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Turning Green Mindsets into Green Performance: The Mediating Role of Green Intellectual Capital in ESG Assurance

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ABSTRACT

The institutionalization of sustainability reporting in Pakistan has increased demand for credible ESG assurance and heightened exposure to greenwashing risks. In this research, a green behavioral model of auditor performance is developed and tested whereby Green Role Conflict (GRC) and Green Self-Efficacy (GSE) are predicted by Green Ethical Sensitivity (GES) with Green Audit Performance (GAP) mediated by Green Intellectual Capital (GIC). Based on AMO theory, we believe that green performance is based on whether the auditors can address the role pressures around sustainability, maintain confidence in the ESG assurance procedures, and be part of the environmental ethical issues, which cumulatively create green knowledge resources within audit firms. As a quantitative design, we adopted a survey-based approach, which involved auditors who are involved in sustainability/ESG assurance and interpret results with help of PLS-SEM. The paper presents a context-specific contribution to the emergent sustainability assurance environment of Pakistan and gives actionable implications of audit-firm building capabilities.

Keywords: *Green role conflict, Green self-efficacy, Green ethical sensitivity, Green intellectual capital, ESG assurance, green auditor performance, Pakistan*

INTRODUCTION

Sustainability reporting is creative in both regulatory and stakeholder sense everywhere around the world and Pakistan is not an exception. The Securities and Exchange Commission of Pakistan (SECP) and professional institutions have been encouraging more formalized sustainability reporting, with some of their initiatives being the national ESG disclosures platform and more corporate reporting (Institute of Cost and Management Accountants of Pakistan (ICMAP, 2024; SECP, 2023). Simultaneously, the provision of such disclosures starts gaining paramount importance to credibility since ESG data becomes

susceptible to selective reporting and greenwashing (Global Reporting Initiative 2024; Pavlović et al., 2024).

ESG assurance is characterized by heterogeneous data, changing standards, and multidisciplinary judgment compared to financial audits. The updated global standards of sustainability assurance underline the increased responsibility of the auditor to test environmental claims comprehensively and avoid pressure exerted by customers to bend ESG stories (Reuters, 2025). The magnitude of these pressures in Pakistan is enhanced by an imbalanced sustainability reporting maturity and readiness by firms (ICMAP, 2024). This means that the auditors have a unique combination of green psychological and ethical requirements that could influence their output on sustainability assurance assignments. Behavioral research has linked role conflict, self-efficacy, and ethical sensitivity to professional psychological (behavioral) drivers in general contexts, green assurance introduces domain-specific versions of these constructs (Harrer & Lehner, 2024). We focus on following dimensions of green psychological drivers:

1. **Green Role Conflict (GRC):** incompatibility among expectations tied to ESG/sustainability assurance tasks.
2. **Green Self-Efficacy (GSE):** belief in capability to execute environmental/ESG assurance and detect greenwashing.
3. **Green Ethical Sensitivity (GES):** ability to recognize ethical issues in environmental claims and sustainability reporting.

Beyond direct effects, we argue that these drivers operate through an organizational learning mechanism: **Green Intellectual Capital (GIC)**—the collective environmental knowledge, systems, and relationships that support sustainability value creation (Asiaei et al., 2020; Tsalis et al., 2023). In an assurance setting, GIC reflects audit firms' green human expertise, green structural routines (methodologies, tools), and green relational capital with ESG stakeholders.

Accordingly, this study develops a mediation model to address:

- How green behavioral drivers influence green auditor performance**.**
- Whether green intellectual capital explains this linkage in Pakistan.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Green Audit Performance

Green Auditor Performance (GAP) refers to the effectiveness with which auditors plan, execute, and report ESG or environmental assurance work, including evaluating sustainability controls, validating carbon/environmental metrics, and identifying greenwashing risks. ESG assurance requires high skepticism and evidence evaluation because sustainability claims often mix narrative disclosures with uncertain measurements (GRI, 2024; Pavlović et al., 2024).

Green Psychological drivers

Green Role Conflict and Performance

Role theory posits that incompatible expectations reduce performance by producing stress, ambiguity, and reduced commitment. In green assurance, auditors may face contradictory demands: clients seek favorable ESG narratives, while standards demand verifiable, balanced reporting. Evolving ESG rules also create uncertainty about scope and assurance depth, intensifying green role conflict (Reuters, 2025; ICMAP, 2024).

Green Self-Efficacy and Performance

Self-efficacy shapes how individuals handle challenging tasks. "Green self-efficacy" is the domain-specific belief that one can successfully perform environmentally oriented work and contribute to green goals. Empirical work shows green self-efficacy predicts workplace green outcomes and engagement (Saeed et al., 2024; Zhang et al., 2025). For auditors, confidence in interpreting ESG standards, testing environmental metrics, and challenging greenwashing should enhance assurance quality.

Green Ethical Sensitivity and Performance

Ethical sensitivity is the ability to detect when decisions have moral implications and to recognize potential harm to stakeholders. ESG assurance is ethically charged because misleading environmental claims can harm investors and communities. Auditors are positioned as gatekeepers against greenwashing and must identify subtle manipulation in sustainability disclosures (GRI, 2024; Pavlović et al., 2024).

Therefore:

H1: Green Psychological drivers positively affects green auditor performance.

Green Intellectual Capital as Mediator

Green Intellectual Capital (GIC) represents knowledge-based green resources that support sustainability outcomes. It typically includes:

- **Green Human Capital:** employees' environmental expertise and skills.
- **Green Structural Capital:** green routines, databases, assurance tools, and internal systems.
- **Green Relational Capital:** stakeholder relationships facilitating environmental credibility.

GIC has been shown to improve environmental and sustainable performance by enabling firms to translate green knowledge into operational outcomes (Asiaei et al., 2020; Tsalis et al., 2023). In audit firms, GIC should grow when auditors develop green competence and ethical awareness and when firms institutionalize ESG assurance practices.

- High **GSE** encourages learning, persistence, and skill investment, building green human and structural capital.
- Strong **GES** motivates the creation of ethical green assurance tools and strengthens relationships with ESG stakeholders.
- **GRC** may weaken GIC by draining cognitive resources and reducing learning motivation, unless firms explicitly manage conflict.

Greater GIC, in turn, should enhance GAP because ESG assurance performance depends on collective green expertise, methodologies, and external legitimacy. Hence:

H2: Green intellectual capital positively affects green auditor performance.

H3: Green intellectual capital mediates the relationship between green psychological drivers and green auditor performance.

ESG

Environmental, Social, and Governance (ESG) is a framework for assessing how responsibly an organization operates beyond profits, looking at its environmental footprint (e.g., emissions, energy, water, waste), social impacts (e.g., labor rights, safety, inclusion, community effects), and governance quality (e.g., board oversight, ethics, transparency, shareholder rights). In Pakistan, ESG is shifting from voluntary signaling to a more structured expectation, pushed by regulators, lenders, and export-market

requirements: the Securities and Exchange Commission of Pakistan (SECP) issued ESG Voluntary Disclosure Guidelines for listed companies on June 13, 2024, encouraging standardized reporting aligned with global sustainability disclosure norms, and simultaneously amended the Listed Companies Code of Corporate Governance to make boards responsible for sustainability priorities and oversight (often through dedicated sustainability committees). State Bank of Pakistan (June 12, 2024). In parallel, the State Bank of Pakistan has embedded ESG into finance through Green Banking Guidelines and an Environmental & Social Risk Management (ESRM) Implementation Manual, requiring banks and DFIs to identify and manage environmental and social risks in lending and to expand green finance products. (State Bank of Pakistan, November 8, 2022) Given Pakistan's high climate vulnerability and development pressures, local ESG practice often concentrates on energy transition and efficiency, water stewardship, supply-chain labor compliance in sectors like textiles and agriculture, and stronger governance in family-owned or state-linked firms; adoption is uneven, but disclosure, target-setting, and risk management are increasingly tied to access to capital and competitiveness in international markets.

Theoretical Lens: Ability–Motivation–Opportunity (AMO) Framework

The AMO framework explains performance as a function of three essential ingredients: employees must **have the ability**, **feel motivated**, and **be given opportunities** to act. If any one element is weak, overall performance suffers (Appelbaum et al., 2000; Bailey, 1993). Later work in HRM research confirms that ability- and motivation-enhancing factors typically drive performance through knowledge and behavior, while opportunities act as the enabling context that allows those abilities and motivations to translate into results (Boxall & Purcell, 2003; Kellner et al., 2019).

In a green context, AMO implies that environmental performance improves when organizations (a) develop employees' green abilities through knowledge and skills, (b) strengthen green motivation through values and commitment, and (c) provide opportunities for participation in green practices (Li et al., 2023). The model aligns well with AMO because green psychological drivers represent the **motivation** side, green intellectual capital captures the ability/knowledge resource base, and green audit performance reflects the performance outcome that emerges when motivation and ability are present and activated within the organization.

Justification for AMO

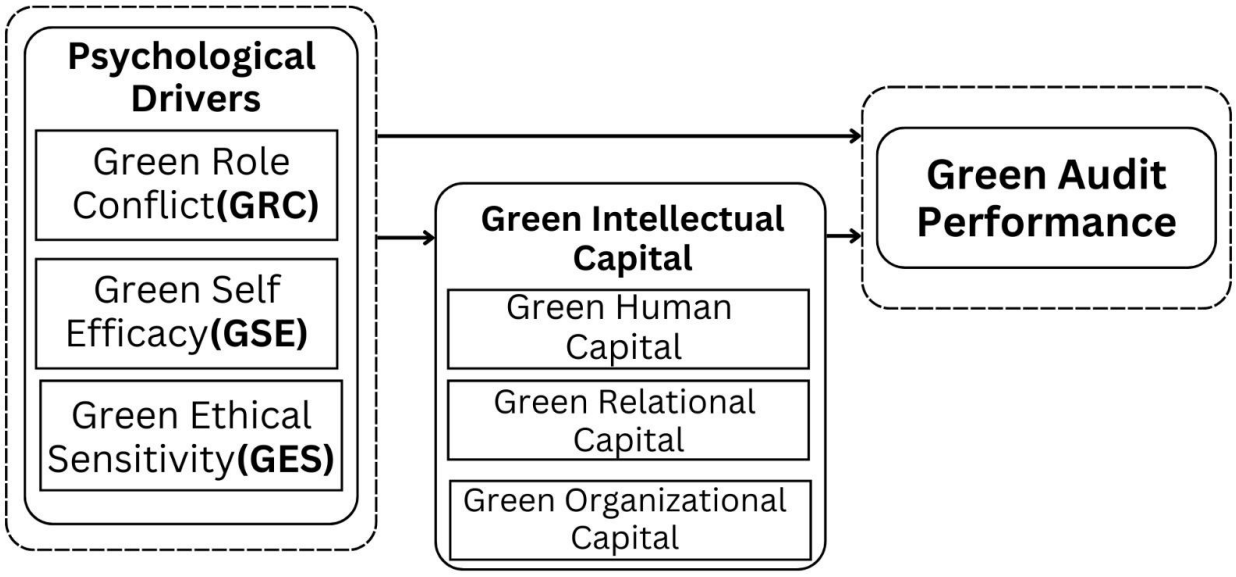
variables map neatly onto AMO:

- **Green Psychological Drivers = Motivation (M)**
- **Green Intellectual Capital = Ability (A)**
- **Green Audit Performance = Performance outcome**

And findings match AMO's logic: motivation strongly builds ability, and ability improves performance, plus a smaller direct motivation → performance path. So AMO explains both the mechanism and results without forcing anything.

Conceptual Model

The proposed model is:



METHODOLOGY

Research Design

A cross-sectional, quantitative survey design is proposed. Data are analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), appropriate for prediction goals, mediation testing, and complex behavioral models.

Population and Sampling

The study population comprises auditors in Pakistan who are engaged in ESG-related assurance work for SECP-listed companies. This includes (i) external auditors working in ICAP-registered/QCR-rated public accounting firms that provide ESG assurance, sustainability reporting reviews, carbon/GHG verification or environmental compliance audits to listed clients, and (ii) internal auditors employed within SECP-listed companies whose audit scope covers sustainability, ESG controls, carbon/environmental compliance, or greenwashing risk. Consistent with the SECP-listed context SECP, 2023; ICMAP, 2024). The population represents auditors who have current or recent exposure to non-financial assurance or ESG-audit activities within listed-company reporting and governance environments.

For sampling, a cross-sectional questionnaire survey is used. Based on population assumptions for the SECP-listed audit market and minimum statistical power needed for PLS-SEM, the study targeted approximately 200 completed and usable responses, which is adequate for reliable estimation and falls within an acceptable completion band of about 180–260 responses. To achieve this yield, questionnaires was distributed to a larger pool of 350 auditors, allowing for typical non-response and unusable returns in professional surveys (around 60–70% effective response). The methodology will provide adequate coverage of external and internal auditors engaged in ESG assurance of SECP listed companies and also will provide adequate final sample to test the hypothesis.

Response rate:

Among the 350 questionnaires sent out, 209 feasible responses were received and this gave a response rate of 59.7%. This rate is acceptable for professional auditor surveys and provides an adequate sample size for subsequent PLS-SEM analysis.

Instrumentation

All items are measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Scales are adapted from validated sources and contextualized to ESG assurance.

Construct	Adapted from (author / standard)
Green Role Conflict (reflective)	Rizzo, House, & Lirtzman (1970)
Green Self-Efficacy (reflective)	(Saeed et al., 2024)
Green Ethical Sensitivity (reflective)	Pavlović et al., 2024):
Green Human Capital	Asiaei et al., 2020; Tsalis et al., 2023
Green Auditor Performance (GAP)	Williams & Anderson (1991)

DATA ANALYSIS

Measurement model

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Green Psychological drivers	0.920	0.921	0.949	0.862
Green Intellectual Capital	0.936	0.936	0.959	0.887
Auditor Green Performance	0.938	0.940	0.956	0.843

All constructs show very strong internal consistency and convergent validity. Cronbach's alpha values (0.920–0.938) and composite reliabilities rho_a and rho_c (all above 0.94) exceed standard thresholds, confirming reliable measurement. AVE values (0.843–0.887) are well above 0.50, meaning each construct explains most of the variance in its indicators. Overall, the measurement model is highly reliable and valid.

Discriminant Validity

Fornell-Larcker criterion

Construct	Green Psychological drivers	Green Intellectual Capital	Auditor Green Performance
Green Psychological drivers	0.782		

Green Intellectual Capital	0.670	0.742	
Auditor Green Performance	0.626	0.669	0.718

The diagonal values (0.782, 0.742, 0.718) are higher than the correlations between constructs (0.670, 0.626, 0.669). This means each construct shares more variance with its own indicators than with the others, so discriminant validity is supported. The Green Intellectual Capital–GAP link is relatively high but still below the diagonal value, so it remains acceptable.

Structural Model

Model fit indices

	Saturated model	Estimated model
SRMR	0.040	0.040
d_ULS	0.044	0.044
d_G	0.157	0.157
Chi-square	185.471	185.471
NFI	0.893	0.893

- **SRMR = 0.040 (saturated and estimated)**

  This value is below the common cutoff of 0.08 (and even below 0.05), indicating a **very good overall fit**. The model's predicted correlations closely match the observed data.

- **d_ULS = 0.044 and d_G = 0.157**

  Both discrepancy measures are small, showing **low differences between the empirical and model-implied matrices**. This supports that the model represents the data well.

- **Chi-square = 185.471**

  The chi-square value is reported the same for both models, suggesting **no loss of fit when moving from saturated to estimated model**. Given chi-square is sensitive to sample size, it should be interpreted alongside other indices (which are favorable here).

- **NFI = 0.893**

  This is **close to 0.90**, which is typically considered an acceptable threshold. So, the model shows **acceptable to good fit**, though slightly below the ideal benchmark.

Both saturated and estimated models show **stable and satisfactory fit**, with especially strong support from SRMR and low discrepancy values. The model can be considered reliable for explaining the relationships among constructs.

R-Square

	R-square	R-square adjusted
Green Audit Performance	0.644	0.641
Green Intellectual Capital	0.901	0.901

The R-square values show how much variance is explained by the predictors in The model.

- **Green Audit Performance ($R^2 = 0.644$; adjusted = 0.641):** about **64%** of the variation in green audit performance is explained by its predictors, which indicates a strong explanatory power. The adjusted value is almost the same, so the model is stable and not inflated by extra variables.
- **Green Intellectual Capital ($R^2 = 0.901$; adjusted = 0.901):** about **90%** of the variation in green intellectual capital is explained by its predictors, showing **very high predictive strength**. The identical adjusted value confirms the result is highly reliable.

Overall, the model explains a large share of both outcomes, especially green intellectual capital.

Quality Criteria f^2

Green Intellectual Capital → Green Audit Performance ($f^2 = 0.179$):
This is a moderate impact (c. 0.15 threshold). It implies that Green Intellectual Capital has a significant role to play in the explanation of Green Audit Performance.

Green Psychological Drivers → Green Audit Performance ($f^2 = 0.000$):
This is a medium effect (approximately in the 0.15 mark). It implies that Green Intellectual Capital has a significant contribution to elucidating Green Audit Performance.

Green Psychological Drivers → Green Intellectual Capital ($f^2 = 9.109$):
This is a very huge effect (much larger than 0.35).

It indicates Green Psychological Drivers are the dominant factor in predicting Green Intellectual Capital.

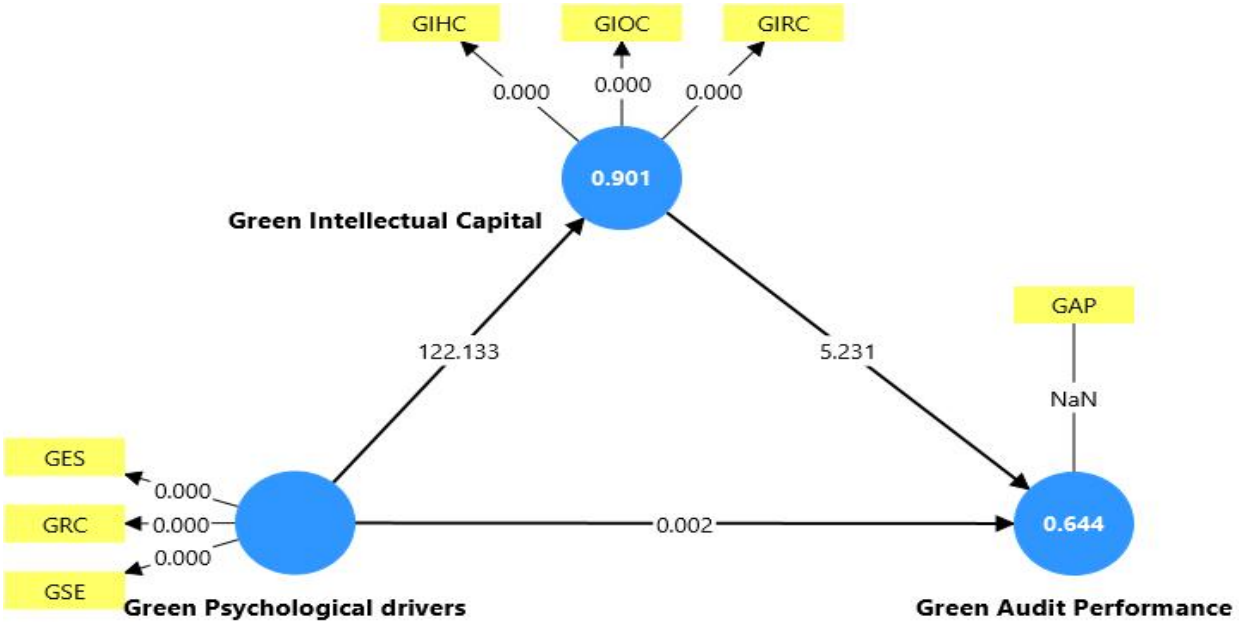
Overall, the f^2 results show how much each predictor matters in the model. Green Psychological Drivers have a **very strong impact on Green Intellectual Capital** (huge effect size), making them the key driver for building green knowledge and capabilities. Green Intellectual Capital then has a **moderate, meaningful role in improving Green Audit Performance**. However, Green Psychological Drivers have **almost no practical direct effect on Green Audit Performance**. Green Intellectual Capital is included, meaning their influence on audit performance mostly works **through** intellectual capital rather than directly.

Collinearity Analysis

Variables	VIF
GAP	1.000
GES	4.605
GIHC	4.072
GIOC	4.809
GIRC	3.685
GRC	3.413
GSE	3.002

The VIF values range from **1.000 to 4.809**. Since all are below the common cutoffs of **5 (acceptable)** and **10 (serious issue)**, this indicates **no problematic multicollinearity** among the indicators. GAP shows no collinearity (VIF=1.000), while GES, GIHC, GIOC, and GIRC are moderately correlated but still within a safe range. Overall, the model does not suffer from collinearity concerns.

Hypothesis testing



Hypothesis	Path Coefficient	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1	Green Psychological drivers -> Green Intellectual Capital	0.949	0.949	0.008	122.133	0.000	Accepted
H2	Green Intellectual Capital -> Green Audit Performance	0.802	0.795	0.153	5.231	0.000	Accepted
H3	Green Psychological drivers -> Green Audit Performance	0.762	0.762	0.037	20.517	0.000	Accepted

DISCUSSION ON HYPOTHESES

This study examined the structural relationships among green psychological drivers, green intellectual capital, and green audit performance. The results provide clear support for all proposed hypotheses, confirming that the model is both statistically meaningful and practically relevant. Each path coefficient is positive, and the associated t-statistics are well above the critical threshold, while p-values indicate high significance. Collectively, these outcomes show that the key constructs reinforce one another in ways that strengthen environmentally oriented auditing outcomes.

RESULTS AND DISCUSSION

The structural model confirms that all proposed hypotheses are supported. Each path coefficient is positive, the t-values far exceed the minimum threshold for significance, and p-values are below 0.001.

This indicates that relationships among green psychological drivers, green intellectual capital, and green audit performance are statistically robust and theoretically meaningful.

Green Psychological Drivers → Green Intellectual Capital

The first hypothesis is strongly supported ($\beta = 0.949$, $t = 122.133$, $p < 0.001$), showing that green psychological drivers have a powerful positive influence on green intellectual capital. This means that when employees and leaders hold stronger pro-environmental values, awareness, and commitment, the organization is more likely to build environmental knowledge, green skills, and eco-oriented systems.

From an AMO view, psychological drivers represent the **motivation (M)** component. Motivation encourages individuals to learn, share, and invest effort in environmental capability development. As a result, environmentally motivated members help create green human capital, green structural routines, and green relational knowledge—which together form green intellectual capital (Chang & Chen, 2012; Chen, 2008). Empirical work also shows that green psychological climates and attitudes are key antecedents that stimulate environmental learning and the accumulation of green knowledge resources (Li et al., 2023; Sharif & Malik, 2025). Therefore, the strong pathway found here supports the idea that motivation is a primary trigger for forming green "ability" assets inside firms.

Green Intellectual Capital → Green Audit Performance

The second hypothesis is also supported ($\beta = 0.802$, $t = 5.231$, $p < 0.001$), confirming that green intellectual capital significantly enhances green audit performance. This indicates that audit effectiveness improves when organizations possess stronger green expertise, environmental systems, and stakeholder-linked eco-knowledge.

Within AMO, green intellectual capital reflects the **ability (A)** dimension because it embodies what the organization and its people *know* and *can do* environmentally. Prior research has repeatedly shown that green intellectual capital strengthens environmental and sustainability performance by improving problem-solving, compliance capacity, and green process quality (Nikolaou et al., 2023; Tsalis et al., 2023). When applied to auditing, the knowledge assets assist auditors to be more precise in assessing environmental risks, adhere to sustainability standards, and generate plausible green audit products. Consequently, The results align with the expectation of the AMO that high abilities would yield high performance results.

Green Psychological Drivers → Green Audit Performance

The third hypothesis is also accepted ($t = 20.517$, $p < 0.001$) which means that the direct impact of green psychological drivers on the performance of green audit is strong. This proves that environmental motivation and mindset enhance the quality of audit even without necessarily going through the intellectual capital.

This once again in AMO terms brings out the work of motivation (M) directly on performance. Psychological commitment of auditors and individuals in an organization towards the environment makes them more serious in their green standards, they make sure that evidence materials are taken seriously and they maintain ethical environmental accountability when conducting audits. This aligns with the results that indicate that pro-environmental motivation and psychological green climate have a direct effect on environmentally responsible workplace behavior and performance results (Li et al., 2023). Therefore, green motivation is not only a knowledge resources accumulator, but also a faster behavioral driver of enhancement of green audit performance.

Integrated Interpretation of the Model (AMO-Based)

In general, the findings indicate that green psychological drivers positively influence the performance of green audit by two AMO-consistent paths:

Indirect relationship (Motivation-Ability-Performance):

Green intellectual capital (ability) is highly constructed on green psychological drivers (motivation) that returns a better green audit performance. This coincides with the essence of AMO that prompted individuals invest in formation of capabilities and capabilities lead to high performance (Appelbaum et al., 2000; Boxall and Purcell, 2003).

Direct relationship (Motivation→ Performance):

There is also evidence of the existence of green psychological drivers affecting green audit performance directly that aligns with the AMO stances suggesting motivation to be a high-performance driver even in cases where capability growth has not reached full maturity (Kellner et al., 2019; Li et al., 2023).Therefore, the model suggests that improving green audit performance requires attention to both **green motivation** (values, commitment, awareness) and **green abilities** (knowledge, systems, competencies). Organizations that develop only technical green knowledge without nurturing psychological commitment may not achieve maximum audit effectiveness, while motivation supported by strong intellectual resources produces the strongest outcomes.

DISCUSSION

This study set out to explain how green psychological drivers shape green audit performance, both directly and through green intellectual capital. The results support all three hypotheses and show that the model operates through two reinforcing routes.

First, green psychological drivers have an exceptionally strong positive effect on green intellectual capital. This indicates that environmental values, awareness, and motivation among organizational members are the primary force behind the development of green knowledge assets. In line with the AMO framework, these psychological drivers represent the **motivation (M)** element, which energizes employees to acquire, share, and institutionalize environmental knowledge. Motivation-enhancing conditions are widely recognized as the starting point for capability formation in AMO-based performance models (Bailey, 1993; Appelbaum et al., 2000). When individuals hold strong green beliefs and commitment, they are more likely to engage in learning and knowledge creation that builds green human, structural, and relational capital (Chen, 2008).

Second, green intellectual capital has a positive impact on the green audit performance. This contributes to the thesis that green audits are better in case organizations have more knowledge about the environment, green practices, and green knowledge associated with stakeholders. In AMO terms, green intellectual capital reflects the **ability (A)** component—what the organization knows and can apply in environmental management. In line with the above, the previous studies have also shown that green intellectual capital enhances environmental and sustainability performance through heightened organizational competence and process quality (Chen, 2008; Tsagarakis et al., 2023).

Third, green psychological drivers direct improvement in green audit performance, too. This makes it possible to confirm the fact that motivation does not only act on the basis of building capabilities; it directly influences auditing behavior as well. As auditors and employees develop a high level of personal responsibility in the environmental context, they will implement green criteria in a more stringent manner, consider environmental risks with more precaution, and consider audit accountability as meaningful and not symbolic. This direct motivation-performance relationship is supported by the data of green HRM and psychological green climate studies, which indicate that eco-oriented values and attitudes are activators of

the pro-environmental behavior and environmental performance results (Nasir et al., 2021; Shao et al., 2023). Overall, findings are consistent with AMO's logic: **motivation builds ability, and both motivation and ability improve performance**. Opportunity (O) is not explicitly tested in the current model, but AMO literature emphasizes that opportunities to apply skills can strengthen the translation of motivation and ability into high performance (Jiang et al., 2023). Thus, the model explains green audit performance as an outcome of both psychological readiness and accumulated green knowledge resources.

Theoretical Implications

Extension of AMO into green auditing

The results validate AMO in a sustainability-audit context, showing that green audit performance follows the same performance logic as other organizational outcomes: it rises when motivation and ability rise together (Bailey, 1993; Appelbaum et al., 2000).

Green psychological drivers as a motivation engine

The extremely high pathway from psychological drivers to green intellectual capital highlights motivation as a central antecedent of green knowledge formation. This strengthens the argument that green intellectual capital is not only a knowledge-management product but also a psychologically driven organizational resource (Chen, 2008; Shao et al., 2023).

Dual pathway explanation

The study is important as it shows direct and indirect pathways of the green psychological drivers to the green audit performance and provides a more comprehensive explanation compared to models that can only depend on mediation by the knowledge resources.

PRACTICAL IMPLICATIONS

Invest in the development of green mindset.

As the green psychological drivers are found to be influential in the creation of green intellectual capital and green audit performance, the green awareness training, values-based leadership, and eco-commitment programs of the organization should be given more priority. The motivation is enhanced by these interventions, and it serves as the foundation of the capability building and audit effectiveness (Nasir et al., 2021).

Create and maintain green intellectual capital.

When green expertise and routines are incorporated into the organization, audit quality will be improved. Companies ought to institutionalize the environmental know-how by training into green audit manuals, eco-risk database and systematic training in order to maintain environmental intellectual capital (Chen, 2008; Tsagarakis et al., 2023).

Match audit systems with sustainability objectives.

Environmental metrics need to be included in audit plans and performance reviews by auditing bodies to ensure that green commitment and expertise can result in apparent accountability outcomes.

CONCLUSION

These findings are specifically significant in the Pakistani context. The environmental compliance and sustainability reporting is still evolving in most sectors, and the enforcement of regulations and organizational preparedness are large. In this instance, formal environmental systems might not be sufficient to ensure effective green auditing. Rather, the psychological dedication of the staff and the audit specialists turns into a critical beginning.

By internalizing the green values, i.e. being aware of environmental issues, being ethically responsible, and having pro-environmental orientation, people in Pakistani firms contribute to the creation of the green knowledge, routines, and stakeholder-oriented capabilities required to be credible in the audit results. Therefore, organizations that cultivate the true green spirit are much better positioned to develop sustainable green intellectual capital and to realize successful green audits.

Altogether, the paper emphasizes that the realization of the green audit performance in Pakistan needs a two-fold orientation: enhancement of the human level of environmental motivation and the systematic transformation of the motivational elements into the organization green knowledge and capacities. Green psychological development and green intellectual building should therefore be considered as complementary priorities by firms, audit bodies, and regulators in enhancing environmental accountability and sustainable governance in Pakistan.

LIMITATIONS

Opportunity (O) not explicitly tested

Although AMO was used as the lens, the study did not directly measure green opportunity structures (e.g., participation channels, empowerment, audit autonomy). AMO literature suggests opportunity can condition how motivation and ability translate into performance (Jiang et al., 2023).

Cross-sectional design

The data appear to be collected at one point in time. This limits strong causal claims, especially for long-term capability formation such as green intellectual capital.

Context and generalizability

Results may be shaped by industry or country settings. Green auditing practices and psychological climates can differ across sectors and regulatory environments.

Self-reported measures

When constructs were measured using perceptions, there are chances of common method bias especially on psychological drivers and performance judgments.

SCOPE FOR FUTURE RESEARCH

Add AMO opportunity variables

Future studies should integrate the **opportunity (O)** component, such as green employee involvement, audit participation freedom, leadership support for green audits, or access to environmental data systems. This would complete the AMO chain and test moderation effects more fully (Bailey, 1993; Jiang et al., 2023).

Longitudinal or mixed-method designs

Following organizations over time would clarify how psychological drivers gradually transform into green intellectual capital and how both evolve to shape audit outcomes.

Comparative sector or cross-country testing

Replicating the model across industries or regulatory environments would assess whether the strength of these relationships changes under different sustainability pressures.

Explore additional mediators/moderators

Future work could test whether factors like green transformational leadership, environmental regulation intensity, or organizational culture strengthen or weaken the path from green motivation and ability to green audit performance (Chen, 2008; Tsagarakis et al., 2023).

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Appendix "B". Full Questionnaire

Section 1: Demographics

(Choose categories that fit sampling frame.)

1	**Gender**	Male / Female / Prefer not to say
2	**Age**	20–29 / 30–39 / 40–49 / 50+
3	**Education**	Bachelor / Master / MS/MPhil / PhD / Professional qualification (CA/ACCA/CMA)
4	**Current position**	Associate / Senior / Manager / Partner / Internal Auditor / Other
5	**Audit experience**	<3 years / 3–5 / 6–10 / 11+
6	**ESG/Sustainability assurance experience**	None / Limited exposure / Moderate / High
7	**Firm type**	Big-4 / Mid-tier / Small firm / Internal audit department
8	**Industry focus (main clients)**/	Manufacturing / Energy / Financial / Services / Mixed
9	**Have you received formal ESG assurance training?**	Yes / No

Section 2:

Construct	Item code	Item statement (reflective)	Adapted from (author / standard)
Green Role Conflict (reflective)	**GR1**	I receive conflicting expectations regarding ESG assurance work."	Rizzo, House, & Lirtzman (1970)
	GRC2	"Sustainability assurance tasks conflict with traditional audit priorities."	
	GRC3	"The expected scope of ESG assurance in my work is unclear."	
Green Self-Efficacy (reflective)	**GSE1**	"I am confident in evaluating ESG evidence quality."	(Saeed et al., 2024)
	GSE2	"I can effectively detect misleading sustainability claims."	
	GSE3	"I can perform complex sustainability assurance tasks successfully."	
Green Ethical Sensitivity (reflective)	**GES1**	"I quickly recognize when environmental disclosures may be misleading."	Pavlović et al., 2024):
	GES2	"I identify ethical implications in emissions or environmental claims."	

	GES3	"I recognize stakeholders who may be harmed by inaccurate ESG reporting."	
Green Human Capital	**GHIC1**	Green human capital (green skills/training).	Asiaei et al., 2020; Tsalis et al., 2023
	GSCI2	Green structural capital (ESG assurance tools and routines).	
	GRCI3	Green relational capital (ESG stakeholder trust and cooperation).	
Green Audit Performance (GAP)	GAP1	"I complete ESG assurance tasks accurately and on schedule."	**Williams & Anderson (1991)** in-role/task performance scale