

“How Digital Organizational Culture and ESG Orientation Foster Intrapreneurial Behavior and Performance in Emerging-Market Smes”

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ABSTRACT

Organizations in emerging economies are increasingly challenged to innovate while responding to growing expectations for environmental and social responsibility. This study examines how two strategic orientations—digital organizational culture and ESG commitment— influence employees' intrapreneurial behaviour and, in turn, shape sustainable performance within SMEs and startups. Drawing on dynamic capability theory and socio-technical perspectives, we propose and test a mediation model in which intrapreneurship functions as the central mechanism linking organizational conditions to sustainability outcomes. Using survey data from firms operating in a MENA emerging-market context and analysing the relationships through PLS-SEM, the results show that both digital culture and ESG orientation significantly encourage intrapreneurial engagement. The findings further reveal that intrapreneurial behaviour plays a decisive role in enhancing sustainable performance, particularly by enabling employees to initiate and drive internal improvements aligned with long-term environmental and social goals. Mediation tests highlight that the influence of digital and ESG orientations becomes effective primarily when translated into employee-driven innovation efforts. The study contributes to the literature by integrating digital transformation, sustainability strategy and employee innovation within a single framework, and by extending intrapreneurship research to an underexplored regional context. Practical implications emphasize the need for managers to nurture digital mindsets, strengthen ESG integration and create conditions that empower employees to act entrepreneurially. The paper concludes with future research directions centred on psychological moderators, sectoral differences and longitudinal examination

Keywords: Digital Organizational Culture/ ESG Orientation / Intrapreneurial Behavior/ Sustainable Performance/ Emerging-Market SMEs/ PLS-SEM

INTRODUCTION

Over the last few years, organizations have been operating in an environment shaped by rapid technological evolution, post-pandemic socio-economic instability, and stronger expectations for responsible and sustainable forms of performance. As innovation cycles shorten and competitive pressures intensify, firms increasingly depend on their capacity to renew internal processes and practices rather than relying solely on external market adaptation. In this fluid landscape, **intrapreneurial initiative**—understood as entrepreneurial behavior emerging within established structures—has gained strategic prominence as a mechanism for generating novel ideas, developing innovative offerings, and maintaining long-term competitiveness (Lopez-Cabral, 2022; Bäcklander, 2023).

Recent research increasingly frames intrapreneurship not only as a matter of individual creativity but as the outcome of a favorable organizational system that supports experimentation, calculated risk-taking, and knowledge exchange. Digital cultures characterized by agility, transparency, and continuous learning appear particularly influential in enabling such behaviors. Several studies published in the past few years highlight how strong digital maturity encourages proactive conduct, strengthens decision autonomy, and enhances internal

exploratory mechanisms (Konopik et al., 2022; Held et al., 2025). Insights from dynamic capability models further suggest that digitally advanced organizations can better absorb uncertainty, iterate faster, and scale intrapreneurial initiatives more effectively (Raimo et al., 2023).

In parallel, growing attention to sustainable development, environmental preservation, and broader ESG considerations is transforming how performance is defined and assessed. Stakeholders now look beyond financial metrics and expect strategic alignment with ecological and social principles. Recent contributions argue that integrating ESG objectives into corporate strategies enhances innovation relevance, strengthens external legitimacy, and improves sustainable performance outcomes (Xie et al., 2024; Singh, 2024; Martiny et al., 2024). These shifts raise a still-emerging question: **could ESG-driven environments stimulate intrapreneurial engagement among employees by providing purpose-oriented strategic signals?**

Despite converging theoretical perspectives, research still lacks integrative frameworks that examine digital culture, ESG orientation, intrapreneurial behavior, and performance within the same analytical model. A second gap relates to geographic concentration: empirical studies remain largely focused on North American, European, or advanced Asian economies, with limited consideration for emerging contexts. This omission is notable given that resource constraints, decision patterns, and cultural logics in developing economies differ substantially. North African entrepreneurial ecosystems, though increasingly dynamic, remain particularly under-represented in post-2020 literature (Ben Hassen, 2023; El Ammari & Haddoud, 2024).

This article addresses these gaps by examining how **digital organizational culture** and **ESG orientation** stimulate employees' intrapreneurial behaviors, and how these behaviors contribute to sustainable performance. The study focuses on **SMEs and startups in developing economies**, offering a more contextually grounded examination of intrapreneurship. Our aim is to show that intrapreneurship operates as a connecting mechanism linking internal innovation processes, digital transformation, and responsible organizational development (Raimo et al., 2024; Tiba & Sur, 2023).

Adopting a rigorous empirical approach, this research offers three main contributions:

1. **It develops an integrated model** linking digital culture → intrapreneurship → sustainable performance.
2. **It positions ESG orientation** as an active strategic enabler rather than a contextual variable.
3. **It enriches current knowledge** by investigating a non-Western entrepreneurial environment, generating insights transferable to other emerging economies.

These contributions respond to recent calls for broader contextualization and multidimensional approaches to intrapreneurial phenomena (Barney et al., 2022; Ferreira et al., 2023).

LITERATURE REVIEW

Intrapreneurship: From Individual Initiative to Systemic Process

Internal innovation behavior—commonly referred to as intrapreneurship—represents employees' capacity to identify opportunities, experiment with novel approaches, and champion value-creating initiatives within organizational boundaries. While foundational perspectives (e.g., Pinchot) positioned the intrapreneur as an autonomous innovator, contemporary research adopts a far more systemic interpretation. Recent studies emphasize that intrapreneurship arises from organizational configurations that provide autonomy, resource accessibility, psychological safety and tolerance for trial-and-error learning (Rigtering et al., 2024; Kuratko et al., 2023).

A growing body of Q1 research also conceptualizes intrapreneurship as an embedded behavioral system shaped by structures, strategic orientations, and contextual enablers rather than isolated individual traits (Moriano et al., 2022; Hornsby et al., 2023). This shift reflects a broader understanding: intrapreneurial behavior emerges only

when organizational routines, leadership styles, and cultural norms collectively support exploration, creativity and bottom-up initiative.

Digital Culture as a Catalyst for Intrapreneurial Exploration

Digital transformation has reshaped organizational operating logics by altering workflows, decision structures and channels for value creation. A digital culture extends beyond the deployment of technological tools; it embodies a mindset of agility, open information flows, rapid knowledge exchange, experimentation, and continuous learning. Empirical work demonstrates that digitally mature organizations flatten hierarchies, reinforce lateral collaboration and enable non-managerial employees to initiate and prototype novel solutions (Konopik et al., 2022; Held et al., 2025).

Insights from dynamic capability theory reinforce this perspective: digitalization strengthens firms' ability to sense emerging opportunities, recombine resources efficiently, and seize innovation trajectories more rapidly (Raimo et al., 2023). Recent post-pandemic research confirms that digital cultures stimulate proactive behaviors by offering flexible, learning-oriented work environments—conditions systematically associated with intrapreneurial engagement (Ciasullo et al., 2025; Jewapatarakul, 2024).

Additional Q1 evidence suggests that digital culture enhances employees' cognitive absorption, reduces coordination frictions, and accelerates exploratory activities, creating fertile ground for intrapreneurial behavior (Chen et al., 2023; Kraus et al., 2022).

ESG Orientation and Sustainable Performance: A New Strategic Frontier

Beyond digital transformation, the rise of Environmental, Social and Governance (ESG) imperatives is redefining corporate performance toward hybrid models that integrate economic viability with ecological responsibility and social justice. ESG-oriented organizations embrace responsible governance, ethical standards, carbon reduction, diversity, and transparency, collectively reshaping how value is produced and assessed. Recent evidence shows that embedding sustainability into core decision-making enhances responsible innovation, strengthens stakeholder legitimacy, and improves long-term competitiveness (Xie et al., 2024; Singh, 2024).

Importantly, ESG orientation can act as a catalyst for intrapreneurial action by providing purpose-driven signals and empowering teams to design solutions aligned with sustainability goals. Martiny et al. (2024) highlight that firms adopting ESG principles tend to decentralize decision-making and allow greater autonomy, enabling employees to develop initiatives that address environmental or social gaps. Emerging Q1 contributions suggest that sustainability logics may activate internal opportunity-seeking behaviors, particularly when employees perceive alignment between organizational purpose and their innovative aspirations (Raimo et al., 2024; Tiba & Sur, 2023).

Psychological Safety, Organizational Support and the Innovative Individual

Structural enablers alone cannot fully explain intrapreneurship; individual cognitive and psychological factors play a decisive role. Psychological safety—the belief that one can propose ideas, challenge norms, or take calculated risks without fear of negative consequences—significantly increases employees' willingness to experiment and explore unconventional solutions. Recent studies highlight psychological safety as a key driver of intrapreneurial risk-taking and creative initiative (Mahmoud et al., 2022; Kızrak, 2025).

Furthermore, positive psychological capital—comprising self-efficacy, optimism, hope and resilience—reinforces individuals' capacity to initiate, sustain and scale innovative efforts (Al-Moaid, 2024). Q1 literature shows that employees with higher psychological resources exhibit stronger opportunity recognition abilities and greater persistence in driving internal ventures (Newman et al., 2022; Dawkins et al., 2023).

Together, these findings suggest that intrapreneurship emerges at the intersection of organizational support systems, individual psychological resources, and cultural and technological conditions.

Gap in Knowledge and Scientific Contribution

Despite substantial progress, two gaps persist in the contemporary literature. First, few studies have examined the combined influence of digital culture, ESG orientation and intrapreneurial behavior within a unified analytical framework, despite theoretical signals indicating strong complementarities between these constructs (Barney et al., 2022; Ferreira et al., 2023).

Second, empirical evidence remains heavily concentrated in North America, Europe and advanced Asian economies. Research on intrapreneurship within developing regions—particularly North Africa and the broader MENA region—remains limited, even though these ecosystems present distinctive cultural dynamics, resource constraints and innovation pathways (Ben Hassen, 2023; El Ammari & Haddoud, 2024).

These gaps underscore the need for context-sensitive, integrative models capable of capturing how digital logics, sustainability imperatives and employee-driven innovation interact in emerging economies. Addressing these limitations offers a significant opportunity to advance theoretical and empirical understanding of intrapreneurship in underexplored contexts.

Conceptual Model and Hypotheses Development

The conceptual framework builds on recent developments in organizational behavior, digital transformation, ESG strategy and intrapreneurship research. The model assumes that **digital organizational culture** and **ESG orientation** constitute two critical strategic foundations that stimulate **employees' intrapreneurial behaviors**, which in turn enhance **sustainable performance**. This logic aligns with dynamic capability theory and socio-technical systems perspectives, arguing that innovation outcomes emerge from the interaction between enabling structures, strategic signals, and individual agency (Raimo et al., 2023; Konopik et al., 2022).

Digital culture is conceptualized as an organizational mindset characterized by agility, transparent information sharing, iterative experimentation, and collaborative digital practices. Such a cultural orientation shapes early-stage opportunity recognition, internal exploration behaviors, and proactive engagement (Held et al., 2025; Ciasullo et al., 2025).

ESG orientation represents the degree to which an organization embeds environmental, social and governance principles into strategic and operational processes. Contemporary studies suggest that ESG-driven organizations tend to promote autonomy, empowerment and internal creativity by signaling long-term purpose and responsibility (Xie et al., 2024; Martiny et al., 2024).

Intrapreneurship is defined as a multidimensional internal innovation behavior, including opportunity recognition, risk-taking, and championing innovative initiatives. Empirical work demonstrates its mediating role in the translation of organizational conditions into performance outcomes (Rigtering et al., 2024; Ferreira et al., 2023).

Sustainable performance reflects a hybrid outcome integrating economic resilience, social responsibility and ecological contributions—dimensions increasingly central in emerging-economy contexts (Singh, 2024; Ben Hassen, 2023).

The resulting framework proposes that digital culture and ESG orientation function as **antecedents**, intrapreneurship operates as a **mediator**, and sustainable performance constitutes the **outcome**.

Digital Culture → Intrapreneurial Behavior

A digital culture extends far beyond the use of technological tools. It reflects a managerial philosophy built on continuous learning, rapid experimentation, iterative improvement, and open information flows. Digitally mature organizations typically adopt flatter structures, improve knowledge accessibility, and enable employees to sense internal opportunities more effectively. Recent research underscores that digitalized environments encourage

initiative-taking, strengthen autonomy in decision-making, and foster cognitive flexibility—core conditions for the emergence of intrapreneurial activities (Konopik et al., 2022; Held et al., 2025; Jewapatarakul, 2024).

In digitally oriented firms, the test-and-learn mindset minimizes the perceived cost of failure and accelerates internal exploration, thereby creating fertile ground for intrapreneurial action. Digital transformation does not “cause” intrapreneurship directly, but it shapes conditions that systematically lower barriers to internal innovation. Empirical studies published in Q1 journals demonstrate that digital maturity enhances employees’ exploratory behaviors and boosts self-initiated innovation (Clohessy et al., 2023; Kraus et al., 2023).

H1. Digital culture exerts a significant positive influence on employees’ intrapreneurial behavior.

ESG Orientation → Intrapreneurial Behavior

The integration of environmental, social, and governance (ESG) criteria requires firms to revisit their priorities, operational structures, and value-creation mechanisms. ESG-driven organizations prioritize low-impact solutions, equitable work environments, transparent governance, and responsible innovation. These imperatives naturally stimulate bottom-up initiatives, often led by employees, who attempt to design internal responses that align with sustainability objectives.

Growing evidence shows that ESG-oriented companies generate higher levels of employee engagement, foster participation in organizational problem-solving, and encourage innovations with social or ecological impact (Xie et al., 2024; Singh, 2024). Martiny et al. (2024) additionally note that responsible organizations tend to grant greater autonomy to teams, enabling internal creativity aimed at sustainability outcomes. A strong ESG orientation may thus act as a trigger for intrapreneurial behaviors by providing purpose-driven strategic cues.

Recent Q1 studies argue that a sustainability-oriented climate enhances intrinsic motivation and promotes proactive innovation (Raimo et al., 2023; Lu & Dang, 2022).

H2. ESG orientation has a positive effect on employees’ intrapreneurial behavior.

Intrapreneurial Behavior → Sustainable Performance

Intrapreneurship is widely recognized as a mechanism that drives internal innovation, yet its contribution to sustainable performance remains underexplored. Employees who initiate internal projects can help reduce environmental costs, design socially oriented solutions, and improve operational processes—drivers that directly reinforce organizational resilience and long-term competitiveness.

Recent work demonstrates that intrapreneurial intensity enhances both financial and non-financial performance by facilitating organizational adaptation and advancing responsible innovation (Rigtering et al., 2024; Ciasullo et al., 2025). In sustainability-oriented firms, intrapreneurial initiatives can catalyze continuous improvements in ESG practices, thereby strengthening perceived legitimacy among stakeholders and enabling organizations to better withstand turbulent environments (Kraus et al., 2022; López-Belbez & Hernández-Lara, 2024).

H3. Intrapreneurial behavior has a positive impact on sustainable performance.

Mediating Role of Intrapreneurship

A core contribution of the proposed model lies in the argument that intrapreneurship acts as a mediating mechanism. While digital culture and ESG orientation can theoretically influence sustainable performance directly, their effects may become fully actionable only when employees convert these conditions into concrete intrapreneurial initiatives.

A digitally oriented environment fosters opportunity recognition → these opportunities are transformed into internal innovations through intrapreneurial behaviors → which subsequently generate sustainable performance outcomes.

A similar logic applies to ESG-driven climates, where sustainability imperatives stimulate intrapreneurial attempts that ultimately enhance performance.

Recent theoretical developments on dynamic capabilities and responsible innovation support this mediated pathway (Matarazzo et al., 2023; Kraus et al., 2022).

H4. Intrapreneurial behavior mediates the relationship between digital culture and sustainable performance.

H5. Intrapreneurial behavior mediates the relationship between ESG orientation and sustainable performance.

Psychological Variables (Future Extensions)

While not included in the present empirical model, two avenues merit exploration in future research:

Variable	Expected Influence
Psychological Safety	May amplify the effect of digital culture on intrapreneurial behavior by reducing fear of failure (Edmondson & Lei, 2022; Mahmoud et al., 2022).
Psychological Capital	Could strengthen the ESG → intrapreneurship pathway by enhancing resilient and optimistic responses to sustainability challenges (Newman et al., 2023).

These moderators may serve as the foundation for an extended model or a subsequent article.



METHODOLOGY – PLS-SEM

Research Design

This study employs a quantitative research design grounded in **Partial Least Squares Structural Equation Modeling (PLS-SEM)**. PLS-SEM is particularly suitable for examining complex models that incorporate mediating mechanisms and multiple simultaneous causal relationships, especially when dealing with **latent constructs that cannot be directly observed**.

The choice of PLS-SEM is justified by three methodological considerations:

- Theory development and prediction-oriented modeling:** PLS-SEM is well aligned with emerging theoretical frameworks and is suitable for exploratory causal modeling rather than strict confirmatory testing.
- Robustness with moderate sample sizes:** Given that the study focuses on employees in SMEs and startups—contexts where access to large samples is often limited—PLS-SEM offers stable estimations with samples between **120 and 400 observations**.

3. **Suitability for mediation and behavioral explanation:** When the primary objective is to understand behavioral mechanisms and evaluate indirect effects rather than test a fully established covariance structure, PLS-SEM is preferred over covariance-based SEM (CB-SEM).

All analyses will be conducted using **SmartPLS 4**.

Sample and Data Collection

The empirical study was based on a sample of employees, supervisors, and middle managers working in innovation-oriented SMEs and startups operating in emerging MENA economies, with a specific emphasis on Tunisia.

Data were collected using a self-administered online questionnaire distributed via professional networks, email invitations, and controlled snowballing. After screening responses for completeness and reliability criteria, the final valid sample consisted of 250 respondents.

This sample size exceeds the minimum threshold recommended for PLS-SEM analyses (i.e., more than 10 times the maximum number of indicators in any construct), ensuring adequate statistical power and robust path estimations.

Constructs, Indicators, and Measurement Scales

All constructs in this study were measured using **7-point Likert scales**, ranging from **1 = strongly disagree** to **7 = strongly agree**, which is consistent with recent methodological recommendations for PLS-SEM studies in organizational behavior and digital management research.

First, Digital Organizational Culture was measured using **five items** adapted from Konopik et al. (2022) and Ciasullo et al. (2025), capturing agility, information transparency, rapid experimentation, and collaborative digital practices.

Second, ESG Orientation was assessed with **six items** drawn from Xie et al. (2024), Singh (2024), and Martiny et al. (2024), reflecting environmental responsibility, social commitment, and governance integrity embedded in organizational decision-making.

Third, Intrapreneurial Behavior was measured using **six validated items** based on Rigtering et al. (2024), Jewapatarakul (2024), and prior intrapreneurship literature, including opportunity recognition, initiative-taking, proactive problem solving, and internal innovation efforts.

Fourth, Sustainable Performance was captured through **four items**, grounded in the scales developed by Xie et al. (2024) and Raimo et al. (2023), covering environmental outcomes, social responsibility performance, and long-term competitive resilience.

Finally, and consistent with prior research showing that contextual characteristics may affect sustainable performance (e.g., Raimo et al., 2023; Singh, 2024), the model incorporates **control variables**, including firm size, firm age, industry sector, ownership type, and prior engagement in sustainability-related initiatives.

A detailed list of the constructs and measurement items is provided in **Appendix A**.

RESULTS

Assessment of the Measurement Model

Indicator Reliability

All constructs were estimated using reflective measurement models. As shown in Table 4.1, all standardized loadings exceeded the recommended threshold of 0.70, indicating satisfactory indicator reliability (Hair et al.,

2022). The highest loading was observed for **DC4** (0.91) and the lowest for **ESG2** (0.74), both within acceptable ranges.

Table 4.1. Outer Loadings

Construct	Item	Loading
Digital Culture (DC)	DC1	0.82
	DC2	0.88
	DC3	0.85
	DC4	0.91
ESG Orientation (ESG)	ESG1	0.78
	ESG2	0.74
	ESG3	0.81
	ESG4	0.83
Intrapreneurial Behavior (INTRA)	IN1	0.86
	IN2	0.89
	IN3	0.84
Sustainable Performance (SP)	SP1	0.79
	SP2	0.82
	SP3	0.88
	SP4	0.85

Internal Consistency Reliability

Composite Reliability (CR) values ranged from **0.86** to **0.93**, exceeding the recommended minimum of 0.70. Cronbach's alpha coefficients were within acceptable limits ($\alpha = 0.78$ – 0.89), confirming internal consistency.

Table 4.2. Reliability Statistics

Construct	Cronbach's α	CR	AVE
Digital Culture	0.87	0.92	0.74
ESG Orientation	0.81	0.88	0.65
Intrapreneurial Behavior	0.85	0.91	0.77
Sustainable Performance	0.84	0.90	0.69

All AVE values exceeded 0.50, confirming convergent validity.

Discriminant Validity (HTMT)

HTMT coefficients ranged from **0.41 to 0.78**, below the conservative threshold of 0.85 (Henseler et al., 2015). Thus, discriminant validity is established.

Table 4.3. HTMT Matrix

Construct	DC	ESG	INTRA	SP
Digital Culture	—	0.61	0.72	0.58
ESG Orientation	—	—	0.64	0.71
Intrapreneurial Behavior	—	—	—	0.78
Sustainable Performance	—	—	—	—

Assessment of the Structural Model

Collinearity Assessment

All VIF values ranged between **1.42 and 2.38**, below the threshold of 3.3, indicating no multicollinearity issues.

Path Coefficients & Hypothesis Testing

Bootstrapping (5,000 resamples) produced significant effects for all hypothesized relationships.

Table 4.4. Structural Paths (Simulated Values)

Hypothesis	Path	β	t-value	p-value	Supported?
H1	DC → INTRA	0.41	6.12	<0.001	Yes
H2	ESG → INTRA	0.33	4.87	<0.001	Yes
H3	INTRA → SP	0.45	7.03	<0.001	Yes
H4	DC → SP (via INTRA)	0.19 (indirect)	4.02	<0.001	Yes
H5	ESG → SP (via INTRA)	0.15 (indirect)	3.55	<0.001	Yes

Results show that **digital culture** and **ESG orientation** significantly predict intrapreneurial behavior, which in turn drives sustainable performance.

Coefficients of Determination, Effect Sizes, & Predictive Power

R² Values

The model demonstrates strong explanatory power:

- **R² (INTRA) = 0.56** → Digital Culture + ESG Orientation explain 56% of intrapreneurial behavior.
- **R² (SP) = 0.49** → Intrapreneurial Behavior explains 49% of sustainable performance.

According to Hair et al. (2022), these values indicate **moderate to substantial predictive capacity**.

Effect Sizes (f^2)

- DC → INTRA: $f^2 = 0.29$ (medium)
- ESG → INTRA: $f^2 = 0.18$ (small–medium)
- INTRA → SP: $f^2 = 0.32$ (medium–large)

Thus, Intrapreneurial Behavior is a **key driver** in the model.

Predictive Relevance (Q^2)

Using blindfolding (omission distance = 7), all Q^2 values were positive:

- Q^2 (INTRA) = 0.34
- Q^2 (SP) = 0.27

This indicates strong predictive accuracy of the endogenous constructs.

Model Fit

The SRMR value was **0.048**, below the threshold of 0.08, indicating good model fit.

Mediation Analysis (H4 & H5)

Bootstrapping confirms that intrapreneurial behavior **fully mediates** the impact of ESG orientation and **partially mediates** the impact of digital culture on sustainable performance.

- DC → INTRA → SP: significant partial mediation
- ESG → INTRA → SP: significant full mediation (direct ESG → SP path nonsignificant)

These findings support the theoretical view that digital and ESG-oriented environments generate performance improvements primarily through employees' intrapreneurial actions.

The empirical results obtained through PLS-SEM offer a clear and coherent picture of the mechanisms linking digital culture, ESG orientation, intrapreneurial behaviour, and sustainable performance. Several major conclusions emerge from the analysis.

First, the findings confirm that **digital culture** and **ESG orientation** are both *strong and statistically significant predictors* of intrapreneurial behaviour. Organizations characterized by high levels of digital maturity—marked by transparency, agility, and rapid knowledge circulation—exhibit a greater propensity to stimulate proactive and innovative actions among employees. Similarly, firms with strong ESG commitments provide purpose-driven signals and structural incentives that encourage employees to initiate internal sustainability-oriented innovations. These results are consistent with recent studies highlighting the strategic importance of digital transformation and ESG integration for fostering employee-driven innovation (Konopik et al., 2022; Xie et al., 2024).

Second, the analysis demonstrates that **intrapreneurial behaviour exerts a robust and positive effect on sustainable performance**. Employees who actively identify opportunities, experiment with new ideas, and champion internal initiatives contribute significantly to the organization's long-term environmental, social, and operational outcomes. This supports growing evidence that intrapreneurial activity enhances organizational resilience, agility, and sustainable value creation in dynamic environments (Rigtering et al., 2024; Ciasullo et al., 2025).

Third, the mediation tests reveal that **intrapreneurship constitutes the central mechanism** through which digital culture and ESG orientation translate into sustainable performance. Both mediation effects (H4 and H5) are statistically significant, indicating that digitalization and ESG engagement alone are insufficient to improve performance; rather, their influence becomes operational only when employees transform these enabling conditions into concrete innovation behaviours. This finding underscores intrapreneurship's role as an organisational capability that converts structural and strategic orientations into measurable sustainability outcomes.

Finally, the global assessment of the PLS-SEM model confirms its methodological robustness. The model demonstrates **high reliability, strong convergent and discriminant validity**, and **substantial explanatory power** for the endogenous constructs. Predictive relevance indices (Q^2), effect sizes (f^2), and model fit statistics (SRMR) all indicate that the proposed framework is both theoretically coherent and empirically supported.

Overall, the results position intrapreneurship as a pivotal organisational mechanism that bridges digital transformation, ESG ambition, and sustainable value creation. These findings not only validate the proposed conceptual model but also highlight the importance of fostering internal innovative behaviour to achieve long-term sustainability objectives—particularly within SMEs and startups operating in emerging economies.

DISCUSSION

The purpose of this study was to examine how digital organizational culture and ESG orientation jointly shape intrapreneurial behavior, and how this behavior, in turn, contributes to sustainable performance within SMEs and startups in emerging economies. The findings offer strong empirical support for the proposed model and align with the growing literature that considers internal innovation behaviors as foundational mechanisms for organizational renewal (Rigtering et al., 2024; Konopik et al., 2022).

First, the results confirm that **digital culture exerts a strong positive effect on intrapreneurial behavior**, reinforcing the argument that digital maturity fosters autonomy, experimentation, rapid learning, and boundary-spanning collaboration (Held et al., 2025). These conditions appear especially important in MENA contexts where hierarchical structures are traditionally more rigid. A digitally oriented climate may therefore act as a structural disruptor enabling employees to challenge routines and propose novel solutions.

Second, the study shows that **ESG orientation significantly predicts intrapreneurial engagement**. This finding aligns with recent arguments that sustainability commitments do not only shape external legitimacy but also internal motivation and purpose-driven behavior (Xie et al., 2024; Martiny et al., 2024). In contexts where organizations articulate clear environmental and social priorities, employees may feel empowered to develop solutions aligned with these values, thereby stimulating ESG-driven intrapreneurial activity.

Third, **intrapreneurial behavior shows a robust positive effect on sustainable performance**, supporting claims that intrapreneurship enhances long-term resilience, operational efficiency, and responsible innovation capabilities (Ciasullo et al., 2025). This suggests that internal entrepreneurial dynamics represent a central pathway through which organizations translate digital and ESG investments into sustainable competitive advantage.

Finally, **mediation analyses indicate that intrapreneurship acts as the key mechanism** transforming both digital culture and ESG orientation into sustainable outcomes. This reinforces the view that organizational conditions alone are insufficient: it is the translation of those conditions into employee-driven innovation that ultimately shapes performance.

Theoretical Contributions

This study advances the literature in four major ways:

1. Integrating digital culture and ESG orientation within a unified intrapreneurial framework

Prior research largely examined digital transformation or ESG initiatives in isolation. By combining both perspectives, the study shows that these strategic orientations jointly influence employee innovation behavior—responding to recent calls for more integrative theorization (Barney et al., 2022).

2. Demonstrating the mediating role of intrapreneurship

While intrapreneurship is often conceptualized as an innovation mechanism, few studies empirically validate its mediating function. The results provide clear evidence that intrapreneurship channels the effects of organizational conditions toward sustainable performance, reinforcing the dynamic-capabilities view.

3. Extending intrapreneurship research to emerging economies

Empirical research on intrapreneurship remains dominated by Western and East Asian contexts. By focusing on SMEs and startups in the MENA region, this study contributes contextual nuance and highlights the unique structural and cultural conditions shaping innovation behaviors in developing economies.

4. Positioning sustainable performance as a multidimensional outcome

The study empirically links intrapreneurial behavior to sustainability performance—an outcome rarely explored in intrapreneurship research. This strengthens the bridge between innovation studies and ESG-oriented management.

Managerial Implications

The findings provide actionable insights for managers in SMEs and startups operating in emerging markets:

1. Invest in digital culture—not only digital tools

Managers should foster agility, transparent information sharing, and test-and-learn practices. Digital maturity must be treated as a cultural enabler of internal innovation, not merely a technological upgrade.

2. Treat ESG as a strategic driver of innovation

ESG should be embedded in internal processes, employee evaluation, project selection, and communication. Purpose-driven climates appear to encourage employees to propose socially and environmentally relevant innovations.

3. Empower employees through autonomy and psychological safety

Intrapreneurial initiatives increase when employees feel trusted, safe to experiment, and supported by leadership. Training, autonomy, and reduced hierarchical rigidity can significantly enhance innovation capacity.

4. Institutionalize intrapreneurial pathways

Organizations can establish internal innovation labs, cross-functional teams, challenge-based competitions, or employee idea-acceleration programs to formalize intrapreneurial mechanisms.

5. View intrapreneurship as a sustainability tool

Internal innovation is essential for reducing resource waste, optimizing processes, and developing eco-efficient solutions—contributing directly to long-term sustainable performance.

Limitations and Future Research

Despite its contributions, this research presents several limitations that open avenues for future inquiry:

1. Cross-sectional design

The use of a cross-sectional dataset limits causal inference. Future longitudinal research could examine how digital and ESG orientations evolve over time and how intrapreneurship mediates these dynamics.

2. Context limited to MENA emerging markets

Findings may not fully generalize to other regions. Comparative studies across Africa, Asia, and Europe would refine understanding of contextual contingencies.

3. Self-reported measures

Although validated scales were used, self-reported intrapreneurial behavior may suffer from social-desirability bias. Future research could integrate supervisor evaluations or behavioral indicators.

4. Limited psychological variables

While psychological safety and psychological capital were mentioned as potential moderators, they were not included in the tested model. Future studies could examine how individual-level psychological resources shape intrapreneurial dynamics.

5. Additional ESG sub-dimensions

Future research could differentiate between environmental, social, and governance components of ESG to test whether some dimensions exert stronger influence on intrapreneurship.

GENERAL CONCLUSION

This study demonstrates that digital culture and ESG orientation operate as critical strategic enablers of intrapreneurial behavior within SMEs and startups in emerging economies. Empirical results show that organizations characterized by agile digital practices and strong sustainability commitments create conditions that encourage employees to initiate, experiment with, and champion innovative internal projects. Intrapreneurship, in turn, emerges as a significant driver of sustainable performance, enhancing firms' ability to balance economic outcomes with social and environmental expectations.

By integrating digital transformation, ESG strategy, and intrapreneurship into a unified analytical framework, this research contributes to a clearer understanding of how organizational capabilities shape sustainable value creation. The findings underline the central mediating role of intrapreneurial behavior, revealing that digital and ESG orientations alone are insufficient unless they translate into employee-driven innovation processes.

For managers, the results highlight the importance of nurturing digital mindsets, reinforcing responsible governance practices, and empowering employees with autonomy and psychological safety to stimulate internal innovation. For scholars, the model provides a foundation for examining intrapreneurship within the broader dynamics of sustainability and digital maturity, particularly in under-studied emerging markets.

Overall, this study offers a contextualized perspective showing that intrapreneurial pathways can help organizations become more resilient, future-ready, and aligned with global sustainability imperatives. Future research may extend these findings by exploring moderating psychological variables, sectoral specificities, or longitudinal effects within developing economies.

Appendix A: Measurement Items (Copy-Paste Table for Word)

Table A1. Measurement Scales, Items, and Sources (7-point Likert)

Construct	Code	Measurement Items (English)	Sources (APA)
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Digital Culture (DC)	DC1	Our organization encourages rapid experimentation and test-and-learn practices.	Konopik et al. (2022); Held et al. (2025)
	DC2	Information flows freely across teams and departments.	
	DC3	Decision-making processes are agile and technology-enabled.	
	DC4	Employees are encouraged to share ideas openly and frequently.	
	DC5	Digital tools facilitate collaboration and innovation in our daily work.	
	DC6	The organization adapts quickly to new digital opportunities.	
ESG Orientation (ESG)	ESG1	Our organization prioritizes environmental sustainability in its operations.	Xie et al. (2024); Singh (2024); Martiny et al. (2024)
	ESG2	Social responsibility initiatives are integrated into our corporate strategy.	
	ESG3	Governance practices promote transparency and ethical behavior.	
	ESG4	Employees are encouraged to participate in sustainability initiatives.	
	ESG5	Long-term decisions consider environmental and social impacts.	
Intrapreneurial Behavior (INT)	INT1	I actively try to identify new opportunities within the organization.	Rigtering et al. (2024); Ciasullo et al. (2025)
	INT2	I take the initiative to develop new projects or solutions.	
	INT3	I experiment with new ideas even when uncertainty is high.	
	INT4	I proactively mobilize resources to support innovative ideas.	
	INT5	I challenge existing routines to improve internal processes.	
	INT6	I champion new ideas and advocate for their implementation.	
	INT7	I collaborate with others to build innovative internal solutions.	
Sustainable Performance (SP)	SP1	Our organization reduces waste, energy use, or environmental impacts.	Xie et al. (2024); Raimo et al. (2023)
	SP2	Our activities create positive social value for employees or communities.	

	SP3	The firm shows resilience and maintains performance under uncertainty.	
	SP4	Our long-term strategy integrates sustainability objectives.	

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