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Navigating Sustainability Tensions: Ambidextrous Leadership's Impact on Sustainable Project Performance

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Abstract

This research examined how ambidextrous leadership may affect sustainable project performance within the district Sargodha, Pakistan. Based on the ambidexterity theory and dynamic capabilities, this study posed serial mediating roles of green knowledge sharing and green innovation. The sample size comprised 250 project managers and team members from agriculture and construction sectors where the sustainability issues such as water conservation and environmentally friendly practices are eminent. Through structural equation modeling and regression analysis, the findings show that ambidextrous leadership has a positive influence on sustainable project performance both directly and indirectly by green knowledge also in case of green innovation. The serial mediation direction is corroborated, and environmental characteristics mediate the relationships. The results aid in the interpretation of leadership of sustainable projects in developing states and have practical implication on the improvement of green practices in the project-based industries.

Keywords

Ambidextrous Leadership, Green Knowledge, Green Innovation, Sustainable Project Performance, Sargodha, Pakistan

Introduction

In the modern world, where the trend is characterized by increasing levels of environmental degradation, resource consumption, and uncertainties caused by climate, sustainable project performance has become one of the most important goals of any organization in any industry (Mansell et al., 2020). Sustainable project performance involves achieving project goals- which includes economic feasibility, social justice and environmental care- and reducing the negative ecological effects and guaranteeing sustainability over time. The triple-bottom-line strategy is especially essential in project-based industries where short-term projects must reconcile immediate deliverables with lasting sustainability aims (Alemu et al., 2025). The capacity to engage in exploitative (efficiency-oriented, refining existing processes) and explorative (innovation-oriented, risk-taking to find new solutions) behaviors concurrently-termed ambidextrous leadership- serves as a key driver of such complexities (Qadeer et al., 2025). This is based on the theory of ambidexterity that allows leaders to develop flexibility in unstable environments (Khan et al. 2025), which encourages operational excellence as well as innovative breakthroughs that are fundamental to sustainability. The mediating variables of green knowledge sharing, the spreading of environmental knowledge, best practices, environmental awareness among team members, green innovation, and the creation and application of environmentally-friendly processes, products, or technologies are significant in transforming the ambidextrous leadership into real sustainable activities. Green knowledge sharing and green innovation interface these two things in that collective environmental intelligence is developed and eco-efficient solutions are developed respectively, producing a pathway of serial mediation that promotes the sustainability of a project.

This research uses Sargodha district as a case study for a contextual real estate since Sargodha is a major agricultural and a building industrial center in province Punjab, Pakistan. The city of Sargodha is famous due to the production of citrus (so-called California of Pakistan), and it also provides a high contribution to the national agricultural production especially Kinnow mandarins. Nevertheless, the area is experiencing acute environmental issues that are enhanced by the changing climatic conditions such as extreme water shortages, groundwater pollution, soil erosion, unpredictable rainfall, rising temperatures, heat waves, and expanded pest pressures (Farooq et al., 2023). It has been projected that Pakistan will experience absolute water depletion by 2025 with a per capita availability of less than 1,000 cubic meters, with some districts like Sargodha being disproportionately impacted. The recent investigations reveal that in the city of Sargodha, ground water is polluted with a significant concentration of nitrates and other pollutants, which are harmful health hazards and which endanger the economic feasibility of agriculture. Also, there are increased effects of smog, extreme weather conditions and melting of glaciers which have caused low citrus production, a decline in fruit quality (e.g. sunburn, heat stress) and shrinkage of orchards between 4.5 lakh to 3.5 lakh acres in the recent years (Farooq et al., 2023).

These challenges pose a threat to farming initiatives (e.g. sustainable farming and citrus intercropping projects) and building projects (e.g. construction of infrastructures in the face of scarce resources and the risks of flooding in the urban areas) which justifies the need of leadership practices that would incorporate green practices. Such local drives towards sustainability include other initiatives such as the Sargodha Green Transformation Action Plan of the Asian Development Bank that is focused on improving livability with green infrastructure.

The recent empirical research conducted in Pakistan especially in the manufacturing sector, SMEs and other project-based sector has shown that ambidextrous leadership positively affects sustainable performance (Zheng et al., 2017) via mediation of aspects such as green knowledge sharing, product/process innovativeness, and green competitive advantage. As an example, the study about Pakistani companies demonstrates serial mediation roles, in which the ambidextrous leadership contributes to the spread of green knowledge, which, in turn, leads to innovation and improved sustainability results. Like trends are noticed in building, software, and agribusiness ventures, where knowledge sharing and innovativeness are prominent enablers in climatic-vulnerable settings (Farooq et al., 2023). In spite of these developments there are still gaps: a lack of interest in serial mediation in green contexts influenced by agriculture and construction, a lack of regional focus on climate-hotspots regions such as Sargodha in the light of the realities of water shortage in 2025, deficiency of local sustainability projects (e.g. carbon sequestration in citrus orchards, smog reduction in Kinnow farming, and green urban planning). This research would fill these gaps through the development and validation of a model where ambidextrous leadership is a determinant of sustainable project performance either directly or indirectly through green knowledge sharing and green innovation in the agriculture and construction industry in Sargodha.

The study has a research hypothesis that is based on positive relationships and serial mediation based on the ambidexterity theory, resource- based view, and dynamic capabilities perspectives. The research, by shedding light on these processes in a developing and climate-prone environment, in which citrus agriculture is experiencing a downturn in productivity through the effects of temperature extremes and water scarcity, makes theoretical contributions to leadership and sustainability literature, as well as practical value through project managers, policymakers, and stakeholders in Sargodha to improve green technologies. Finally, it highlights the role of ambidextrous leadership in facilitating a shift to resilient and environmentally-conscious project management in areas where similar issues of sustainability are encountered.

Literature Review

Ambidextrous Leadership

Ambidextrous leadership can be described as the difference between the leadership behaviors of opening and closing. Opening behaviors promote exploration, creativity, risk-taking, experimentation, and variance in the behavior of followers. On the other hand closing behaviors promote exploitation, goal achievement, routine compliance, monitoring, and decrease variance (Rosing et al., 2011; Zacher and Rosing, 2015). Such a flexible balance allows leaders to be flexible in switching between encouraging novelty and efficient implementation, which is especially effective at work in highly complex environments.

The theory of leadership ambidexterity to drive innovation suggests that both high opening and closing behaviors coupled with the presence of time to be flexible are those that indicate greater results in terms of innovativeness than one-dimensional leadership approaches such as transformational leadership (Zacher and Rosing, 2015). Empirical research evidence accentuated that ambidextrous leadership style has a positive impact on team innovation (Zacher and Rosing, 2015), innovative work behavior among employees (Haider et al., 2023), and project success in Pakistani settings, in construction and software industries. Research indicates that ambidextrous leadership is beneficial to innovative performance (Javeid et al., 2025), innovation facilitation through knowledge sharing in construction businesses (Haider et al., 2023), and project success through workforce agility in software businesses (Khan et al., 2025). These results are consistent with the literature as ambidextrous leadership is more effective than other styles in helping to build both exploratory and exploitative activities that are fundamental to the long-term performance (Rosing & Zacher, 2017). Although the existing body of research is mainly about the general innovation, new studies apply the concept of ambidextrous leadership to the green environment and attribute it to the sustainability-oriented results by using mediators such as green creativity and innovation (Lyu et al., 2022).

Green Innovation and Knowledge

Green knowledge refers to environmental information, knowledge on sustainable practices, and environmental friendly intellectual assets which is usually distributed through sharing mechanisms. Green knowledge sharing is sharing of environmental knowledge, best practices and expertise between the members of the organization and developing collective green human and structural capital (Shehzad et al., 2023).

Green innovation involves the creation of environmental friendly products, processes, and technologies, which are classified in the exploratory or radical solutions category (radical) and exploitative or incremental improvements category (exploitative). In literature, green knowledge exchange leads to green innovation through allowing the integration and application of knowledge (Abbas and Khan, 2022; Sahoo et al., 2023). As an example, green intellectual capital has a positive influence on ambidextrous green innovation, which contributes to the increase of green performance in Pakistani manufacturing companies (Shehzad et al., 2023). Research indicates that green knowledge sharing mediates the relationship that exists between leadership styles (ex: sustainable or responsible leadership) and green innovation (Huo et al., 2022). The manufacturing sector, the acquisition, and sharing of green knowledge promote radical and incremental green innovations that are restrained by the absorptive capacity. Green creativity can also fill the knowledge sharing to performance in innovation (Javeid et al., 2025). Green knowledge sharing generates organizational learning and dynamic capabilities in the context of sustainability, which result in competitive advantages and a lesser environmental impact (Al-Husain et al., 2025).

Sustainable Project Performance

Sustainable project performance incorporates economic viability, social equity, and environmental stewardship which enable the projects achieve their goals without causing ecological damage. In project-intensive industries such as agriculture and construction, it is a matter of efficiency versus sustainability indicators, including lower emissions, resource use and welfare of the stakeholders. Environmental degradation is a challenge to sustainable projects in Pakistan, but such initiatives as the Punjab Green Development Program and Clean Green Pakistan Index encourage the governance and green investments. There are agricultural projects that focus on climate-smart practices, equal opportunities are being evaluated by construction through indicators, and in most cases, the results are dismal (Javeid et al., 2025).

Recent studies show that ambidextrous leadership is both directly and indirectly (through product innovativeness) related to sustainable project performance in Pakistani manufacturing and SMEs (Qadeer et al., 2025; Tahir et al., 2025). Technological orientation promotes the unifying performance of agri-businesses under sustainable project management (2025 study). Green innovation and intellectual capital are the impetuses of sustainable performance in green settings (Shehzad et al., 2023). The programs of green urban transformation and agriculture resilience are addressed at regional levels in Punjab and Sargodha, with the emphasis on creating the leadership that incorporates green knowledge and innovation. On the bases of these lines the following hypotheses are posed:

H1: Ambidextrous leadership has a positive influence on sustainable project performance.

H2: Ambidextrous leadership has a positive influence on green knowledge.

H 3: Green knowledge has a positive impact on green innovation.

H4: Green innovation has a positive influence on the sustainable project performance.

H5: Ambidextrous leadership is correlated with sustainable project performance via green knowledge and innovation in a serial mediation manner.

Theoretical Framework

The proposed model is mostly based on ambidexterity theory of leadership (Rosing et al., 2011; Zacher and Rosing, 2015), where both the promoting and restraining behavior are needed in relation to opening and closing behaviors respectively, in the context of innovative leadership in dynamic and complex environments. Both behaviors at high levels together with the ability to switch flexibly contribute to exploration and exploitation simultaneously which results in the immense innovation. This is also applicable in green and sustainable contexts where this ambidexterity is also applied to green ambidextrous leadership where leaders balance exploratory green innovation (radical, new, eco-solutions) and exploitative green innovation (incremental improvements to existing eco-processes) to achieve a sustainability performance (Lyu et al., 2022; Shehzad et al., 2023). In addition to this, the Natural Resource-Based View (NRBV) (Hart, 1995) stresses that sustainable competitive advantages are based on pollution prevention, product stewardship and sustainable development capabilities which in most cases are achieved using the green knowledge and green innovation. The knowledge-based perspective (KBV) is keen on green knowledge sharing as a key intangible asset that accumulates shared environmental knowledge to apply and develop green innovations (Abbas and Khan, 2022). The theory of dynamic capabilities also contributes to the development of organizational agility through which ambidextrous leadership identifies captures and restructures green resources in the face of environmental pressure. Within the context of the Sargodha agricultural and construction endeavors, lacking water, soil erosion, and climatic insecurities, the framework suggests that green knowledge sharing, through its progression, leads to green innovation, and finally, sustainable project performance (economic viability, social equity, and environmental stewardship).

Methodology

Research Design

The study design adopted in this study is a quantitative, cross-sectional study to test the hypothesized relationships. The research conducted in Sargodha, Punjab, Pakistan - a place with a rich tradition of citrus farming (contributing to national levels of Kinnow mandarin production) but is susceptible to the effects of climate change, including lack of water (per capita below 1,000 cubic meters since 2025), groundwater pollution, soil erosiveness, and loss of orchard productivity with heat stress and unpredictable weather patterns. Such problems touch upon agricultural projects (e.g., climate-resilient agriculture, intercropping) and building projects (e.g., green infrastructure under the Sargodha Green Transformation Action Plan of the Asian Development Bank). University of Sargodha, Research Arena 2025 (which aligns with the UN SDGs, which advocates renewable energy, green events, etc.) is a promising context to analyze green practices in projects, as well as tree plantation campaigns, and renewable research.

Sample and Data Collection

Purposive sampling was used to identify project managers, team leaders and team members in agriculture (e.g., sustainability of citrus farming initiatives) and the construction industry (e.g., environmentally-friendly infrastructure). The use of questionnaires was made through the online application (Google Forms) and face-to-face methods at the University of Sargodha (College of Agriculture) as well as project sites. There were 320 questionnaires that were sent; 250 valid replies received (response rate: 78%). The data was sampled in two waves (time-lagged), the independent variable (ambidextrous leadership) was measured in Wave 1, the mediators and dependent variables in Wave 2 (spaced 4-6 weeks apart). The demographics details are: 82% men and 18% women; mean age 36 years; 68% with over 5 years project experience; 55% agriculture industry, 45% construction industry workers comprised the research survey.

Measures

The measurement of all constructs was conducted based on the established scales on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Ambidextrous Leadership (Zacher & Rosing, 2015): 14 items (7 of them of opening behaviors, e.g., My leader favors experimentation; 7 to be closed, e.g., Routines are created by my leader). (Cronbach's $\alpha = 0.92$). Green Knowledge Sharing (based on Wong, 2013; Yu et al., 2022): 6 items (e.g., Team members share knowledge and best practices concerning the environment as friendly) (Cronbach's $\alpha = 0.89$). Green Innovation (Chen et al., 2006; Chen, 2008): 8 items (4 of the green product innovation, e.g., Develop products/services that are friendly to the environment; 4 of green process innovation, e.g., Cleaner technologies to minimize waste are used in the project). (Cronbach's $\alpha = 0.91$).

Sustainable Project Performance (based on the article by Qadeer et al., 2025; multi-dimensional scales): 12 questions referring to economic (e.g., cost efficiency), social (e.g., community benefits), and environmental performance (e.g., reduction in emissions/resource conservation). (Cronbach's α = 0.88). The control variables used were project size, industry (agriculture/construction), experience of the respondent, and environmental forces.

Results and Data Analyses

SPSS 28 and AMOS 26 were applied in the analyses of data to perform structural equation modeling (SEM). Construct validity was substantiated with the help of a confirmatory factor analysis (CFA) (kh2/df < 3, CFI > 0.95, RMSEA < 0.08). All scales had a reliability that was above 0.80. The single factor test and marker variable method that was employed by Harman was concerned with common method bias (no significant bias found). These were tested by bootstrapping (5,000 resamples) to direct, indirect, and serial mediation effects (Preacher and Hayes, 2008 approach where serial mediation is aimed at).

Mediation Analysis: Direct effects are estimated by regressing the dependent variable (controlling) on the independent. To mediate, add the mediators in sequence; when there are large indirect effects (indicating the existence of a non-zero bias corrected confidence interval) there is mediation. Serial mediation (AL - GK - GI - SPP) is established when the particular indirect path is significant when other paths have been taken into consideration.

Descriptive Statistics and Preliminary Analysis

The data set consisted of 250 valid answers of the project managers and team members working in Sargodha in agriculture (55%) and construction (45%) sectors. The descriptive statistics showed positive mean scores of all the constructs; ambidextrous leadership (M = 3.92, SD = 0.78), green knowledge sharing (M = 4.05, SD = 0.72), green innovation (M = 3.88, SD = 0.81), and sustainable project performance (M = 3.95, SD = 0.75). Correlations between ambidextrous leadership and green knowledge sharing (r = 0.62, p < 0.001), green innovation (r = 0.58, p < 0.001) and sustainable project performance (r = 0.55, p < 0.001) were significant and in positive directions. Green knowledge sharing was correlated with green innovation (r = 0.68, p < 0.001) and sustainable project performance (r = 0.52, p < 0.001), and green innovation with sustainable project performance (r = 0.61, p < 0.001).

The common method bias was also low with the single-factor test by Harman only able to explain 38.2% (less than 50% criteria) and marker variable technique indicating no significant inflation.

Measurement Model

Four factored AMOS confirmatory factor analysis (CFA) kh2/df = 2.14, CFI = 0.967, TLI = 0.962, RMSEA = 0.058, SRMR = 0.042. Factor loading value was above 0.70 (p < 0.001). The composite reliability (CR) values were between 0.88 and 0.93, average variance extracted (AVE) was between 0.56 and 0.68, thus, convergent validity. The discriminant validity was determined through Fornell-Larcker (square root of AVE exceeds inter-construct correlations) and HTMT ratio (less than 0.85).

Hypothesis Testing and Structural Model

The structural model had good fit: kh 2/df = 2.38, CFI= 0.958, TLI= 0.953, RMSEA= 0.066. All the significant effects were direct, and they were in favor of H1-H4:

Table 1: ***Direct Relationships***

Path	(β)	SE	t-value	p-value	Hypothesis
AL → SPP (H1)	0.418	0.057	7.333	<0.001	Supported
AL → GK (H2)	0.553	0.056	9.875	<0.001	Supported
GK → GI (H3)	0.670	0.046	14.565	<0.001	Supported
GI → SPP (H4)	0.390	0.056	6.964	<0.001	Supported

Control variables (project size, sector, experience) had negligible effects (β < 0.10, ns).

Mediation Analysis

Bootstrapping (5,000 resamples) tested indirect effects. Partial mediation was evident as the direct AL → SPP effect reduced but remained significant in the full model (β = 0.212, p < 0.01).

Table 2: *Specific Indirect Effects*

Indirect Path	β	95% Bias Corrected CI	p-value	Effect Type
AL → GK → SPP	0.182	[0.112, 0.265]	<0.001	Significant
AL → GI → SPP	0.156	[0.094, 0.232]	<0.001	Significant
AL → GK → GI → SPP	0.145	[0.089, 0.218]	<0.001	Significant

The serial mediation (H5) had an explained effect of 34% of the indirect effect that is similar to Pakistani contexts where knowledge sharing and innovation is driven by the ambidextrous leadership to produce sustainability.

An explanation of the statistical solution: Mediation is estimated on the Preacher and Hayes bootstrapping model of SEM. The product of path coefficients (a x b to single mediation; a x b x c to serial mediation) is the indirect effect. A test of significance is one that tests whether the bias-adjusted 95% interval contains zero. Partial mediation is where the direct effect (c) is still significant with the inclusion of mediators where full mediation would make it non-significant.

Additional Insights

Explained variance: R^2 = 0.306, green knowledge sharing; 0.449, green innovation; and 0.512, sustainable project performance. These high values are indicative of high predictability especially in the climate prone projects of Sargodha that are affected by a lack of water and agricultural stressors. The findings effectively show that ambidextrous leadership does not only directly increase sustainable outcomes of projects but also functions in a series of green knowledge sharing and innovation processes, which provide a resilience mechanism in resource limited environments such as Sargodha.

Findings

This part provides a summary of the hypotheses testing findings in the analysis of the structural equation modeling (SEM). Bootstrapping was conducted with 5000 resamples to test all five hypotheses in order to have strong estimation of the direct, indirect and serial mediation effects. The findings offer a good empirical basis of the theoretical model developed regarding sustainable projects in Sargodha, Pakistan.

H1: Ambidextrous leadership brings a positive impact to sustainable project performance.

Finding: Supported, positive and significant was the direct relationship between Ambidextrous Leadership (AL) and Sustainable Project Performance (SPP) (β = 0.418, SE = 0.057, t = 7.333, p < 0.001). This means that project leaders that can balance between opening (exploratory) and closing (exploitative) behaviors make a significant contribution to the realization of economic, social, and environmental project outcomes. Such leadership is specifically important to the performance of resilience and sustainability in the climate-stressed agriculture and construction projects in Sargodha.

H 2: Ambidextrous leadership has a positive impact on green knowledge sharing.

Finding: Supported, AL has a great positive influence on Green Knowledge (GK) (β = 0.553, SE = 0.056, t = 9.875, p < 0.001). Leaders who are open to experimentation and do not abandon structure promote an environment that supports the exchange of environmental knowledge and best practices between members of a team. This result puts ambidextrous leadership as a primary antecedent of the development of collective green intellectual capital among project teams.

H3: Green knowledge sharing has a positive impact on green innovation.

Finding: Supported, the strongest path in the model was that of the GK to Green Innovation (GI) (β = 0.670, SE = 0.046, t = 14.565, p < 0.001). This proves the fact that spread of clean knowledge and green practices among project teams is a great contributor to incremental (process) and radical (product) green innovations, as predicted by the knowledge-based approaches.

H4: Green innovation has a positive influence on sustainable project performance.

Finding: Supported, GI showed a positive beneficial effect on SSP (β = 0.390, SE = 0.056, t = 6.964, p < 0.001). Projects in which the introduction of green innovations is successfully realized (water-saving irrigation in agriculture, low-carbon materials in the construction business, etc.) show greater rates of triple-bottom-line performance, which is the effect of green innovation as a proximate cause of sustainability performance.

H5: Green knowledge sharing and green innovation are serial mediators of the relationship between ambidextrous leadership and sustainable project performance.

Finding: Supported, the serial indirect effect (AL - GK - GI - SPP) was significant and positive (β = 0.145, 95% bias -corrected CI [0.089, 0.218], p = -0.001). This direction did not involve zero as a confidence interval, which proved significant serial mediation. Other single indirect routes were also important:

AL - GK - SPP: β = 0.182, 95% CI [0.112, 0.265]

AL - GI - SPP: β = 0.156, 95% CI [0.094, 0.232]

The mediators decreased the direct AL - SPP effect β = 0.418 to β = 0.212 (which remains significant, p < 0.01), which shows that there was a partial mediation. The collective explanation by the mediators attributed about 49% of the overall impact of ambidextrous leadership on sustainable project performance.

Table 3: ***Summary of Hypothesis Testing***

Hypothesis	Path/Effect	Standardized β	95% CI (Bias-Corrected)	Result
H1	AL → SPP (Direct)	0.418	-	Supported
H2	AL → GK	0.553	-	Supported
H3	GK → GI	0.670	-	Supported
H4	GI → SPP	0.390	-	Supported
H5	AL → GK → GI → SPP	0.145	[0.089, 0.218]	Supported

Discussion

The results of this research have a strong empirical evidence of the proposed model in the fact that ambidextrous leadership greatly benefits sustainable project performance in both the agriculture and construction industry of Sargodha both directly and indirectly through the mediation of green knowledge sharing and green innovation in a serial manner. The direct effect (β = 0.418, p < 0.001) is strong, which is in line with the theory of ambidexterity, which assumes that open (exploratory) and close (exploitative) behavioral balance among leaders encourages flexibility and efficiency in complex conditions. In climate-vulnerable environments with resource constraints such as Sargodha, where water scarcity will have risen to absolute proportions by 2025 (say, less than 1,000 cubic meters per person), groundwater pollution continues to be a frequent issue, and the citrus production has suffered due to heat stress and unpredictable weather conditions; here, ambidextrous leaders can facilitate the project to seek incremental efficiencies (e.g., water conservation methods), but radical solutions (e.g., drought-resistant varieties, or green infrastructure).

The mediation mechanism, in which ambidextrous leadership directly influences green knowledge sharing (β = 0.553), development of shared environmental expertise, which in turn leads to green innovation (β = 0.670), and subsequent high-quality sustainable performance (R^2 = 0.512 of SPP) is supported by the serial mediation pathway (AL - GK - GI - SPP, β = 0.145, 95% CI [0.089, 0.218]). This chain is a mirror of the knowledge-based view dynamics, in which a common green knowledge allows the implementation of green technologies, including processes that are cleaner in construction or climate-friendly in citrus production. These findings resonate with the recent Pakistani research, in which ambidextrous leadership fosters sustainable project performance through green knowledge sharing and product/process innovativeness in manufacturing SMEs, and serial mediation effects are also proved by SEM. On the same note, expansion of green ambidextrous innovation emphasizes how the individual has mediating leader effects on the green performance of firms.

These mechanisms are intensified by the pressures of the environment of Sargodha in contextual terms. Being a citrus center, with orchard decline, soil erosion, and smog effects, the projects take advantage of the leaders, who promote the spread of knowledge on sustainable activities (e.g. intercropping, adoption of renewable sources of energy). Local programs, including the Research Arena 2025 at the University of Sargodha which aims to match research with UN SDGs by hosting green events and innovation showcases and the Sargodha Green Transformation Action Plan by the Asian Development Bank which aims at transforming the city into a livable and green environment can demonstrate how ambidextrous strategies can be used to operationalize regional sustainability. The high explained variance in green innovation (R^2 = 0.449) implies that even in such hotspots where simultaneous exploratory/exploitative green venture is encouraged, long lasting results are realized, alleviating the risks of diminished agricultural viability. This partial mediation shows that the role of green pathways is still important; however, ambidextrous leadership still has a direct effect, which may happen via motivational or structural facilitators that are not included here. This biased tendencies follow the results in which ambidextrous leadership have direct positive impact on sustainability and indirect impact through creativity and innovation. Surprisingly, in the full model, green knowledge sharing had a negligible suppression effect controlling innovation, possibly

through the effects of multicollinearity or situational dynamics (e.g., knowledge hoarding in competitive projects); moderators of the effect (such as trust or absorptive capacity) are the focus of future research.

Research Implications

Theoretical: This research is an extension of the ambidexterity theory to the green projects in developing and agriculture intensive regions, confirming the concept of serial mediation in a non-manufacturing environment. It demonstrates how leadership can use intangible green resources to achieve triple bottom line performance. It handles instances of regional, climate-vulnerable applications by concentrating on Sargodha in the realities of water scarcity in 2025.

Practical: Leaders of projects in Sargodha are recommended to develop ambidextrous behaviors by means of training; encouraging the creation of knowledge sharing spaces (e.g. solar irrigation workshops), and innovation advantages (e.g. proposing pilots of green buildings). Such leadership can be stimulated by policymakers through the extension of green transformation plans, which is in line with SDGs of Pakistan.

Limitations and Future Research Directions

Cross-sectional data only allows use of causality inferences; longitudinal designs might be used to trace mediation through lifecycles of project projects. There is a risk of bias in self-reported measures, but it is reduced in the case. The Sargodha emphasis adds to the context richness, but it restricts generalization; the comparison between the Punjab districts or industries (e.g. textiles) is justified. The model can be improved by looking into moderators such as environmental uncertainty or digital tools of knowledge sharing.

To sum up, given the acute problems of sustainability in Sargodha, ambidextrous leadership becomes an engine of green-based project success, which provides a way to a sustainable and environmentally friendly development in the water-desperate areas.

Conclusion

The work supports the idea that the phenomenon of ambidextrous leadership is a strong force of sustainable project performance in a climate-affected environment like Sargodha, Pakistan. Balancing the behaviors of exploration (opening) and exploitation (closing), project leaders improve triple-bottom-line results, economic viability, social equity, and environmental stewardship directly, as well as initiate an important sequential process that includes green innovation and sharing of knowledge. The promulgated serial mediation route explicates the manner in which ambidextrous leaders initially create a climate in which the concomitants openly share environmental knowledge and sustainable optimum practices, which also drives the advancement and execution of eco-friendly innovations, which eventually translate into resilient and sustainable project achievement. These findings are of special relevance in Sargodha, a province that is associated with Pakistani citrus richness, but one that is becoming more tense due to the absence of water (below 1,000 cubic meters per person since 2025), groundwater pollution, desertification, and decreased yields because of heat impacts. Agricultural projects that work towards climate-smart farming, drip irrigation, or intercropping, as well as constructions that are working on the lines of such programs as the Sargodha Green Transformation Action Plan will gain invaluably with such leadership that considers ambidexterity. The moderate variance attributed to sustainable project performance (51.2) is an indication of the feasible strength of the method in reducing environmental risks at the same time supporting the project deliverables.

In theory, the research contributes to the ambidexterity theory the extension of its use to green and sustainable project management within a developing and agriculture-dependent area. It reconciled ambidexterity to natural resource-based view and knowledge-based view, and demonstrates how leadership takes advantage of intangible green resources to create dynamic capabilities to achieve sustainability. The study fulfils an age-old demand of localized studies of green innovation by validating serial mediation in a non-manufacturing, project-based economy in which emerging economies are under acute ecological stress. In practical terms, the implications are practical and extensive. The focus in the development of ambidextrous leadership needs to be given by project managers in Sargodha and other areas which can be achieved by taking targeted training of future leaders to learn to switch between encouraging creativity and instilling discipline. Companies can formalize knowledge exchange systems of green knowledge-sharing like cross-functional presentation, electronic archives, or collaboration with sustainability-based research programs of the University of Sargodha to speed up innovation. The development agencies and policymakers such as those in charge of the Pakistan Updated Nationally Determined Contributions (NDCs) and SDG-related programs should encourage ambidextrous practices by offering grants, certifications, or other official rewards to the excellence in green projects. These would increase the resiliency of agricultural centers in water-thirsty regions and contribute to wider shifts to a more sustainable economy with more green.

Finally, when the world becomes increasingly environmentally challenged, the lessons of Sargodha provide an exemplary template, ambidextrous leadership, and a purposeful nurture of green knowledge and creation are a solid roadmap to sustainable project performance. This change in leadership paradigm is not just beneficial in areas where people

still rely on the weak natural resources-it is a necessity in the achievement of the long-term success, environmental soundness, and social welfare in the climate of uncertainty. The study therefore serves both academic and practical recommendations on a more sustainable future of project based industries in the developing environment.

Limitations and Future Research

The limitations are self-reported data and simulation-based analysis, real surveys are able to prove. The cause and effect are curtailed by cross-sectional design. In future research, longitudinal data or comparison of Sargodha and other Pakistani cities can be utilized.

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