by A. Pundhir, A. K. Mehto, and A. Jaiswal. Academic Press.

Jiatong, Wang, Maj Murad, Cai Li, Shabeeb Ahmad Gill, and Sheikh Farhan Ashraf. 2021. "Linking Cognitive Flexibility to Entrepreneurial Alertness and Entrepreneurial Intention among Medical Students with the Moderating Role of Entrepreneurial Self-Efficacy: A Secondorder Moderated Mediation Model." *PLoS ONE* 16(9 September). doi: 10.1371/journal.pone.0256420.

Jimoh, Adams Lukman. 2025. "The Effect of Sustainable Leadership on Institutional Innovation in Higher Education: The Role of Organizational Learning Culture." *International Journal of Educational Management* 39(7):1647–61. doi: https://doi.org/10.1108/IJEM-07-2025-0552.

Katou, Anastasia A., and Maria Gianni. 2026. "Green Leadership's Role in Developing Organizational Sustainability: A Multilevel Structural Equations Model." *Strategic Business Research* 100051. doi: https://doi.org/10.1016/j.sbr.2026.100051.

Khaddage-Soboh, Nada, Manal Yunis, Muhammad Imran, and Faheem Zeb. 2024. "Sustainable Practices in Malaysian Manufacturing: The Influence of CSR, Transformational Leadership, and Green Organizational Culture on Environmental Performance." *Economic Analysis and Policy* 82:753–68. doi: 10.1016/j.eap.2024.04.001.

Khan, K., Hameed, I., Riaz, K., Hussainy, S. K., & Hameed, I. (2025). Sustainable leadership: Empirical evidence of its effect on the sustainable performance of an organization. FIIB Business Review. Advance online publication. https://doi.org/10.1177/23197145251347733

Khan, Muhammad Mumtaz, Muhammad Shujaat Mubarik, Syed Saad Ahmed, Tahir Islam, and Essa Khan. 2022a. "The Contagious Servant Leadership: Exploring the Role of Servant Leadership in Leading Employees to Servant Colleagueship." *Leadership and Organization Development Journal* 43(6):847–61. doi:10.1108/LODJ-06-2021-0305.

Kinnunen, Jorma, Minna Saunila, Juhani Ukko, and Hannu Rantanen. 2022. "Strategic Sustainability in the Construction Industry: Impacts on Sustainability Performance and Brand." *Journal of Cleaner Production* 368. doi: 10.1016/j.jclepro.2022.133063.

Latifi, Mohammad Ali, Shahrokh Nikou, and Harry Bouwman. 2021. "Business Model Innovation and Firm Performance: Exploring Causal Mechanisms in SMEs." *Tech novation* 107. doi: 10.1016/j.technovation.2021.102274.

Lee, Younggeun, and Pol Herrmann. 2026. "Passion and Performance: A Moderated Mediation Model of Bricolage and Entrepreneurial Autonomy." *Journal of Business Research* 204:115856. doi: https://doi.org/10.1016/j.jbusres.2025.115856.

Liu, Longjun, Qing Fan, Ruhong Liu, and Jing Long. 2022. "How Leader Bottom-Line Mentality Relates to Employee Innovation: A Cross-Layer Model Mediated by Psychological Contract Breach." *Leadership and Organization Development Journal* 43(4):580–95. doi:10.1108/LODJ-04-2021-0156.

McCann, Jack T., and Roger A. Holt. 2010. "Defining Sustainable Leadership." *International Journal of Sustainable Strategic Management* 2(2):204. doi:10.1504/ijssm.2010.032561.

Mfarrej, Manar Fawzi Bani, Imane Belyamani, Syed Zamberi Ahmad, and Abdul Rahim Abu Bakar. 2025a. "Exploring the Path to Sustainable Firm Performance: The Role of Leadership, Learning, and Procurement in SMEs." *Sustainable Futures* 10. doi: 10.1016/j.sftr.2025.101454.

Moradi, Ehsan, Seyed Mohammadbagher Jafari, Zahra Mohammadi Doorbash, and Ashraf Mirzaei. 2021. "Impact of Organizational Inertia on Business Model Innovation,

Open Innovation and Corporate Performance." *Asia Pacific Management Review* (xxxx). doi: 10.1016/j.apmrv.2021.01.003.

Murad, Majid, Jin Zhao, Maria Rasheed, Syed Haider Ali Shah, Amar Johri, and Misbah Ul Islam. 2025. "Bridging Entrepreneurial Networks and Academic Entrepreneurial Behavior: Applying Theory of Planned Behavior." *International Entrepreneurship and Management Journal* 21(1). doi:10.1007/s11365-025-01096-3.

Nabeel Siddiquei, Ahmad, Zeeshan Ahmed, Khansa Zaman, Kamal Badar, Mishal Khosa, and Hashim Zameer. 2025. "Top Management's Green Inclusive Leadership and Sustainable Competitive Advantage in Manufacturing Firms: The Enabling Role of Internal CSR Communication." *Journal of Environmental Management* 395. doi: 10.1016/j.jenvman.2025.127825.

Nguyen-Van, Ha, Anh Hai Le, Chuyen Van Nguyen, Lam Duc Ho, and Quynh Thi Thu Nguyen. 2025. "Green Ambidextrous Innovation and Sustainable Performance in Vietnam's Low-Carbon Transition: The Role of Green Intellectual Capital, Green Ambidextrous Leadership, and Green Entrepreneurial Orientation." *Journal of Open Innovation: Technology, Market, and Complexity* 11(4). doi: 10.1016/j.joitmc.2025.100655.

Norman, Geoff. 2010. "Likert Scales, Levels of Measurement and the 'Laws' of Statistics." *Advances in Health Sciences Education* 15(5):625–32. doi:10.1007/s10459-010-9222-y.

Piwowar-Sulej, Katarzyna, and Qaisar Iqbal. 2023a. "Leadership Styles and Sustainable Performance: A Systematic Literature Review." *Journal of Cleaner Production* 382(October 2022):134600. doi: 10.1016/j.jclepro.2022.134600.

Quansah, Emmanuel, Kaveh Moghaddam, Stephanie Solansky, and Yuan Wang. 2022. "Strategic Leadership in SMEs: The Mediating Role of Dynamic Capabilities." *Leadership and Organization Development Journal* 43(8):1308–20. doi:10.1108/LODJ-05-2021-0229.

Regmi, Rupesh, Zhuo Zhang, and Hongpeng Zhang. 2023. "Entrepreneurship Strategy, Natural Resources Management and Sustainable Performance: A Study of an Emerging Market." *Resources Policy* 86. doi: 10.1016/j.resourpol.2023.104202.

Robertsone, Galina, and Inga Lapiņa. 2023. "Digital Transformation as a Catalyst for Sustainability and Open Innovation." *Journal of Open Innovation: Technology, Market, and Complexity* 9(1). doi: 10.1016/j.joitmc.2023.100017.

Rosenbach, Misha, Dedee F. Murrell, Jean-Claude Bystryn, Sam Dulay, Sarah Dick, Steve Fakharzadeh, Russell Hall, Neil J. Korman, Julie Lin, Joyce Okawa, Amit G. Pandya, Aimee S. Payne, Mathew Rose, David Rubenstein, David Woodley, Carmela Vittorio, Benjamin B. Werth, Erik A. Williams, Lynne Taylor, Andrea B. Troxel, and Victoria P. Werth. 2009. "Reliability and Convergent Validity of Two Outcome Instruments for Pemphigus." *Journal of Investigative Dermatology* 129(10):2404–10. doi:10.1038/jid.2009.72.

Rosenzweig, James E., Fremont E. Kast, and James E. Rosenzweig Ph D -. 1972. "General Systems Theory: Applications for Organization and Management." *Academy of Management Journal* 447–64

Salkind, Neil J. 2010. *Encyclopedia of Research Design*. Vol. 3. Sage.

Sekaran, Uma, and Roger Bougie. 2016. *Research Methods for Business: A Skill Building Approach*. John Wiley & Sons.

Senyard, Julienne, Ted Baker, Paul Steffens, and Per Davidsson. 2014a. "Bricolage as a Path to Innovativeness for Resource-Constrained New Firms." *Journal of Product Innovation Management* 31(2):211–30. doi:10.1111/jpim.12091.

Shen, Tao, and Shuxing Chen. 2025. "Resource Constraints and Bricolage: The Moderating Role of Entrepreneurs' Creativity Cognitive Style." *Chinese Journal of Population Resources and Environment* 23(2):261–69. doi: 10.1016/j.cjpre.2025.05.010.

Shirokova, G., Bystrov, A., & Tyutneva, A. (2026). Bricolage strategy and SME performance: The paradoxical role of organizational ambidexterity and entrepreneurial leadership. Foresight and STI Governance, 20(2). https://doi.org/10.17323/fstig.2026.31636

Tanveer, Muhammad. 2025. "Leading Green with Heart and Intelligence: Uniting AI, Emotional Intelligence, and Transformational Leadership for a Sustainable Future." *Sustainable Futures* 10:101137. doi: https://doi.org/10.1016/j.sftr.2025.101137.

Ullah Khan, Rizwan, Abdul Saqib, Munir A. Abbasi, Alexey Mikhaylov, and Gabor Pinter. 2023. "Green Leadership, Environmental Knowledge Sharing, and Sustainable Performance in Manufacturing Industry: Application from Upper Echelon Theory." *Sustainable Energy Technologies and Assessments* 60. doi: 10.1016/j.seta.2023.103540.

Wang, Yanfei, Caiping Wu, Xiaoxia Tian, and Yu Zhu. 2022. "Leader–Follower Psychological Capital Congruence and Work Outcomes: The Mediating Role of Organizational Embeddedness." *Leadership and Organization Development Journal* 43(4):563–79. doi:10.1108/LODJ-06-2021-0300.

Wong, Chi Sum, Junbang Lan, Kelly Z. Peng, and Joyce Iun. 2022. "Should We Stop Using the Label of 'Paternalistic Leadership'? Evidence from Three Chinese Samples." *Leadership and Organization Development Journal* 43(6):909–27. doi:10.1108/LODJ-06-2021-0267.

Wu, Shaoling, Yingjie Luo, Han Zhang, and Peng Cheng. 2024a. "Entrepreneurial Bricolage and Entrepreneurial Performance: The Role of Business Model Innovation and Market Orientation." *Heliyon* 10(4). doi: 10.1016/j.heliyon. 2024.e26600.

Xu, Xinpeng, Shengxian Wang, Jinyu Li, and Tai Qiao. 2024. "Environmental Regulatory Intensity, Green Finance and Corporate Green Sustainable Development Performance." *Heliyon* 10(9). doi: 10.1016/j.heliyon. 2024.e30114.

Yadegaridehkordi, Elaheh, Behzad Foroughi, Mohammad Iranmanesh, Mehrbakhsh Nilashi, and Morteza Ghobakhloo. 2023. "Determinants of Environmental, Financial, and Social Sustainable Performance of Manufacturing SMEs in Malaysia." *Sustainable Production and Consumption* 35:129–40. doi: 10.1016/j.spc.2022.10.026.

Yu, Jun, Zhengcong Ma, and Wenhao Song. 2022. "New Venture Top Management Team's Shared Leadership and Its Indirect Effect on Strategic Performance: Findings from SEM and FsQCA." *Leadership and Organization Development Journal* 43(3):435–56. doi:10.1108/LODJ-05-2021-0234.

Yu, Jun, and Lin Zhu. 2022. "Corporate Ambidexterity: Uncovering the Antecedents of Enduring Sustainable Performance." *Journal of Cleaner Production* 365(June). doi: 10.1016/j.jclepro.2022.132740.

Znidarsic, Jana, Sabina Bogilović, Matej Černe, and Roopak Kumar Gupta. 2021. "Leadership-Promoted Diversity Climate and Group Identification." *Leadership and Organization Development Journal* 42(7):1018–36. doi:10.1108/LODJ-09-2020-0418.