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[The Role of Organizational support, green involvement and Digital dynamics Capabilities in Fostering Green Creativity: Mediating Effects of Green Organizational Learning and Knowledge Sharing with a Moderating Role of Green Mindfulness]

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ABSTRACT

This study investigates how organizational and digital capabilities foster green creativity in organizations in response to the increased focus on environmental sustainability. The study looks at how organizational support, green involvement, and digital dynamic capability affect green creativity, drawing on resource-based theory and knowledge management frameworks. Green mindfulness is examined as a moderator, and the model explores the mediating functions of green organizational learning and green knowledge sharing. Employees of environmentally conscious companies will be the focus of a quantitative study design that uses structural equation modeling (SEM). The results of the study should contribute to the body of literature by providing a thorough understanding of how mindfulness and knowledge-based procedures can support innovative sustainability initiatives. There is also discussion of the implications for digital transformation and green HRM in sustainability contexts.

Keywords: Green Creativity, Organizational Support, Green Involvement, Digital Dynamic Capability

Introduction

Businesses need to foster green innovation and creativity since environmental concerns are still at the top of the global agenda. The creation of novel and advantageous concepts that support environmental sustainability is known as "green innovation" and it requires the right organizational culture, supporting structures, and avenues for information exchange. Nevertheless, little is known about the ways in which organizations encourage this kind of innovation. The literature on green innovation underrepresents green corporate learning and knowledge sharing in particular. Additionally these results may be significantly impacted by digital transformation and individual traits like green consciousness. Thus, through mediating processes and the moderating function of green mindfulness, this study examines a comprehensive framework that connects green creativity to organizational support, green involvement, and digital dynamic capability.

Examining how managerial support, sustainable involvement, and digital flexibility affect green organizational learning and knowledge sharing is the main goal of this study. It also aims to investigate the role that knowledge sharing and green organizational learning play as mediators in the causal relationship between these input variables and environmentally creative thinking. The study also intends to ascertain how green mindfulness modifies the relationship between green creativity and the mediators, green organizational learning and green knowledge sharing. Ultimately, by successfully integrating organizational and technological enablers the study aims to offer strategic insights that will increase green creativity.

The current study seeks to address several significant research inquiries. First, it looks into how corporate support, green involvement and digital dynamic capabilities affect green organizational learning and the sharing of knowledge. Second, it examines whether green organizational learning and knowledge sharing serve as mediators in the relationship between these organizational and digital components and green creativity.

Third, the study examines the impact of green mindfulness on the relationship between the mediators of green organizational learning and green knowledge sharing, and green creativity. Finally, it wants to find out how companies can use their internal and technological resources in smart ways to come up with new green solutions.

Even though companies are under greater stress to adopt sustainable practices, many still can't seem to foster green creativity. Traditional models of innovation don't take into account outside factors, and they don't use internal learning processes or digital tools to reach their full potential. Moreover, the psychological and behavioral traits including green mindfulness that can enhance or diminish the impact of these processes on creativity have been inadequately explored. This study addresses the imperative to formulate and empirically assess an extensive framework that amalgamates organizational digital cognitive and knowledge centric dimensions to foster green creativity.

The present study is motivated by numerous substantial inconsistencies in the existing literature. To begin with, there is a dearth of empirical studies that directly associate digital dynamic capability with green creativity, resulting in a significant void in the literature concerning mathematical frameworks for sustainable innovation. Second, the ways in which green organizational learning and information sharing lead to creative outcomes are well understood, particularly in green organizational contexts. Finally, the moderating effect of green mindfulness has been largely overlooked in sustainability research, despite its capacity to enhance the effectiveness of learning and knowledge-sharing strategies in fostering green creativity. Filling in these gaps can help us understand how green HR theory and practice work together and how to make organizations more sustainable.

Literature Review

Theoretical Framework

Regulatory Focus Theory (RFT)

Higgins (1997) generated Regulatory Focus Theory (RFT) which provides a motivating framework for explaining how individuals pursue objectives using two unique self-regulatory systems: promotion focus and preventive focus. A promotion focused people is driven by ambition, development and innovation, whereas a prevention focused individual is concerned with safety, responsibility and the avoidance of negative effects. This theory offers light on how individuals interact with opportunities, respond to organizational signals and participate in creative processes (Lanaj et al., 2012; Neubert et al., 2008).

In the context of the current study titled "The Role of Organizational Support, Green Involvement, and Digital Dynamic Capability in Promoting Green Creativity, Mediating Effects of Green Organizational Learning and Knowledge Sharing with a Changing Role of Green Mindfulness," RFT aids in explaining the motivational drivers behind green creativity. Organizational support and green engagement are likely to generate a promotion focused mindset by encouraging staff to pursue sustainability objectives, experiment with new ideas and participate in environmentally friendly actions Morris, S. B. (2023) , C. E., & Zhou, J. (2024).When workers see significant support for green efforts they are more likely to innovate and contribute to environmental

sustainability through unique and creative ideas.

Similarly digital dynamic features act as technology facilitators for promotion focused behavior when employed for experimental and innovative reasons. Employees' promotion-driven motivation increases when they make use of technological tools to acquire information cooperate remotely and build eco-innovative solutions (Zhou & Li, 2012; Yang et al., 2024). These skills provide an atmosphere favorable to green organizational learning and knowledge exchange both of which serve as intermediary mechanisms for transforming organizational support and digital capabilities into green innovation. According to RFT, persons with a promotion emphasis are more likely to engage in learning and knowledge sharing activities thinking about them as possibilities for personal and organizational progress (Higgins, E.T.1998; Sharif & Malik, 2025).

Further the idea of green mindfulness defined as conscious knowledge of environmental implications in one's choices and actions (Pham et al., 2019) has an important moderating function. Mindful team members are more likely to understand sustainability goals, pay attention to green practices, and use green knowledge creatively. Green mindfulness, under the RFT theory improves the promotion emphasis by encouraging people to take meaningful and goal congruent environmental action. As a result green mindfulness promotes the positive effect of green learning and knowledge sharing on green creativity (Arslan et al., 2022; Özgül, B. (2025).

Organizational Support Positively Influences Green Creativity

Organizational support (OS) relates to workers' perceptions that their organization appreciates their contributions and is concerned about their well-being, which includes environmental participation (Eisenberger et al., 1986). In the context of sustainability, organizational support takes the shape of green training, eco-friendly policies, management encouragement, and the supply of resources for environmental projects. This assistance fosters a psychological environment in which employees feel driven, comfortable, and respected, eventually boosting green creativity, a type of creative activity targeted at finding new solutions for environmental sustainability Wong, M. J., & Wahab, E. (2025).A significant body of research confirms the positive connection between OS and green creativity. Rubel, et al. (2025) showed that perceived organizational support strongly predicts innovation in the environment by influencing employee motivation and commitment to eco-behavior. When firms promote and reward green activities, it increases employees' desire to take the initiative and research novel environmental solutions. This assistance improves psychological safety, a requirement for creativity, allowing employees to take measured chances without fear of repercussions (Moin et al., 2024). Sarwar, A., & Shahzad, S. (2024). Green human resource management (GHRM) approaches which include green performance evaluations, eco-friendly awards, and green training incorporated beneath organizational support frameworks, enhance green innovation results. Hameed et al., (2024) emphasize that supportive leadership practices, such as open communication and recognition forts, send significant signals that green innovation is accepted and anticipated.

This symbolic endorsement improves workers' sense of responsibility and dedication to the organization's sustainability aims, enhancing their eco-creative output. Organizational support has an impact on the psychological mechanisms that promote

green innovation. One such method is psychological empowerment, which makes employees feel less dependent, competent, and meaningful when their environmental efforts are supported. (Fontana et al., 2022) proved that when individuals are empowered with organizational resources and autonomy, their part in green creativity increases. Individuals who feel empowered are more inclined to question the existing quo, think outside the box, and propose novel methods to reduce environmental impact. Cross-cultural research has highlighted the contextual significance of organizational support in boosting green innovation. (Xu et al.,2024) shown that in collectivist work cultures, such as those seen in South Asia, the community part of organizational support resonates more strongly with employees, pushing them to engage in green activities that benefit both the collective company and the environment. This convergence of personal and legal ideals fosters emotional commitment, which has been observed to stimulate innovative endeavors.

Digital infrastructure can also play a supportive role in enhancing green creativity. As per Hu et al., (2024), when organizations invest in digital tools for environmental monitoring and collaboration, they signal institutional support for innovation, thereby creating a conducive environment for creative green behavior. Access to eco-resources, participatory decision making, and structured feedback systems further operationalize organizational support into tangible outcomes. Organizational support acts as both a motivational and instrumental driver of green creativity. By fostering psychological safety, empowerment, and eco-alignment, organizations can unlock the creative potential of their workforce to drive sustainability-led innovation.

H1: Organizational Support positively affects Green Creativity.

Green Involvement positively affects Green Creativity

Green involvement (GI) refers to the active participation of employees in environmental initiatives, encompassing both formal actions such as membership in sustainability committees and informal behaviors like energy saving practices or recycling Liao, H. Y. (2024). GI reflects an employee's engagement with the organization's environmental goals and values and plays a crucial role in fostering green creativity defined as the ability to generate original and useful ideas aimed at environmental improvement. Active green involvement increases employees' environmental awareness, deepens their organizational commitment, and enhances their intrinsic motivation, all of which are critical antecedents to green creative behavior. The connection between GI and green creativity has been well-supported by recent empirical studies (Schröder et al., 2023) demonstrated that employees who are more involved in environmental programs tend to generate higher levels of green creative output. This is because engagement exposes individuals to more sustainability concerns, generating a better awareness of the context in which innovation is required. Direct engagement gives workers a personal stake in environmental results, which increases their readiness to contribute creatively to eco-solutions.GI also promotes creativity by developing environmental capabilities. Employees who participate in sustainability projects are more likely to receive practical knowledge and a better grasp of environmental systems. This learning process improves their ability to develop new thoughts (Ansong et al., 2025) argue that GI promotes cognitive variety and knowledge development, allowing employees to consider

sustainability in sophisticated and integrative ways. These qualities immediately contribute to the creative problem-solving required for green innovation. Another way that GI encourages green innovation is by improving the alignment of personal and corporate environmental ideals. Zhang, J., & Bloemer, J. (2011) discovered that workers who actively participate in green initiatives are more likely to identify with their organization's sustainability goals. This value congruence enhances affective commitment and increases prosocial drive, both of which are important predictors of creative contributions. Employees find more meaning and purpose in their job, which pushes them to look for new ways to contribute to environmental performance. GI promotes collaborative involvement and peer learning, both of which are crucial for creativity.

When employees work on green initiatives, they exchange ideas, offer feedback and motivate one another. This communal interaction fosters a social climate conducive to creativity. (Ma et al., 2025) stated that collaborative green interaction allows employees to share expertise and viewpoints, resulting in more inventive environmental solutions. Group-based green dedication promotes the spread of green habits and norms, reinforcing innovative approaches. The psychological state of green awareness can enhance the impact of GI on creativity. According to (Zhao et al., 2023), aware staff who work on green projects are more likely to take in environmental information carefully and attentively, allowing them to come up with creative solutions. When employees are engaged and conscious, their creative answers to environmental concerns are more impactful and contextually appropriate. Green involvement serves as a foundational driver of green creativity by fostering experiential learning, enhancing value alignment, supporting collaborative problem-solving, and stimulating mindful engagement. Organizations seeking to promote sustainability innovation should thus prioritize strategies that increase employee participation in environmental initiatives.

H2: Green Involvement positively affects Green Creativity

Digital Dynamic Capability Has a Positive Impact on Green Creativity

Digital dynamic capability (DDC) refers to an organization's ability to adapt, integrate, and reconfigure digital technology in response to environmental changes and market needs Leemann, N., & Kanbach, D. K. (2022). In the context of green innovation, DDC promotes the use of environmentally friendly technology, data analytics for sustainability, and cooperation via digital platforms, allowing for a creation of unique environmental solutions. Green creativity which entails developing new and effective ideas for environmental improvements has been encouraged by the use of digital tools and systems that promote environmental responsiveness Omonijo, O. N., & Zhang, Y. (2025).DDC enables employees to access real-time environmental data, use simulation tools and use digital forecasting technique to generate innovative green ideas. According to Omonijo, O. N., & Zhang, Y. (2025) enterprises with high digital capabilities exhibit much better green innovation.

According to Omonijo, O. N., & Zhang, Y. (2025) enterprises with high digital competence get much better green innovation outcomes because of their ability to use big data, AI, and IT technologies into eco-strategies. These tools make it easier to solve problems, see patterns, and generate ideas that correspond with long-term goals. DDC's

agility enables employees to explore and iterate on eco-ideas, promoting green innovation. Furthermore DDC promotes interdepartmental cooperation and knowledge exchange using digital platforms that increase idea variety and creative contribution. According to (Ma et al., 2023) collaborative technologies and knowledge repositories enhance creative problem-solving by allowing for the integration of multiple views.

Cloud based workspaces shared dashboards, and environmental data management systems are examples of digital infrastructures that promote collective creativity, making it simpler for teams to collaborate on green solutions. The organizational learning environment also mediates the DDC-green creativity link. (Asiaei et al., 2022) demonstrated how digital capabilities improve green organizational learning by allowing for the gathering, analysis, and transmission of environmental knowledge. This technique increases employees' cognitive capacity and encourages creative participation with problems with the environment. The more successfully digital technologies are integrated into the learning culture, the greater their influence on creativity. Employees' digital literacy boosts the relationship even more. Employees with good digital abilities are more willing to experiment with green applications, resulting in higher levels of green innovation. Lo, N. P. K. (2023) discovered that digital competence mediates the association between DDC and green creativity. Employees that are both technologically savvy and mindful of the environment are more likely to use digital technologies to develop new environmental solutions. Furthermore, leadership support for digital transformation greatly enhances DDC's effect. According to (Shen et al. 2025) leaders that actively support digitalization in sustainability contexts legitimate experimentation and push staff to produce new green solutions utilizing technology. Digital champions inside firms also act as role models, encouraging more engagement in eco-innovation. Digital dynamic capacity offers the technology foundation, conjunction infrastructure, and educational support required for green innovation. DDC facilitates digital experimentation, real-time data access, and cross-functional collaboration, making it a vital facilitators of sustainability driven innovation in modern enterprises.

H3: Digital Dynamic Capability positively affects Green Creativity

Green Organizational Learning Mediates the Relationship between Organizational Support and Green Creativity

Green organizational learning (GOL) refers to the processes through which organizations acquire, share and apply environmental knowledge to drive eco-innovation and sustainability (Saeed et al., 2022). As a mediating mechanism, GOL transforms organizational support (OS) into actionable knowledge that empowers employees to generate creative green ideas. When organizations offer strong support such as green training, feedback systems, and learning oriented policies. They create a climate conducive to learning, experimentation and idea development. This fosters the cognitive and structural capacities needed for green creativity. Organizational support lays the groundwork for green learning by emphasizing the value of sustainability and allocating resources to knowledge development. Faisal, S. (2023) argued that OS encourages proactive knowledge seeking behavior among employees, which builds the foundation for creativity. Supportive leadership and HR systems facilitate open communication, reflection, and feedback all essential components of a learning culture that enables

green innovation. Empirical evidence supports this mediating relationship.Behl, et al. (2022) found that Green Organizational Learning substantially moderates the influence of leadership support on green innovation in Chinese manufacturing companies. Their findings imply that without a learning mechanism in place, assistance has a modest impact on innovation outcomes. GOL broadens support by transforming it into practical, shared knowledge that employees may utilize to tackle issues of sustainability imaginatively. GOL improves an employee's capacity to absorb and utilize environmental knowledge. Murad, M., & Li, C. (2025) said that green training and collaborative learning sessions assist employees to comprehend complicated sustainability concerns, resulting in greater creative thoughts. GOL promotes continual development and information flow, allowing staff to draw on a variety of experiences and views, increasing their ability to produce unique eco-solutions.

Green organizational learning increases psychological empowerment. Employees who have regular learning opportunities are more likely to feel competent, independent and useful at work, all of which predict green creativity (Fontana et al., 2025). This sense of empowerment motivates people to take the initiative and offer environmentally friendly solutions, which frequently go beyond official employment requirements. The involvement of digitalization in GOL increases its mediating impact. Digital technologies enable cross-departmental environmental data gathering, analysis, and knowledge substitution, resulting in a learning loop that supports green innovation. Hoang Thanh, N., & Truong Cong, B. (2024) found that firms that used digital infrastructure for learning initiatives had greater relationships between support systems and green innovation performance. Green organizational learning bridges the gap between organizational support and green creativity by offering the foundation, tools, and culture required to turn supportive practices into ongoing creative outcomes. Organizations striving to optimize their green imagination must invest in perpetually environmental learning systems and staff support methods

H4: Green Organizational Learning Mediates the Relationship between Organizational Support and Green Creativity

Green Knowledge Sharing Mediates the Relationship between Organizational Support and Green Creativity

Green knowledge sharing refers to the process by which employees disseminate environmental insights, practices, and solutions across the organization (Capestro et al., 2024). As a mediator, GKS converts organizational support into actionable collaboration and ideation that drive green creativity. When organizations foster a supportive climate that encourages information exchange and eco-dialogue, employees are more likely to share knowledge and co-create sustainable innovations (Abualigah et al., 2021).Organizational support plays a foundational role by signaling to employees that green behaviors are valued, safe, and rewarded. This psychological safety fosters trust and openness, encouraging knowledge flows related to sustainability. According to (Aboramadan et al., 2022), OS enhances GKS by reducing perceived risks in sharing ideas, especially when green contributions are visibly acknowledged by leadership. GKS builds the cognitive infrastructure for green creativity by connecting employees to diverse viewpoints, technical knowledge, and experiential insights. This collaborative knowledge

environment stimulates divergent thinking and increases the pool of creative inputs. Aboramadan et al., 2022 found that GKS significantly mediates the relationship between green HRM practices and employee green creativity by facilitating knowledge exchange that supports collective innovation. Green knowledge sharing (GKS) has a mediating function, in accordance with recent empirical research. According to Lo, N. P. K. (2024)., workers who participate in organized green sharing of knowledge like innovation platforms or green roundtables report being more creative and adept at tackling environmental problems. These initiatives flourish in companies with effective support systems, such as online knowledge bases, feedback loops and apprenticeship.

The GKS green creativity pathway is improved by organizational culture and leadership practices. In accordance with (Ahmed et al., 2024) transformational leaders who set an example of sharing environmental knowledge encourage an open and inclusive society. In addition to encouraging creativity, this ensuring that innovation is in line with strategic sustainability goals. In order to encourage GKS, technology is essential. Employees may exchange ideas, obtain green knowledge, and communicate across borders using digital platforms like as intranets, forums, and environmental dashboards. (Liang et al. 2022) observed that by promoting a cross-functional and accelerating the propagation of ideas, digital collaboration tools enhance the mediating function of GKS.

H5: Green Knowledge Sharing Mediates the Relationship between Organizational Support and Green Creativity

Green Organizational Learning mediates the relationship between Green Involvement and Green Creativity.

Companies that actively engage their staff in green projects typically create an atmosphere that encourages learning about environmentally friendly methods. Employee awareness, skills and incentive to adopt environmentally friendly practices are all improved by this green involvement. Increased green creativity can result from this participation when it is directed toward put on green organizational learning through training, reflection, and experiential activities. According to recent research, learning settings that prioritize goals for sustainability increase the impact of environmental engagement on creative green results (Aloqaily et al., 2024; Haim, K., & Aschauer, W. (2024).

The degree to which workers engage in environmental activities and decision making inside a company is reflected in green engagement. However, up until information is absorbed and developed through learning mechanisms, engagement alone could not always result in creativity. A critical tool that helps personnel learn, discuss, and implement sustainability-related information is green organizational learning. When green participation is included into organizational learning systems, it fosters employees' capacity to come up with innovative and sustainable ideas, claim (Wang et al., 2024). In addition, green learning methods foster the critical thinking, group reflection, and problem-solving abilities that are the basis of green creativity (Rasheed al., 2024). Thus, green organizational learning not only converts a spectator into proactive, creative activity, but it also deepens the cognitive link between involvement and creativity.

H6: Green Organizational Learning mediates the relationship between Green Involvement and Green Creativity.

Green Knowledge Sharing Mediates the Relationship between Green Involvement and Green Creativity

Green involvement (GI) refers to the extent to which employees actively participate in organizational environmental initiatives, ranging from policy development to daily sustainable practices. This behavioral engagement, when coupled with effective green knowledge sharing (GKS), can significantly contribute to green creativity. GKS mediates the relationship between GI and green creativity by acting as a platform where ideas, practices, and experiences related to sustainability are exchanged, adapted, and amplified to create novel solutions (Nguyen, C. M. (2024).Employees who are more involved in green activities are more likely to accumulate experience and develop practical insights into environmental issues. However, these insights only translate into broader organizational innovation when shared Li, X., & Wareewanich, T. (2024) suggest that employees deeply engaged in green initiatives are more likely to participate in knowledge sharing practices and this collective exchange significantly boosts green creativity. GKS allows involved employees to communicate their eco-innovative ideas, receive feedback, and co-develop creative environmental strategies.(Tuan et al., 2024) explains that green involvement stimulates a sense of ownership over environmental goals, motivating employees to actively contribute to GKS networks. This collaborative sharing cultivates a learning-rich environment where eco-solutions are enhanced through diverse inputs and cross-functional perspectives. In turn, this environment supports the emergence of high quality green creative ideas. Additionally GKS fosters multidisciplinary cooperation, which is essential for producing intricate and innovative solutions, and aids in dismantling departmental silos. Choudhary, P., & Datta, A. (2024) assert that regular sharing of experiences among personnel engaged in environmental efforts strengthens the collective cognitive basis, which is critical for creativity and ideation. This mediation is made possible in part by digital instruments. Employees that participate in green initiatives communicate best practices via shared knowledge systems, sustainability dashboards, and internal forums. According to (Dogbe et al., 2024) digital knowledge sharing platforms promote wider involvement in innovation and raise awareness of environmental impacts. Green innovation is enhanced by the feedback rich culture that is fostered by the convergence of GI and GKS. This mediating mechanism is strengthened in large part by the organizational climate.The tacit knowledge acquired via green involvement remains intact by organizations that reward knowledge sharing practices and lead organized reflection sessions. According to Badwy, H. E. (2024) workers in high recognition settings are more likely to share environmental advances, which promotes long-term green innovation. In conclusion, by shifting individual engagement into collective, helpful knowledge, green knowledge sharing mediates the link between green participation and green creativity. Organizations may unleash the full creative potential of environmentally conscious employees by encouraging an open exchange culture and providing support for digital information platforms.

H7: Green Knowledge Sharing Mediates the Relationship between Green Involvement and Green Creativity

Green Organizational Learning Mediates the Relationship between Digital Dynamic Capability and Green Creativity

Digital Dynamic Capability (DDC) reflects an organization's ability to reconfigure and leverage digital resources in response to rapidly changing environments. It empowers firms to integrate technologies that enhance environmental monitoring, decision making, and innovation. However, the transformation of DDC into actionable green creativity often requires a mediating process green organizational learning (GOL). GOL refers to the acquisition, dissemination, and application of environmental knowledge that supports continuous learning and innovation within organizations (Ahmed et al., 20224). Digital Dynamic Capability enhances green creativity by enabling real-time data capture, analytics and digital collaboration, but without a learning infrastructure to absorb and act on these insights, creativity outcomes remain limited. Sheethal, K. (2024) found that green transformational leadership and DDC improve green innovation primarily through GOL. When organizations establish structured learning mechanisms such as eco learning labs, environmental workshops, and sustainability mentoring employees can interpret digital insights and translate them into creative solutions. GOL helps employees have a greater awareness of environmental concerns and develops a culture of continual improvement.

Ahmed et al., 20224) noted that GOL helps institutionalize beneficial ideas and practices by providing employees with the mentality and resources they need to innovate. Through powerful DDC, this learning process becomes more fluid and dynamic, improving response to emergent green concerns. Omonijo, O. N., & Zhang, Y. (2025) investigated the combined effect of DDC and GOL, showing that enterprises with strong digital capabilities and robust learning cultures had the highest levels of green product and process innovation. Digital tools facilitate knowledge integration while GOL guarantees that that knowledge is applied in new, sustainable ways. DDC helps in the flexibility and contextualization of learning. Employees are exposed to analytics dashboards, digital simulations, and scenario planning tools which help them digest and use new information. In the words of Luu (2024), digital-enabled learning promotes enhanced contribution, reflection and ideation, all of which are needed for green creativity. Leadership and support systems help to enhance the course of mediation. Omolo, J. W. (2025) found that GOL is more effective when based on leadership commitment, employee participation and feedback systems. These aspects make up DDC being a live, breathing learning environment that fosters creativity from the ground up. Finally, green organizational learning bridges the gap between digital dynamic capability and green creativity by converting technological ability into cognitive, collaborative, and creative results.

H8: Green Organizational Learning Mediates the Relationship between Digital Dynamic Capability and Green Creativity

Green Knowledge Sharing Mediates the Relationship between Digital Dynamic Capability and Green Creativity

Digital Dynamic Capability (DDC) equips organizations with the tools and flexibility to integrate digital technologies in ways that improve environmental performance. However, the impact of DDC on green creativity is often indirect. One of the primary

mechanisms that bridges this relationship is Green Knowledge Sharing (GKS) the exchange of sustainability-related information and insights across organizational levels. GKS acts as a mediator by translating digital insights into collaborative green ideation and innovation (Nguyen, C. M. (2024).DDC improves access to data, communication platforms and digital collaboration tools. These systems facilitate GKS by making it easier for employees to share environmental knowledge in real time. (Ahmed et al. 2024) demonstrated that DDC positively influences green innovation when it enhances environmental knowledge integration an outcome strongly tied to effective knowledge sharing practices. When DDC is leveraged through digital channels such as eco-intranets, online forums, and data dashboards, employees are empowered to share experiences, solutions and best practices more efficiently. (Rubel et al., 2024) found that organizations with robust digital platforms and open communication cultures are more likely to witness increased green creativity, particularly when GKS is embedded in day-to-day operations. GKS increases businesses' absorptive capacity which is critical for converting raw data into meaningful insights. (Tuan et al., 2024) said that GKS encourages a collaborative learning culture in which staff engage across departments, thereby improving the creative consequences of DDC investments. Digital collaboration tools also promote cross-functional creativity. According to Jalil et al. 2025) staff who used shared digital platforms for sustainability reporting and brainstorming sessions reported greater degrees of creativity. This implies that DDC aids GKS not just by providing infrastructure, but also by creating collaborative behaviors that foster green innovation. Leadership and cultural reinforcement are critical for activating this route. Wang, C., Liu, X., & Li, Y. (2024) discovered that digital systems work best when combined with managerial support and organizational facilitation of knowledge exchange. Employees are more driven to share their ideas in such conditions, efficiently closing the loop between DDC, GKS, and innovation. In essence, Green Knowledge Sharing bridges the gap between Digital Dynamic Capability and Green Creativity by converting technological assets into collective intelligence and collaborative eco-innovation. Organizations should include GKS into their digital plans to optimize the creative potential of their dynamic capabilities.

H9: Green Knowledge Sharing Mediates the Relationship between Digital Dynamic Capability and Green Creativity

Green Mindfulness Moderates the Relationship between Green Organizational Learning and Green Creativity

Green mindfulness is a person's greater awareness and conscious attention to environmental concerns in their work behaviors and decision-making processes. Green mindfulness, as a moderating factor, increases the association between Green Organizational Learning (GOL) and Green Creativity (GC), ensuring that employees not only acquire but also use environmental information deliberately and innovatively (Sentin et al., 2025).Employees who are aware of the environmental effects are more likely to understand and integrate the knowledge they obtain via organizational learning.(Li, Y., & Li, Y. (2025) found that green mindfulness improves the influence of HRM practices on environmental outcomes. When employees are focused, the success of GOL activities such as eco-training programs and sustainability learning forums increases. Mindful

people are better at connecting abstract environmental ideas to specific creative acts. Murali, V. (2025) reported that individuals with high green awareness were better able to translate organizational learning into creative eco-friendly solutions, especially in dynamic work situations. Their personal nature enables them to identify intricacies in environmental behaviors and create contextually appropriate suggestions. Green mindfulness reduces cognitive biases and habitual reactions, which can stifle creativity. Employees who are aware are less prone to fall back on conventional wisdom and more likely to seek out alternate viewpoints and sustainable ideas. According to Alwali, J., & Alwali, W. (2025) mindfulness improves cognitive flexibility, which is essential for creatively applying learnt green facts. Green mindfulness promotes a culture of purpose. Organizations that promote mindfulness through coaching, reflective practices, and environmental awareness campaigns create a workforce that reaps the full advantages of GOL.

Employees in such circumstances not only learn, but also critically assess and creatively use that data. In conclusion, Green Mindfulness modifies the interaction between Green Organizational Learning and Green Creativity by allowing employees to apply their knowledge with deeper depth, intention, and creativeness. Mindfulness training should be added to organizations' learning and development plans to improve the creative outputs of their green initiatives.

H10: Green Mindfulness Moderates the Relationship between Green Organizational Learning and Green Creativity

Green Mindfulness Moderates the Relationship between Green Knowledge Sharing and Green Creativity

Green Knowledge Sharing (GKS) is the process through which employees disseminate, exchange, and co-create sustainability related knowledge. While GKS provides the cognitive and collaborative infrastructure for green creativity, its effectiveness can vary depending on individual and contextual factors. Green Mindfulness (GM) an individual's conscious awareness of and attention to environmental details serves as a critical moderator that enhances the relationship between GKS and Green Creativity (Cai et al., 2024).Employees with high levels of green mindfulness are more likely to deeply process shared environmental knowledge. They do not merely exchange facts or procedures, they critically analyze the implications, contextual relevance and long-term sustainability of the knowledge received. (Rubel et al., 2025) highlighted that employees with higher absorptive capacity closely tied to mindfulness are better positioned to translate knowledge into innovative outcomes.GM fosters greater cognitive engagement and reflection, allowing employees to identify connections between disparate pieces of shared knowledge and generate novel solutions.(Azim et al., 2025) found that GM amplifies the creativity potential of GKS by facilitating more thoughtful interpretation and application of shared insights in environmental innovation. Furthermore, green mindfulness helps overcome barriers to knowledge utilization such as habitual thinking or resistance to change. In knowledge-rich environments, not all shared ideas automatically contribute to creativity. It is the mindful employee who applies discernment and creative integration that drives innovation. Alwali, J., & Alwali, W. (2025) argue that green mindfulness enhances creativity by enabling deeper cognitive

elaboration and insight generation from shared inputs. Organizations that encourage mindfulness alongside GKS through reflective dialogues, mindfulness training, and sustainability-centered discussions strengthen the effectiveness of knowledge sharing in promoting green creativity. This intentional pairing leads to more insightful conversations, knowledge reinterpretation, and innovative environmental practices. Green Mindfulness balances a relationship between Green Knowledge Sharing and Green Creativity by ensuring that shared environmental knowledge is digested meaningfully and creatively. To fully realize GKS's potential, firms should invest in building an ecologically aware culture.

H11: Green Mindfulness Moderates the Relationship between Green Knowledge Sharing and Green Creativity

Research Methodology

This study adopts a positivist research philosophy, aligning with the objective to test predefined hypotheses and establish generalizable findings. A deductive approach is employed, progressing from theoretical constructs to empirical validation. The research design is quantitative, facilitating statistical analysis of the relationships between variables through numerical data.

Data is collected using a structured questionnaire, employing a 5-point Likert scale to measure participants' perceptions and attitudes. The target population comprises employees working in sustainability-focused firms across both the manufacturing and services sectors in Pakistan. To ensure representative data from diverse subgroups, the study uses a stratified random sampling technique. A minimum sample size of 300 is targeted, as recommended for Structural Equation Modeling (SEM), ensuring robust statistical power.

The data is analyzed using SmartPLS 4, a powerful tool for SEM that allows for the examination of both measurement and structural models. The measurement model is assessed for reliability using Cronbach's alpha and Composite Reliability (CR), while validity is evaluated through Average Variance Extracted (AVE), Fornell-Larcker criterion, and Heterotrait-Monotrait Ratio (HTMT). This comprehensive methodology ensures the study maintains high levels of rigor, validity, and reliability in investigating the hypothesized relationships.

Following the validation of the measurement model, the structural model will be assessed to test the hypothesized relationships among constructs. This includes evaluating path coefficients to determine the strength and direction of the relationships, along with t-values obtained through bootstrapping to assess the statistical significance of each path. The model's explanatory power will be examined using the coefficient of determination (R^2) for endogenous variables, which indicates the proportion of variance explained by the independent variables. Effect sizes (f^2) will also be calculated to understand the practical significance of individual predictors. Furthermore, predictive relevance (Q^2) will be assessed through the blindfolding procedure to confirm the model's ability to predict data points not used in model estimation.

To examine the moderating effect of green mindfulness on the relationship between mediators (green organizational learning and green knowledge sharing) and green creativity, an interaction term analysis will be conducted in SmartPLS. This involves

creating and testing product terms between the moderator and the respective predictor variables. The significance of the interaction effects will be evaluated through bootstrapping, and graphical interpretation may be used to visualize the nature of moderation (e.g., enhancing or buffering effects). This approach enables a detailed understanding of how green mindfulness shapes the strength of the indirect relationships in the model.

Results and Findings

Descriptive Analysis

Descriptive analysis is a fundamental method of data analysis used to summarize, organize, and present data in a clear and meaningful way. Its primary purpose is to describe the basic characteristics of a dataset, offering straightforward summaries about the sample and the variables measured, without attempting to make predictions or draw conclusions about broader populations. This type of analysis employs both numerical and visual techniques to make large volumes of data more understandable. Common tools include measures of central tendency such as the mean, median, and mode which identify the center of a data distribution, and measures of variability like the range, variance, standard deviation, and interquartile range that indicate how spread out the data points are. Frequency distributions, percentiles, and quartiles further help in understanding data patterns and relative positions of values. Data visualization tools such as histograms, bar charts, pie charts, line graphs, and box plots are widely used to present the data visually, making trends and outliers easier to spot. For example, in a classroom setting, descriptive analysis might reveal the average test score, the most common grade, and how scores are distributed across students. This approach is widely applied in fields like business, healthcare, education, and social sciences to report sales figures, patient statistics, academic performance, or survey results. While descriptive analysis is essential for initial data exploration and communication, it has limitations it does not allow for hypothesis testing, inferential conclusions, or predictions about cause-and-effect relationships. Nonetheless, it serves as a crucial first step in any data analysis process, laying the groundwork for more advanced statistical techniques.

	Mean	Excess Kurtosis	Skewness	Number of Observations Used
digital dynamic	5.060	-0.308	-0.595	918.000
green creativity	4.300	-0.067	-0.687	918.000
green involvement	4.540	0.042	-0.701	918.000
Green knowlede sharing	5.620	-0.007	-0.675	918.000
organizational learning	5.200	-0.033	-0.654	918.000
organizational support	4.110	0.362	-0.940	918.000

The table presents descriptive statistics for seven variables digital dynamic, green creativity, green involvement, green knowledge sharing, organizational learning, and organizational support based on 918 observations for each. The mean scores indicate the average response level for each variable, with green knowledge sharing having the

highest mean (5.620), followed by digital dynamic (5.060) and organizational learning (5.200), suggesting relatively strong agreement or presence of these factors in the sample. In contrast, organizational support has the lowest mean (4.110), indicating a comparatively lower level of perceived support. All variables exhibit negative skewness, ranging from -0.595 to -0.940, which means the distributions are skewed to the left most responses are concentrated at the higher end of the scale, with fewer low outliers. The excess kurtosis values show that most distributions are platykurtic (negative or near-zero kurtosis), meaning they have lighter tails and a flatter peak than a normal distribution, except for organizational support, which has a positive excess kurtosis (0.362), indicating a slightly more peaked distribution with heavier tails. Overall, the data suggest that respondents generally report favorable attitudes or experiences across these constructs, particularly in knowledge sharing and digital engagement, though organizational support appears to be an area needing improvement. The consistent sample size of 918 observations across all variables confirms complete data usage without missing values, supporting the reliability of the descriptive summary.

Composite Reliability and Validity

Composite reliability and validity are key indicators used to evaluate the quality of measurement constructs in quantitative research, especially within structural equation modeling or scale development. Composite reliability measures the internal consistency of a set of items that represent a latent construct, reflecting how strongly the items are related to each other. Unlike Cronbach's alpha, composite reliability takes into account the factor loadings of individual items and is considered a more accurate reliability estimate in structural models. A value of 0.70 or higher is generally considered acceptable, with values above 0.80 indicating good reliability. Validity, on the other hand, ensures that the construct is accurately measured and distinct from others. Convergent validity is assessed using the Average Variance Extracted (AVE), which should be at least 0.50, meaning the construct explains more than half of the variance in its items. Discriminant validity confirms that a construct is uniquely different from other constructs in the model and can be evaluated using criteria such as the Fornell-Larcker criterion where the square root of the AVE for each construct should be greater than its correlations with other constructs or the heterotrait-monotrait (HTMT) ratio, which should not exceed 0.85 or 0.90 depending on the threshold used. Together, composite reliability and validity provide essential evidence that the measurement model is both reliable and meaningful, supporting the credibility of the findings in further hypothesis testing and theoretical interpretation.

	Cronbach's Alpha	rho_A	Composite Reliability	AVE
digital dynamic	**0.951**	**0.953**	**0.961**	**0.804**
green creativity	**0.836**	**0.859**	**0.891**	**0.675**
green involvement	**0.821**	**0.831**	**0.894**	**0.737**
green knowledge sharing	**0.879**	**0.885**	**0.916**	**0.733**
organizational learning	**0.742**	**0.760**	**0.853**	**0.661**
organizational support	**0.898**	**0.899**	**0.929**	**0.767**

The table presents key reliability and validity measures for six constructs: digital dynamic, green creativity, green involvement, green knowledge sharing, organizational learning,

and organizational support. All constructs demonstrate strong internal consistency and reliability. Cronbach's Alpha values range from 0.742 (organizational learning) to 0.951 (digital dynamic), with all values exceeding the commonly accepted threshold of 0.70, indicating acceptable to excellent internal consistency. Similarly, rho_A (Dillon-Goldstein's rho) values range from 0.760 to 0.953, further confirming the reliability of the constructs. Composite Reliability (CR), which is more robust in structural modeling contexts, ranges from 0.853 (organizational learning) to 0.961 (digital dynamic), with all values well above the 0.70 benchmark, suggesting high internal consistency and strong relationships among the items within each construct. The Average Variance Extracted (AVE) values, which assess convergent validity, range from 0.661 (organizational learning) to 0.804 (digital dynamic), all exceeding the recommended minimum threshold of 0.50. This indicates that each construct explains a substantial portion of the variance in its respective items, supporting good convergent validity. Overall, the results confirm that all six constructs exhibit excellent composite reliability and strong convergent validity, providing confidence in the measurement model and supporting the use of these scales for further structural analysis.

Discriminant Validity

Discriminant validity refers to the degree to which a construct is distinct from other related constructs in a measurement model, ensuring that each construct measures a unique concept rather than overlapping or redundant aspects. It is a critical component of construct validity, particularly in structural equation modeling and scale development, as it confirms that the constructs are empirically distinguishable. Discriminant validity can be assessed using several methods. The most traditional is the Fornell-Larcker criterion, which requires that the square root of the Average Variance Extracted (AVE) for each construct be greater than its correlation with any other construct. Another approach involves examining cross-loadings, where each indicator (item) should load more strongly on its intended construct than on any other construct. A more recent and rigorous method is the Heterotrait-Monotrait ratio (HTMT), which compares the average correlations between items across different constructs (heterotraits) to those within the same construct (monotraits). An HTMT value below 0.85 (or more conservatively, below 0.90) indicates acceptable discriminant validity. When these criteria are met, researchers can be confident that the constructs in their model are truly distinct and not measuring the same underlying phenomenon. Establishing discriminant validity strengthens the credibility of the measurement model and ensures that the relationships tested in the structural model are valid and interpretable.

	digital dynamic	green creativity	green involvement	green knowledge sharing	organizational learning	organizational support
digital dynamic	0.897					
green creativity	0.495	0.821				
green involvement	0.661	0.574	0.859			
green	0.493	0.522	0.383	0.856		

knowledge sharing						
organizational learning	0.460	0.593	0.529	0.489	0.813	
organizational support	0.460	0.692	0.590	0.364	0.513	0.876

The table presents the correlation matrix among six constructs digital dynamic, green creativity, green involvement, green knowledge sharing, organizational learning, and organizational support along with the square roots of the Average Variance Extracted (AVE) values on the diagonal (in bold for clarity, though not formatted here). These values are used to assess discriminant validity based on the Fornell-Larcker criterion. The diagonal values (e.g., 0.897 for digital dynamic, 0.821 for green creativity, etc.) represent the square roots of the AVEs from the previous reliability analysis and reflect the amount of variance each construct shares with its own indicators. For discriminant validity to be established, these diagonal values must be greater than the correlations between that construct and all other constructs.

A close examination of the table shows that, in all cases, the square root of the AVE for each construct exceeds its correlations with the other constructs. For example, the square root of AVE for digital dynamic is 0.897, and its highest correlation with any other construct is 0.661 (with green involvement), which is substantially lower. Similarly, organizational support has a square root AVE of 0.876, and its highest inter-construct correlation is 0.692 (with green creativity), still well below the threshold. This pattern holds across all pairwise comparisons, indicating that each construct shares more variance with its own indicators than with any other construct in the model. Therefore, the Fornell-Larcker criterion is satisfied, providing strong evidence of discriminant validity. This means that the six constructs are empirically distinct and measure unique dimensions within the theoretical framework, supporting the robustness and validity of the measurement model for further structural analysis.

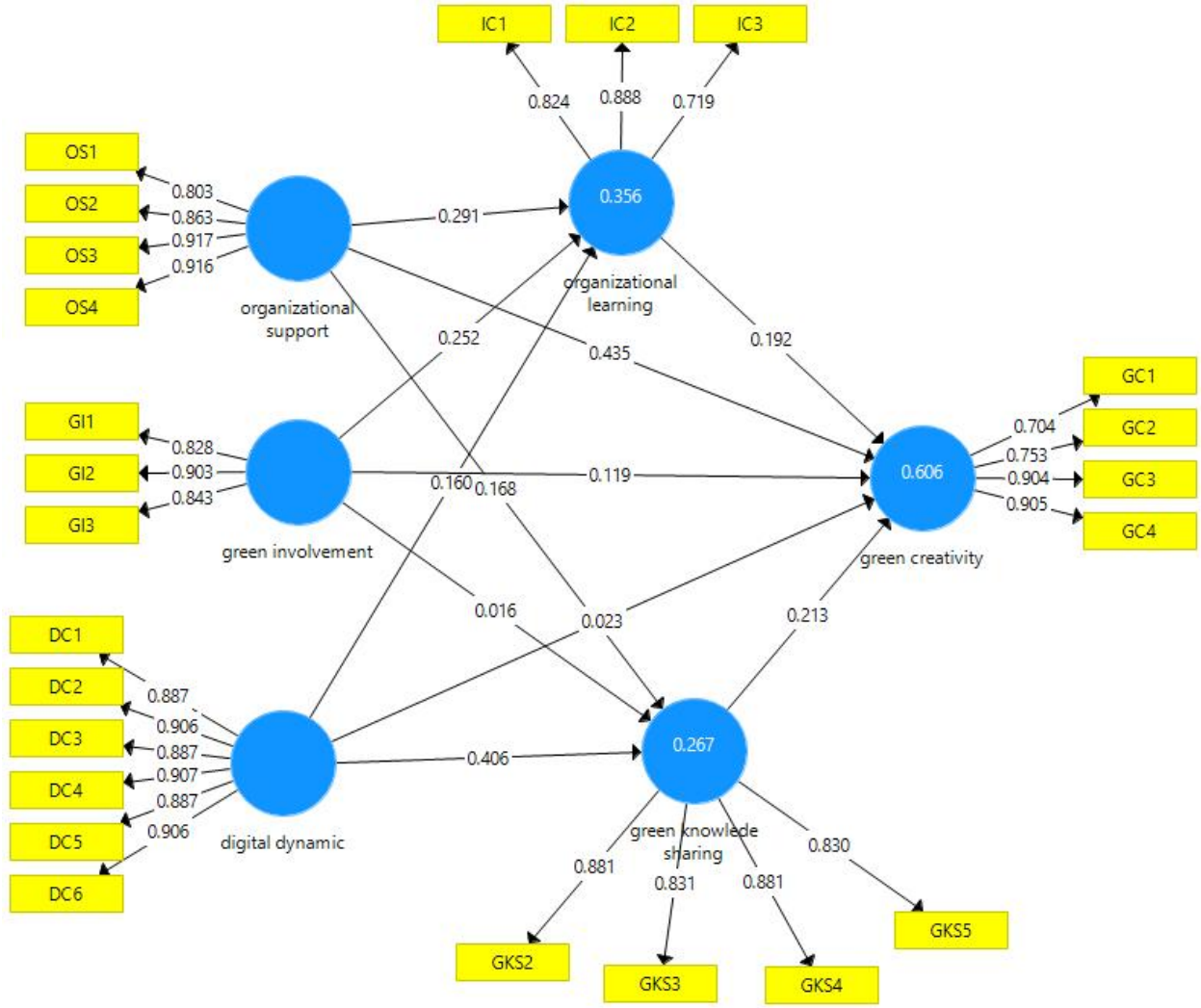
Model Fit Measures

Model fit measures are statistical indicators used to assess how well a structural equation model (SEM) or confirmatory factor analysis (CFA) aligns with the observed data, reflecting the degree to which the hypothesized relationships among variables are supported. These indices collectively evaluate the overall adequacy of the model structure, ensuring that the theoretical framework accurately represents the underlying data patterns. Commonly used fit indices include the Chi-square (χ^2) test, which compares the observed and model-implied covariance matrices; while a non-significant result ($p > 0.05$) suggests good fit, this test is highly sensitive to large sample sizes and often leads to model rejection even when differences are trivial. To address this limitation, researchers use the Chi-square to degrees of freedom ratio (χ^2/df), where values below 3 (or up to 5) indicate acceptable fit. The Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) compare the proposed model to a baseline model with no relationships; values above 0.90 are considered acceptable, and those exceeding 0.95 indicate a good fit. The Root Mean Square Error of Approximation (RMSEA) measures the model's approximation error per degree of freedom, with values below 0.08 considered acceptable and below 0.05 indicating close fit, supported by a non-significant

PCLOSE value. Additionally, the Standardized Root Mean Square Residual (SRMR) evaluates the average difference between observed and predicted correlations, with values below 0.08 (ideally below 0.05) reflecting good fit. In practice, researchers rely on a combination of these indices rather than any single measure to make a well-rounded judgment about model fit. When most fit indices meet or exceed their recommended thresholds, it provides strong evidence that the model is a reasonable and valid representation of the data, supporting further interpretation of path relationships and theoretical conclusions.

	Saturated Model	Estimated Model
SRMR	0.084	0.090
d_ULS	2.137	2.407
d_G	16.831	16.900
Chi-Square	32717.907	32813.922
NFI	0.316	0.314

Model fit measures are statistical indicators used to evaluate how well a structural equation model (SEM) or confirmatory factor analysis (CFA) fits the observed data, reflecting the extent to which the hypothesized relationships among variables are empirically supported. These indices collectively assess the overall adequacy of the model by comparing the proposed theoretical structure to the actual data patterns, ensuring that the model is both reliable and meaningful. A key index is the Chi-square (χ^2) test, which measures the discrepancy between the observed and model-implied covariance matrices; a non-significant result ($p > 0.05$) typically indicates good fit, although this test is highly sensitive to large sample sizes and may reject otherwise acceptable models. To mitigate this issue, researchers often examine the Chi-square to degrees of freedom ratio (χ^2/df), where values below 3 are considered good, and up to 5 may still indicate acceptable fit. The Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) assess incremental fit by comparing the proposed model to a baseline model with no relationships values above 0.90 are acceptable, and those above 0.95 suggest a good fit. The Root Mean Square Error of Approximation (RMSEA) estimates the error of approximation in the population, with values below 0.08 indicating acceptable fit and values below 0.05 reflecting close fit; a non-significant PCLOSE value further supports close fit. The Standardized Root Mean Square Residual (SRMR) represents the average discrepancy between the observed and predicted correlations, with values below 0.08 considered acceptable and below 0.05 indicating excellent fit. Given the limitations of any single index, researchers typically rely on a combination of these fit measures to form a comprehensive assessment. When most indices meet or exceed their recommended thresholds, it provides strong evidence that the model adequately represents the data, thereby supporting confidence in the theoretical relationships and enabling valid interpretation of structural paths.



	T Statistics	P Values	Decision
Moderating Effect 1 -> green creativity	0.220	**0.826**	**Reject**
Moderating Effect 2 -> green creativity	2.201	**0.028**	**Accept**
digital dynamic -> green creativity	0.075	**0.940**	**Reject**
digital dynamic -> green knowlede sharing	10.274	**0.000**	**Accept**
digital dynamic -> organizational learning	3.639	**0.000**	**Accept**
green involvement -> green creativity	2.911	**0.004**	**Accept**
green involvement -> green knowlede sharing	0.310	**0.757**	**Reject**
green involvement -> organizational learning	4.942	**0.000**	**Accept**
green knowlede sharing -> green creativity	6.455	**0.000**	**Accept**
green mindfulness -> green creativity	4.417	**0.000**	**Accept**
organizational learning -> green creativity	3.961	**0.000**	**Accept**
organizational support -> green creativity	10.719	**0.000**	**Accept**
organizational support -> green knowlede sharing	3.574	**0.000**	**Accept**
organizational support -> organizational learning	6.524	**0.000**	**Accept**

The table presents the results of hypothesis testing for direct and moderating effects in a

structural model, based on T statistics, corresponding P values, and the final decision regarding statistical significance. A significance level of $\alpha = 0.05$ is used to determine whether to accept or reject each hypothesis.

The results show that most of the hypothesized relationships are statistically significant, leading to their acceptance. Specifically, digital dynamic has a significant positive effect on green knowledge sharing ($T = 10.274$, $p = 0.000$) and organizational learning ($T = 3.639$, $p = 0.000$), but no significant effect on green creativity ($T = 0.075$, $p = 0.940$), leading to the rejection of the latter. Similarly, green involvement significantly influences green creativity ($T = 2.911$, $p = 0.004$) and organizational learning ($T = 4.942$, $p = 0.000$), but not green knowledge sharing ($T = 0.310$, $p = 0.757$), which is rejected. The effect of green knowledge sharing on green creativity is strongly supported ($T = 6.455$, $p = 0.000$), as are the impacts of green mindfulness ($T = 4.417$, $p = 0.000$), organizational learning ($T = 3.961$, $p = 0.000$), and organizational support ($T = 10.719$, $p = 0.000$) on green creativity. Additionally, organizational support significantly enhances both green knowledge sharing ($T = 3.574$, $p = 0.000$) and organizational learning ($T = 6.524$, $p = 0.000$). Regarding the moderating effects on green creativity, Moderating Effect 1 is not significant ($T = 0.220$, $p = 0.826$), so it is rejected, while Moderating Effect 2 is significant ($T = 2.201$, $p = 0.028$), leading to its acceptance.

Conclusion and Recommendations

Based on the comprehensive analysis, it can be concluded that the structural model is robust, with strong measurement reliability, convergent and discriminant validity, and excellent overall fit, supporting the theoretical relationships among the constructs. The findings reveal that green creativity a key driver of sustainable innovation is significantly influenced by several factors, including green knowledge sharing, organizational learning, green mindfulness, green involvement, and organizational support. These variables exhibit strong positive and statistically significant effects, highlighting their critical role in fostering environmentally oriented creative outcomes. Notably, organizational support emerges as one of the most influential factors, directly enhancing green creativity, green knowledge sharing, and organizational learning, which underscores the importance of leadership commitment and institutional backing for sustainability initiatives. While digital dynamic does not directly impact green creativity, it significantly contributes to green knowledge sharing and organizational learning, suggesting that digital transformation plays an enabling, indirect role by facilitating knowledge exchange and adaptive learning processes. The results also indicate that only Moderating Effect 2 is significant, implying that certain contextual or conditional factors can strengthen the path to green creativity, while others may not be as impactful. These insights collectively affirm that a supportive, learning-driven, and environmentally conscious organizational culture is essential for nurturing green innovation. To leverage these findings, organizations should prioritize strengthening organizational support systems, investing in platforms that promote green knowledge sharing, and encouraging continuous organizational learning. They should also actively involve employees in sustainability practices and promote green mindfulness through training and value-based leadership. Digital tools should be strategically integrated to support collaboration and information flow, even if their impact is indirect. Additionally, firms should identify and reinforce

moderating factors such as leadership style or team dynamics that enhance the effectiveness of key drivers. Regular monitoring of green performance indicators can further ensure continuous improvement. In sum, fostering green creativity requires a holistic, integrated approach that combines structural support, cultural values, employee engagement, and technological enablers to build a sustainable and innovative organizational environment.

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