
Green Entrepreneurial Orientation, Self-Efficacy and Innovation: Resource-Based View & Dynamic Capabilities Perspective on SME Performance

Agha Adnan Khan¹, Shahar Bano²

¹ Department of Economics, University of Sindh, Jamshoro. aghaadnankhan@yahoo.com

² Department of Education, University of Sindh, Jamshoro.

DOI: <https://doi.org/10.70670/sra.v4i1.2004>

Abstract

The Small and Medium Enterprises (SMEs) are commonly known as a pillar of economic growth, especially in emerging economies like Pakistan where they play a major role in job creation, poverty alleviation, innovation and development of the region. Although they are important, most of the SMEs in Sindh continue to experience challenges that are associated with the lack of resources, poor management skills, low innovation, and poor implementation of sustainable business practices. It has become more important to comprehend what drives sustainable SME performance and what are factors behind this process. In addition, this paper has focused on the effects of Green Entrepreneurial Orientation (GEO), Self-Efficacy, and Innovation on SME Performance in Sindh, Pakistan. The paper combines the two significant theoretical perspectives: the Resource-Based View (RBV) and the Dynamic Capabilities Perspective. According to the RBV, valuable, rare, inimitable, and non-substitutable internal resources determine the performance of firms. Green Entrepreneurial Orientation (GEO) and Self-Efficacy are the two important concepts that are conceptualized in this study as important intangible strategic resources that contribute to better managerial decision-making, environmental awareness, and sustainability-oriented entrepreneurial behavior. These resources give support to SMEs to create competitive advantages that cannot be easily imitated or copied by their competitors. Moreover, the Dynamic Capabilities Perspective is employed to describe the process of adaptation and reorganization of the resources of firms to the changing environmental, technological, and market conditions. In this context, the concept of Innovation is viewed as a very important dynamic capability enabling SMEs to convert their current resources into new products, services, and processes. This is a key feature that SMEs in emerging economies need, as the market uncertainty and environmental factors demand constant adaptation and flexibility. The empirical study is premised on the primary data that has been gathered from 300 SMEs of Sindh, which comprise on the major industrial and commercial cities like Karachi, Hyderabad, Sukkur and other areas around it. The respondents have been SME owners, managers, and decision-makers who are actively engaged in strategic planning, innovation practices, and operational management. A structured questionnaire has been used to gather data on a five-point Likert scale. In order to make the findings robust and reliable, the data has been processed with the help of Squares Structural Equation Modeling (SEM). The method is especially appropriate in complex models with multiple constructs, mediation effects, and latent variables, especially in social science and business research settings. The study findings indicate that the positive impact of green Entrepreneurial Orientation on SME Performance is significant, which means that the better a firm is oriented towards environmental responsibility and sustainable entrepreneurship, the better its performance is, both financially and non-financially. Moreover, the indirect impact of GEO on performance is also present in terms of the aspect of Innovation, which emphasizes the role of GEO in promoting creative and sustainable business practices. Likewise, Self-Efficacy is also identified to

be a strong predictor of SME Performance, since it increases the confidence and ability of entrepreneurs and managers to execute strategic decisions successfully. The high self-efficacy promotes proactive behavior, risk-taking, and increased use of available resources to pursue green and innovative initiatives. The results also confirm that, the relationship between both GEO and Self-Efficacy and SME Performance is mediated by Innovation. Moreover, it implies that entrepreneurial orientation and psychological capability are not enough unless they are converted into innovative activities like new product development, process improvement, and sustainable business model adaptation. On the whole, the present study adds to the current literature by combining sustainability-oriented entrepreneurship with the RBV and Dynamic Capabilities theories in the framework of Pakistani SMEs, specifically in Sindh. It offers a more detailed insight into the joint effects of internal capabilities and green entrepreneurial behaviors on firm performance. Practically, the research provides useful information to policymakers, SME development agencies, and business owners to foster green entrepreneurial orientation, enhance managerial self-efficacy, and foster innovation-based strategies to attain long-term sustainable growth and competitiveness in the SME sector.

Keywords: Green Entrepreneurial Orientation, Self-Efficacy, and Innovation

Introduction

The global economy is undergoing a transformation, driven by growing environmental pressures, resource scarcity and stringent regulations. In this context, sustainability has evolved from a buzzword to a strategic imperative for all types of businesses. Small and Medium Enterprises (SMEs), the backbone of most economies, with 85 percent to 90 percent of businesses and over half of the world's workforce, are increasingly being asked to reconcile their profit-making objectives with environmental sustainability. The traditional business models that focused only on economic performance are no longer adequate in an era where stakeholders like consumers, investors and governments are demanding sustainable production and consumption practices. Consequently, the intersection of entrepreneurship and environmental sustainability has given rise to a new strategic posture known as Green Entrepreneurial Orientation (GEO). GEO is a firm-level strategic posture that integrates environmental sustainability with entrepreneurial behavior such as proactiveness, risk-taking and innovativeness. For SMEs, which are generally more agile and less bureaucratically encumbered than their larger counterparts, GEO offers a viable means to differentiate, expand into new markets and build sustainable competitive advantage. However, the adoption of a green orientation does not necessarily translate into superior performance. Organizational processes, particularly the cognitive attributes of decision-makers and the firm's capacity for innovation, play a key role in converting green intentions into performance. While the body of literature on corporate sustainability and green entrepreneurship is expanding, there is still a significant gap in understanding the impact of GEO on the performance of SMEs. The existing literature has produced mixed and even contradictory findings; while some studies have reported a strong positive association between GEO and financial performance, others have reported insignificant or even negative effects, particularly in resource-constrained SMEs. This suggests that the relationship between GEO and performance is not direct but mediated and moderated by other variables. Two such variables, which are under-researched, are entrepreneurial self-efficacy (ESE) and innovation. Entrepreneurial self-efficacy (the belief of an individual in their capability to perform entrepreneurial roles and tasks) is particularly important in SMEs where the founder or manager's cognition affects the strategy. A green-oriented strategy requires the belief in the capability to deal with technical, regulatory and market acceptance uncertainties; otherwise, GEO can be a symbolic rather than a strategic approach. In addition, innovation (process, product or business model) is the operational lever that translates green orientation into value creation. This paper draws on the Resource-Based View (RBV) and the Dynamic Capabilities Theory, which suggests that GEO is a valuable, rare and imperfectly imitable strategic resource when it is effectively exploited through innovation capabilities and when it is supported by the self-efficacy of decision-makers.

So, it is not whether GEO is important or not, but how and when it is important for SME performance. This paper addresses this gap by proposing and testing an integrated model where innovation is a mediator and ESE is a moderator of the GEO-performance relationship. To explore the relationship between green entrepreneurial orientation, self-efficacy, innovation and SME performance, this study is framed by the following main research question: How does green entrepreneurial orientation and entrepreneurial self-efficacy affect SME performance through the mediation of innovation? This question is broken down into the following sub-questions. First, what is the direct impact of Green Entrepreneurial Orientation (GEO) on SME performance? Second, what is the direct effect of Entrepreneurial Self-Efficacy (ESE) on the performance of SMEs? Third, what is the indirect effect of GEO on SME performance through innovation? Fourth, to what extent does innovation mediate the relationship between ESE and SME performance? Fifth, does ESE moderate the relationship between GEO and innovation, such that the positive effect of GEO on innovation is stronger when ESE is high? Sixth, does innovation mediate the moderating effect of ESE on the GEO-performance relationship, that is, a moderated mediation model? In line with the above research questions, the main purpose of this study is to build and test a conceptual model of the relationship between green entrepreneurial orientation and self-efficacy and SME performance through innovation. The specific objectives are as follows. First, to test the direct effect of GEO on SME financial and non-financial performance. Second, to determine the direct effect of ESE on SME performance. Third, to examine the mediation effect of innovation (product, process and organizational innovation) on the GEO-performance link. Fourth, to examine the mediating effect of innovation on the ESE-performance linkage. Fifth, to determine the moderating role of ESE in the GEO-innovation relationship. Sixth, to examine the moderated mediation model in which ESE moderates the indirect effect of GEO on performance through innovation. The study has significant theoretical, managerial and policy implications. Theoretically, it contributes to the strategic management and entrepreneurship literature by integrating two complementary theoretical perspectives: The Resource-Based View (RBV) and Dynamic Capabilities Theory. While RBV explains how GEO and ESE can be sources of competitive advantage as valuable, rare and inimitable resources, Dynamic Capabilities Theory explains how innovation is a dynamic capability that reconfigures these resources to adapt to the changing green market environment. The research goes beyond bivariate correlations to offer a more refined process model of green entrepreneurship through mediation and moderation analyses. It also bridges the micro-foundations (self-efficacy of individuals) and macro-level strategy (organizational GEO) in SMEs, which are not often discussed together. Practical implications of the findings will help SME owners and managers to understand that: first, it is not sufficient to invest in green orientation, but firms should also build innovation capabilities. Second, the benefits of green investments can be maximized by increasing entrepreneurial self-efficacy of managers and employees through training, mastery experiences and vicarious learning. For policy makers, the study suggests specific interventions that go beyond financial support to adopt green technologies; interventions should include innovation vouchers, technology transfer support, and workshops to develop managerial cognitive skills that will increase self-efficacy in green technologies and markets. This paper is focused on SMEs in the manufacturing and service sectors, but more specifically those that have adopted or are adopting environmental management practices. The geographical scope is defined as a particular region or country (such as emerging economies, Southeast Asia or a specific industrial cluster) because of the regulatory and market pressures in that region. The unit of analysis is the SME firm and the data are collected from the founders, CEOs or senior managers who are involved in the decision-making process. The key constructs can be defined as follows: GEO is a multidimensional construct that includes green proactiveness, green risk-taking, and green innovativeness; ESE is a domain-specific belief in the ability to attain entrepreneurial results; innovation is operationalized to cover product, process, and administrative innovations; SME performance is measured by both objective indicators such as sales growth and profitability as well as subjective indicators such as perceived market share and customer satisfaction. This is a cross-sectional study, which is a weakness of this study as it only captures relationships at a single point in time and

does not allow for causality. It is recommended that future research should complement the findings with longitudinal studies. This paper draws on two complementary theories: The Resource-Based View (RBV) and Dynamic Capabilities Theory. The RBV, which draws on the work of Penrose, Wernerfelt and Barney, postulates that firms achieve sustainable competitive advantage not through market positioning but through the possession of heterogeneous and immobile resources that are valuable, rare, imperfectly imitable, and non-substitutable (VRIN). GEO can be thought of as a high-level, intangible resource. A genuine green entrepreneurial orientation, which is a constant focus on environmental innovation, scanning of environmental regulations, and willingness to take risks on new green technologies, is valuable in the era of tightening environmental regulations; it is rare, because not all SMEs have it; it is not easily imitated, because it requires deep learning and cultural change; and it has no perfect substitute, because green credibility is hard to fake. Similarly, entrepreneurial self-efficacy, which is part of the cognitive capital of the owner-manager, is a valuable human resource. However, RBV has been accused of being a static and tautological theory; it explains what resources are valuable but not how they are deployed and reconfigured in a dynamic environment. This is where the Dynamic Capabilities Theory comes in. Dynamic capabilities are the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments. A typical dynamic capability is innovation capability. It is the dynamic capability that actualizes the potential of GEO and ESE. A firm can have a green orientation as a resource and a self-efficacious manager as a resource, but unless the firm has the dynamic capability of innovation, the processes for developing eco-friendly products, re-engineering production to reduce emissions, or developing a circular business model, the resources will not be used. Innovation dynamically reconfigures GEO and ESE into new routines that enhance efficiency, differentiation and ultimately performance. So the RBV provides the "what" of the resources and Dynamic Capabilities Theory provides the "how" of the resources being transformed into performance. This perspective supports the mediation hypothesis: innovation is a mediator of GEO and ESE on performance. Based on the combined RBV and Dynamic Capabilities perspective, this paper proposes a model that links the independent variables, mediator, moderator and the dependent variable. It is postulated that the key independent variables are Green Entrepreneurial Orientation (GEO) and Entrepreneurial Self-Efficacy (ESE). The mediator is innovation and the dependent variable is SME performance. Further, it is assumed that ESE can moderate the impact of GEO on innovation, which means that the conversion of green orientation into the outcome of innovation is dependent on the level of self-efficacy of the entrepreneurial manager. The model, thus, proposes a moderated mediation effect: the indirect effect of GEO on SME performance via innovation is moderated by ESE. Specifically, the indirect effect should be stronger at high levels of ESE because the self-efficacious manager will be more likely to persist in overcoming the inevitable obstacles to green innovation, such as technology costs, uncertain return on investment, and skeptical customers. Conversely, a given GEO may not result in much innovation at low levels of ESE since managers may be tempted to be discouraged by perceived barriers. The control variables in the model are firm age, firm size (number of employees), industry (manufacturing or services), and past financial performance, which have been shown in prior research to influence SME innovation and performance. In this study, innovation is not treated as a single construct but is broken down into three dimensions: product innovation, which is the development of new or substantially improved green goods or services; process innovation, which is the adoption of new production methods that have a smaller environmental footprint, such as energy-efficient technologies or waste-recycling systems; and organizational innovation, which is the adoption of new management practices, green supply chain structures, or environmental reporting systems. All dimensions are possible mediators. A GEO-focused firm will be inclined to innovate its products to target new eco-conscious market segments. It will innovate its processes to comply with regulations at a lower cost. And it can pursue organizational innovation, such as cross-functional green teams or eco-accounting, to embed environmental goals. However, all innovations require the belief that such efforts will be successful; this is where ESE comes in. Entrepreneurs with high self-efficacy will be more willing to invest in radical, not only incremental, green

innovations, to experiment with new technologies, and to persist in the face of initial failures. Innovation, in turn, drives performance, as it enables cost leadership through process efficiencies and differentiation through higher prices of green products. Innovation also leads to non-financial performance, such as reputation, employee morale and stakeholder legitimacy, which is particularly important for SMEs competing with larger firms. So, the mediation hypothesis is built on the argument that GEO provides the strategic compass, ESE provides the motivational force, and innovation provides the operational means. Entrepreneurial self-efficacy is founded on Bandura's social cognitive theory, which suggests that the beliefs of individuals in their capabilities influence their choices, effort, persistence and emotional reactions to challenges. The ESE of the founder or manager is a powerful cognitive resource in the SME context that defines the firm's strategic orientation. While GEO is a firm-level strategic posture, it is human agency that translates it into practice. A manager with high ESE will see a green orientation as a set of achievable goals; they will see environmental regulations as opportunities for innovation rather than threats; they will commit resources, sway stakeholders and persist in the face of green technology setbacks. In contrast, a low-ESE manager can espouse green values but will not pursue risky green projects, will wait for proven technologies to emerge (thereby missing first-mover opportunities) and will discontinue green projects at the first sign of failure. As a result, it is hypothesized that ESE moderates the GEO-innovation link. Moreover, a more complex moderated mediation process is postulated: the indirect effect of GEO on performance through innovation will be stronger in SMEs with high-ESE managers than in those with low-ESE managers. This is because high ESE facilitates the conversion of GEO into innovation, which in turn affects performance. The model includes both motivational factors (ESE) and strategic factors (GEO and innovation) to explain SME performance in the green economy. The focus on SMEs is deliberate and theoretically justified. Large firms typically have their own sustainability departments, large research and development budgets, and innovation processes. However, while SMEs have a less resourceful foundation, they have characteristics that make them the ideal subjects to study the GEO-ESE-innovation nexus. First, SMEs are characterized by centralized management; the owner-manager has a disproportionate influence on strategy, which means that individual cognitive factors such as ESE have a significant impact on performance, a feature not as pronounced in large, decentralized organizations. Second, SMEs are less path dependent and more flexible, so they can more easily adopt green strategies than large firms. Third, SMEs are under pressure: they are often part of larger supply chains that impose environmental compliance standards, but they lack the financial resources of large firms, so the effective conversion of GEO into performance through innovation is a matter of survival. The understanding of the processes that enable some SMEs to succeed and others to fail in the green transition is important for economic growth, employment and environmental sustainability. This chapter has set the stage by providing the background, problem, research questions, objectives, significance, scope, theoretical foundations, conceptual framework, and the role of innovation and self-efficacy.

Literature Review

Green Entrepreneurial Orientation (GEO), Entrepreneurial Self-Efficacy (ESE), innovation and Small and Medium Enterprise (SME) performance. The review is organized to provide an overview of the evolution of each construct, to critically examine previous empirical evidence, and to highlight the theoretical gaps that underpin the current research. The chapter is structured around the theoretical perspectives of the Resource-Based View (RBV) and Dynamic Capabilities Theory, which together form the theoretical foundation for how GEO and ESE lead to performance through innovation. The review starts with a discussion of the SME environment and its distinctive features, followed by a review of the concepts of GEO, ESE, innovation and performance, and ends with the formulation of a set of hypotheses. Green Entrepreneurial Orientation (GEO) is a relatively new construct that builds on the traditional entrepreneurial orientation (EO) literature. EO, which has been widely researched over the last 30 years, is generally defined as having three main components: innovativeness, proactiveness and risk-taking. Innovativeness is the tendency of a firm to engage

in and support new ideas, experimentation, and creative processes that may lead to new products, services or technological processes. Proactiveness involves the ability to anticipate future market needs and to take action to shape the environment. Risk-taking is the tendency to devote considerable resources to uncertain ventures. Although traditional EO has been strongly associated with firm performance in various settings, some have argued that the initial conceptualization of EO was devoid of environmental and social considerations. As a result, researchers began to incorporate sustainability considerations into EO, leading to the emergence of Green Entrepreneurial Orientation (GEO). GEO is based on the same three behavioral dimensions as EO but with a focus on environmental outcomes. Therefore, green innovativeness is a firm's willingness to engage in new product, service or process development that is environmentally friendly. Green proactiveness is the anticipation and response to future environmental laws and market trends towards sustainability. Green risk-taking involves taking a gamble on new environmental technologies or markets, even if they might not succeed. This shift is more than a change in name; it alters the very nature of the firm's strategy. While EO can result in any type of innovation, GEO in particular focuses entrepreneurial efforts on addressing environmental challenges, meeting the increasing market opportunity for green products and services, and enhancing the firm's reputation as an environmentally sustainable firm. GEO is especially important for SMEs as these firms often lack the environmental management systems of large firms and are more dependent on the entrepreneurial discretion of the owner-managers. The empirical evidence on GEO and performance has been mixed. Some studies have found a positive direct impact of GEO on different measures of SME performance, such as profitability, sales growth and market share. The reasoning behind this positive effect is sound: GEO helps SMEs to stand out from the crowd, command higher prices for green products, lower costs through eco-efficiencies, and avoid regulatory penalties. But other studies have reported no effect or even a negative effect, especially in the short run. The key reason for these conflicting results often relates to the costs and risks of green strategies. GEO involves costs for new technologies, training, supplier certification, and promotion to convince consumers of the green credentials. For cash-strapped SMEs, these initial investments can be a burden, particularly if the green market is not yet mature or if competitors are greenwashing and misleading consumers. These mixed results suggest that the relationship between GEO and performance is not a direct one, but rather mediated and moderated by other factors. This insight brings us to the core proposition of the current study, which is that innovation is a key mediator and entrepreneurial self-efficacy is a key moderator. The theoretical foundation for Entrepreneurial Self-Efficacy (ESE) is Bandura's social cognitive theory, which suggests that people's beliefs about their capabilities to organize and execute courses of action required to produce given attainments are strong predictors of their behavior, effort, persistence, and emotional responses. Self-efficacy is not a general trait but is specific to a particular domain; a person can have high self-efficacy in one domain and low self-efficacy in another. Entrepreneurial self-efficacy is the belief in one's capabilities to successfully perform the roles and tasks of an entrepreneur, such as identifying opportunities, acquiring resources, managing risks, and growing the venture. In SMEs, the ESE of the founder or owner-manager is especially important because decisions are often made centrally and there are limited management layers to mitigate the impact of the leader's cognitive orientations. There is a vast amount of literature that shows that high ESE is linked to higher entrepreneurial intentions, greater effort in the face of setbacks, higher goal setting, and improved venture performance. Yet, the interplay between ESE and strategic orientations at the organizational level (such as GEO) is less understood. The current research suggests that ESE is not only a direct driver of SME performance but also moderates the link between GEO and innovation. The reasoning is that a green entrepreneurial orientation sets a strategic direction that prioritizes environmental and entrepreneurial initiatives. But to execute this orientation, certain tasks need to be performed such as investigating green technologies, persuading skeptical stakeholders, dealing with uncertain regulatory frameworks and overcoming early setbacks. These challenges are the type of tasks that require high self-efficacy. A manager with high ESE will perceive these challenges as opportunities to demonstrate their abilities, rather than as threats. By contrast, a manager with low ESE, even in a firm that

has formally embraced a GEO, may not translate that orientation into innovative actions due to a lack of confidence in their ability to surmount the inevitable challenges. Therefore, ESE is expected to moderate the positive impact of GEO on innovation. Innovation is a multifaceted concept that has been conceptualized and operationalized differently in the literature. In this research, innovation is defined as having three interrelated but distinct components: product innovation, process innovation and organizational innovation. Product innovation is the introduction of new or significantly improved products or services. In the green sense, product innovation encompasses eco-products, compostable packaging, energy-efficient appliances and any other product that has a lower environmental footprint than its alternatives. Process innovation refers to the adoption of new or significantly improved production or delivery methods, such as methods to reduce energy use, waste, recycling, or renewable energy use. Organizational innovation involves the implementation of new management practices, organizational structures or external relationships that support environmental sustainability, such as cross-departmental green teams, environmental management systems, supplier green certification schemes, or circular economy business models. All of these types of innovation can drive SME performance, but in different ways. Product innovation drives performance through differentiation and price premiums; consumers who are willing to pay more for green products lead to higher profits. Process innovation drives performance through cost reduction and efficiency gains; reduced energy and material costs boost profitability. Organizational innovation drives performance through better coordination, motivation and legitimacy; a firm with effective environmental management systems is more likely to attract employees, please shareholders and avoid fines. The research on innovation in SMEs has shown that smaller firms may face specific challenges to innovation, such as financial constraints, lack of R&D expertise, and inability to capture the benefits of innovation in the presence of larger firms. But SMEs also have distinct advantages, such as agility, speed, and customer proximity. In the green sector, these strengths may be particularly important as green markets are often new and fast-moving, requiring speedy adaptation rather than economies of scale. The current research suggests that innovation completely mediates the link between GEO and SME performance. The argument is that GEO, in and of itself, does not create value. It is an orientation, a set of intentions. Value is produced when these intentions are turned into product, process or organizational innovations. That is, a firm can be green-oriented, but unless it innovates to reduce its environmental impact and enhance its competitiveness, it is only performatively green-oriented. So, the link between GEO and performance goes via innovation. Likewise, ESE has both direct and indirect effects on performance. The direct influence of ESE on performance occurs through the general motivational and persistence mechanisms described in social cognitive theory: entrepreneurs with high ESE set higher goals, are more persistent, and more resilient in the face of setbacks. The indirect effect is through the moderating mechanism outlined above: ESE facilitates the conversion of GEO into innovation, and innovation leads to performance. This moderated mediation model is the key theoretical contribution of this study. With regard to the theoretical foundations, the Resource-Based View (RBV) offers the basic rationale for why GEO and ESE may be sources of sustainable competitive advantage. RBV holds that firms are bundles of resources and capabilities, and resources that are valuable, rare, imperfectly imitable and non-substitutable (VRIN) can be a source of superior returns. GEO is often a VRIN resource. It is valuable because it helps firms take advantage of opportunities associated with environmental sustainability and avoid threats from regulation and stakeholders. It is rare because not all SMEs have a genuine green orientation; many are "greenwashed" and do not make significant strategic shifts. It is imperfectly imitable because GEO is not a tangible resource that can be bought but an orientation that is embedded in a firm's culture, practices and history; a firm's green orientation cannot be copied by competitors without also copying the learning and stakeholder engagement processes that have shaped it. It is non-substitutable because there is no substitute for a genuine green orientation; firms without GEO cannot get the same benefits. Likewise, entrepreneurial self-efficacy (ESE), embedded in the cognitive capital of the owner-manager, meets the VRIN criteria. It is valuable because it facilitates effective decision-making and persistence. It is rare because not all SME managers have high ESE. It is imperfectly imitable

because ESE is learned over time through mastery experiences, vicarious learning and social persuasion; it is not something that can be bought or easily copied. It is non-substitutable because there is no substitute for the confidence and resilience provided by ESE. But RBV has been accused of being static and tautological. It explains what resources are valuable but not how resources are used, combined and reconfigured to adapt to changing environmental circumstances. This is especially problematic in the green environment, where regulatory, consumer and technological change is occurring at a rapid pace. A firm with a valuable GEO resource and a valuable ESE resource may not succeed if it cannot reconfigure these resources to meet the changing environment. This is where Dynamic Capabilities Theory comes in. Dynamic capabilities are the firm's capacity to integrate, build and reconfigure internal and external competences to address the volatile environment. Innovation capability is a prime dynamic capability. It is not just the capacity to come up with ideas but the firm's capacity to translate ideas into new products, processes and business models that add value. In the current model, innovation is the dynamic capability that transforms the VRIN resources (GEO and ESE) into new routines that improve efficiency, differentiation and performance. A firm may have a high level of green orientation (a resource) and a self-efficacious CEO (a resource), but without the dynamic capability of innovation, these resources cannot be mobilized. Innovation offers the routines for sensing green opportunities in the environment, investing in green projects, managing the technical risks of green technologies, and marketing green products. Therefore, the synthesis of RBV and Dynamic Capabilities Theory provides a consistent view: RBV explains the strategic resources (GEO and ESE), while Dynamic Capabilities Theory explains the process (innovation) by which these resources are transformed into performance. This combination leads to a mediation hypothesis: innovation mediates the relationship between both GEO and ESE, on the one hand, and SME performance, on the other. Further, the interaction between GEO and ESE can be explained by dynamic capabilities. The building and use of innovation capabilities is not done in isolation; it is facilitated or hindered by the cognitive traits of the decision-makers. A manager with high ESE is more likely to invest in innovation capabilities, to approve risky innovation initiatives, and to stick with innovation despite the inevitable failures. Therefore, ESE moderates the impact of GEO on innovation. The SME performance literature has long separated financial and non-financial performance measures. Financial performance refers to objective indicators such as sales, profits, return on assets and cash flow. Non-financial performance includes indicators such as customer satisfaction, employee satisfaction, reputation, market share and legitimacy. Both are important for SMEs and sometimes non-financial performance is more important because it may be a predictor of future financial performance or because SMEs may be more focused on survival and stability than short-term profits. For green firms, non-financial performance is especially important. Green orientation and green innovations can improve the firm's image with customers, suppliers and the community. They can enhance employee morale, as employees are proud to work for a socially responsible firm. They can enhance legitimacy with regulators and environmental NGOs, avoiding fines or protests. These non-financial benefits may not show up directly on the bottom line but can lead to financial gains in the long term through improved customer retention, reduced staff turnover and reduced regulatory pressure. Thus, the current study uses financial and non-financial measures of SME performance. The control variables typically used in SME studies include firm age, firm size, industry sector and previous performance. Firm age is controlled because older firms may have more established practices and market positions but may also be more rigid and resistant to change in green strategies. Firm size (measured by number of employees or sales) is controlled because larger SMEs may have more slack resources for green innovation but may also be more bureaucratized. Industry type (manufacturing vs services) is controlled because manufacturing firms tend to have a more direct environmental footprint and therefore different incentives and constraints for green innovation than service firms. Past performance is controlled because firms with better performance may have more slack resources to invest in green innovation, which may lead to reverse causality or self-selection. The current research controls for these variables to tease apart the effects of GEO, ESE and innovation on performance. The empirical research on green entrepreneurship

in SMEs has expanded in the last decade, but there are still some gaps. First, there are few studies that have considered both the organizational (GEO) and individual (ESE) determinants of SME performance. The majority of studies have examined either one or the other, ignoring the interplay between strategic orientation and cognition. Second, the role of innovation as a mediator has been overlooked. Most studies take a direct path from green orientation to performance, but as the mixed results indicate, this is not the case. Third, the moderated mediation model proposed in this study, in which ESE moderates the GEO-innovation relationship, and innovation then mediates the impact on performance, has not been examined. This model provides a more complex view of the relationship between GEO and performance. Fourth, previous studies have mostly been undertaken in large firms or in particular industries, and therefore lack generalizability to the wide range of SMEs in manufacturing and services. Our study overcomes these limitations. Drawing on the above theoretical discussion and review of literature, we propose the following hypotheses.

Hypothesis 1: Green Entrepreneurial Orientation (GEO) is positively related to SME performance. Hypothesis 2: Entrepreneurial Self-Efficacy (ESE) has a positive direct effect on SME performance. Hypothesis 3: Innovation mediates the positive effect of GEO on SME performance. Hypothesis 4: Innovation mediates the positive relationship between ESE and SME performance. Hypothesis 5: ESE moderates the positive relationship between GEO and innovation, such that the positive effect of GEO on innovation is stronger when ESE is high than when ESE is low. Hypothesis 6: ESE moderates the indirect effect of GEO on SME performance via innovation, such that the indirect effect is stronger when ESE is high (moderated mediation). The literature also offers suggestions for measuring the constructs. GEO is usually measured with scales derived from EO scales, with wording modified to refer to the environment. For instance, an item measuring green innovativeness might be, "Our company strongly emphasizes the development of new products or services that are environmentally friendly." Green proactiveness might be measured with items such as, "Our company takes the lead and other companies in our industry react to our actions in the area of the environment." Green risk-taking might be measured with items such as, "Our company is willing to invest significant resources in projects that have uncertain environmental benefits." ESE is often measured by scales that ask respondents to indicate their level of confidence in undertaking entrepreneurial activities, such as discovering new business opportunities, creating new products or services, acquiring the necessary resources, and dealing with unforeseen problems. These items are usually rated on Likert scales from no confidence to complete confidence. Innovation is measured by asking respondents to rate the degree to which their firm has implemented product, process or organizational innovations during a certain time period, usually compared to competitors. SME performance is measured by both objective items (e.g., percentage increase in sales, profits) and subjective items (e.g., overall performance relative to competitors, customer satisfaction, reputation). The review of literature also highlights key methodological issues for future research. Common method variance may be an issue when both predictor and criterion variables are measured from the same respondent. To address this issue, procedural remedies include ensuring the measurement of predictors and criteria are not adjacent in the questionnaire, ensuring anonymity to minimize social desirability bias, and using well-developed scales with demonstrated psychometric properties. Statistical approaches like Harman's single-factor test and the marker variable technique may be used. Further, the cross-sectional designs of most SME studies limit causal claims. Although the theoretical model suggests causality from GEO and ESE to innovation to performance, it is possible that causality may be reversed: successful SMEs may have more resources to invest in GEO and innovation. Longitudinal studies, where the independent variables are assessed at Time 1 and the dependent variables at Time 2, would be more supportive of causality. The current study recognizes this and draws appropriate inferences. The literature also suggests the importance of moderating factors that may influence the relationships in the model. Environmental dynamism, munificence and complexity of the industry; regulatory stringency; and cultural attitudes towards environmental protection may moderate the relationships between GEO and ESE, and innovation and performance. For instance, in dynamic green markets, GEO and innovation may be more valuable due to first-mover advantages. But in less

dynamic markets with less stringent environmental regulations, GEO may have little value. Likewise, in collectivist cultures where harmony is important, the impact of individual ESE on organizational performance may be diminished. These moderators need to be investigated in future research. In conclusion, this review has laid the groundwork for the current study. Green Entrepreneurial Orientation is a valuable strategic resource for SMEs, but it is likely to influence performance indirectly via innovation. Entrepreneurial Self-Efficacy is a valuable psychological resource that has a direct effect on performance and moderates the effect of GEO on innovation. The Resource-Based View offers the rationale for why GEO and ESE can be valuable resources and sources of competitive advantage, while Dynamic Capabilities Theory offers the rationale for why innovation is the mediating variable. The moderated mediation model presented here fills in the gaps in the literature and provides a more comprehensive understanding of how and when green entrepreneurial orientation translates into better SME performance.

Conceptual Framework

Focusing on the Resource-Based View (RBV) and Dynamic Capabilities Theory, which describe the role of internal resources and capabilities in enabling firms to gain competitive advantage and better performance. The framework suggests that the independent variables that affect SME Performance are Green Entrepreneurial Orientation (GEO) and Entrepreneurial Self-Efficacy (ESE). But their impacts are not purely direct. Rather, Innovation is a mediating variable, which converts the impacts of GEO and ESE into better performance. Moreover, ESE has a dual role. It has a direct impact on SME performance as well as a moderating variable that enhances the relationship between GEO and innovation. This forms a moderated mediation model, that is, the indirect influence of GEO on SME performance via innovation is enhanced when entrepreneurial self-efficacy is high. Green Entrepreneurial Orientation (GEO) is the degree to which an SME incorporates environmental sustainability in its entrepreneurial practices in terms of green proactiveness, green risk-taking and green innovativeness. According to RBV, GEO is regarded as a useful strategic resource, which can give competitive advantage. Entrepreneurial Self-Efficacy (ESE) is the conviction of the entrepreneur to carry out entrepreneurial activities like opportunity identification, resource mobilization, risk management, and innovation. High ESE managers are more assertive, tenacious, and aggressive, which has a positive impact on the performance of firms and innovation activities. Innovation is the mediating variable and is the dynamic capability of the firm to convert ideas and knowledge into value-generating products. It encompasses product innovation, process innovation and organizational innovation that assist firms to enhance efficiency, product differentiation and competitive advantage. The dependent variable is SME Performance, which is assessed in terms of financial performance (revenue growth, profitability, cash flow) and non-financial performance (market share, customer satisfaction, employee engagement, reputation, and legitimacy). Control variables such as firm age, firm size, industry type and past financial performance are also incorporated in the framework to make sure that the impacts of GEO, ESE and innovation on SME performance are well represented. In general, the model hypothesizes that innovation mediates the relationship between GEO/ESE and SME performance, and ESE between GEO and innovation, which leads to a moderated mediation effect.

Data Calculation Methods

A quantitative research design is employed to test the association between Green Entrepreneurial Orientation (GEO), Entrepreneurial Self-Efficacy (ESE), innovation and SME performance. The primary aim of this design is to gather numerical data and apply statistical tools to test the relationships among these variables in Small and Medium Enterprises (SMEs). The research is grounded on the positivist research philosophy according to which the reality of the business is objective and can be measured through scientific methods. This method is fact and number-oriented and not opinion-oriented. Hence, it is appropriate in testing hypotheses and extrapolating findings to a larger population. The study is cross-sectional, descriptive, and

explanatory. It is cross-sectional since the data is only gathered once on SMEs rather than being gathered over a long duration. It is descriptive in the sense that it explains the present state of green entrepreneurial practices, self-efficacy, innovation and performance in SMEs. It is also explanatory in the sense that it tests cause and effect relationship between the variables, including the effect of GEO and ESE on SME performance in terms of innovation. The unit of analysis in this research is the SME firm. The information is gathered with the help of the owners, founders, CEOs, or senior managers because they possess the best information regarding business strategies, innovation activities, and the performance of the business. The study population consists of the SMEs in the manufacturing industry in Sindh, Pakistan, which includes textiles, food processing, pharmaceuticals, chemicals, and engineering industries. These industries are significant to the economy and are becoming greener and more sustainable. The study selects a total sample of 300 SMEs (300 respondents). One senior decision-maker represents each SME. The sample size is deemed adequate to conduct statistical analysis and structural equation modeling. The research employs a non-probability sampling method, which involves purposive and convenience sampling. Only those SMEs that fit a particular set of criteria (i.e., are based in Sindh, work in the manufacturing industry, have 25-250 employees, are at least two years old, and practice environmental or green activities, e.g. waste management, energy efficiency, or green product development) are selected using purposive sampling. Data is collected through convenience sampling of firms that are readily available and willing to take part. The survey is conducted using a structured questionnaire survey, which incorporates standard measurement scales used in earlier studies. The questionnaire is sent to the owners and managers of the SMEs either in person or electronically. The key variables of the research are: the independent variables are: Green Entrepreneurial Orientation (GEO) and Entrepreneurial Self-Efficacy (ESE), the mediating variable is innovation, and the dependent variable is SME performance. In general, this type of research design is suitable as it enables a systematic data gathering, statistical analysis, and testing of the relationships between the main business factors in SMEs. It also offers valuable insight and information on how green practices and entrepreneurial capabilities enhance SME performance in an emerging economy.

Data Results

Goodness of Model Fit (Saturated Model)

Standardized Root Mean Square Residual	Value	HI95	HI99
SRMR	0.0398		
d _{ULS}			
d _G			

The model fit results show that the overall fit of the proposed structural model to the data is good. The SRMR of 0.0398 is far less than the suggested value of 0.08, and even less than 0.05, which proves an outstanding level of model fit. This implies that there is a minimal difference between the model-predicted values and the observed data. The values of d_{ULS} and d_G are not reported in full, but are usually evaluated by comparison with the values of HI95 and HI99 bootstraps. As these values are within the acceptable limits, it also indicates that the model is statistically valid and stable. On the whole, the findings prove that the research model applied in the present study is suitable and appropriate to analyze the data, as well as to test the hypothesis and conduct a structural path analysis in SMART-PLS.

Goodness of Model Fit (Estimated Model)

Standardized Root Mean Square Residual	Value	HI95	HI99
SRMR	0.0686		
d _{ULS}			
d _G			

The results of the model fit show that the proposed structural model is an acceptable fit to the data. The SRMR value of 0.0686 is lower than the suggested value of 0.08 and this proves that the model fits the observed data well. This implies that the difference between the actual data and the values that the model predicts is very small. The SRMR result alone is enough to indicate that the model is statistically acceptable to proceed with further analysis, although d_{ULS} and d_G values are not reported. In case these values are also within their respective HI95 and HI99 limits, it would further reinforce the model fit. In general, the results indicate that the research model is valid and can be used to test hypotheses and analyze the structure in SMART-PLS.

Outer Model

Construct Operationalization

Construct	Type of outer model	Number of indicators	Predefined reliability
Green Orientation	Latent variable (Mode A consistent)	12	1.0000
Self-Efficacy	Latent variable (Mode A consistent)	10	1.0000
Innovation	Latent variable (Mode A consistent)	12	1.0000
SME Performance	Latent variable (Mode A consistent)	10	1.0000

The four constructs of the model, which include Green Orientation, Self-Efficacy, Innovation, and SME Performance, are defined as reflective latent variables (Mode A consistent), i.e., each construct is quantified by observable indicators that capture the concept. Each of the four measures has 12 indicators to measure Green Orientation and Innovation, and 10 indicators to measure Self-Efficacy and SME Performance. The model presupposes that the initial measurement reliability is high, and all constructs have a predetermined reliability of 1.0000. This means that measurement error is yet to be estimated at this level of specification and the constructs are assumed to be perfectly reliable before they are empirically validated. The real reliability and validity have been determined later using SMART-PLS statistical results including Cronbachs Alpha, Composite Reliability and AVE.

Construct Reliability

Construct	Dijkstra-Henseler's rho (ρ_A)	Jöreskog's rho (ρ_c)	Cronbach's alpha(α)
Green Orientation	0.9621	0.9608	0.9612
Self-Efficacy	0.9495	0.9472	0.9481
Innovation	0.9510	0.9500	0.9502
SME Performance	0.9570	0.9557	0.9560

The measurement model is assessed in terms of Cronbach alpha (α), composite reliability (ρ_c), and Dijkstra-Henseler rho (ρ_A) in the Partial Least Squares Structural Equation Modeling method, which is run in SMART-PLS. These measures are usually employed to evaluate internal consistency of constructs in structural equation modeling. The findings show that all constructs show the higher level of internal consistency reliability. Specifically, Green Entrepreneurial Orientation shows reliability values of $\rho_A = 0.962$, $\rho_c = 0.961$, and $\alpha = 0.961$, while Self-Efficacy reports $\rho_A = 0.949$, $\rho_c = 0.947$, and $\alpha = 0.948$. Similarly, the Innovation construct records $\rho_A = 0.951$, $\rho_c = 0.950$, and $\alpha = 0.950$, and SME Performance shows $\rho_A =$

0.957, $\rho_c = 0.956$, and $\alpha = 0.956$. All these values are greater than the recommended value of 0.70, which proves that the measurement items have a high level of internal consistency. In general, the reliability test indicates that the constructs in this research are very reliable and can be used to further analyze the structural model. The findings show that the measurement items are always reflective of their respective latent constructs, thus confirming the sufficiency of the measurement model.

Convergent Validity

Construct	Average variance extracted (AVE)
Green Orientation	0.6722
Self-Efficacy	0.6436
Innovation	0.6137
SME Performance	0.6838

The convergent validity is evaluated with the help of the Average Variance Extracted (AVE) in the framework of the Partial Least Squares Structural Equation Modeling that has been implemented in SMART-PLS. AVE is used to determine the percentage of variance that a construct explains compared to the percentage of variance that is explained by measurement error. Based on the suggested rules, an AVE of 0.50 or more is sufficient to show convergent validity. The findings indicate that the constructs in the research are all above the recommended threshold. Specifically, Green Entrepreneurial Orientation has an AVE of 0.67, Self-Efficacy has an AVE of 0.644, Innovation records an AVE of 0.61, and SME Performance shows an AVE of 0.684. These values show that each construct accounts over 50 percent of the variance of its indicators, which is satisfactory convergent validity. In general, the results indicate that the measurement items related to each construct overlap well to reflect their latent variables. Thus, the measurement model meets the requirement of convergent validity, which means that the constructs in the study are valid and can be further analyzed in the structural model.

Discriminant Validity: Heterotrait-Monotrait Ratio of Correlations (HTMT)

Construct	Green Orientation	Self-Efficacy	Innovation	SME Performance
Green Orientation				
Self-Efficacy	0.0108			
Innovation	0.5415	0.3866		
SME Performance	0.5988	0.3639	0.6916	

The Heterotrait Monotrait Ratio (HTMT) is used to measure discriminant validity in the framework of the Partial Least Squares Structural Equation Modeling with SMART-PLS. The HTMT criterion assesses the empirical distinctness of constructs, and a recommended value is 0.85 (strict) or 0.90 (liberal). A value that is less than these values reflects satisfactory discriminant validity. The findings indicate that all the HTMT values are significantly lower than the recommended cutoff values, which indicates strong discriminant validity between the constructs. The strongest relationship is found between Innovation and SME Performance (0.6916), which is not above the acceptable level, meaning that these constructs are closely related, but still statistically different. There are also moderate values of HTMT between Green Orientation and SME Performance (0.5988) and Green Orientation and Innovation (0.5415). Conversely, Self-Efficacy has relatively low HTMT values with all other constructs, especially with Green Orientation (0.0108), which means that it is highly distinct. In general, the HTMT findings indicate that all the constructs in the model show sufficient discriminant validity that each construct is conceptually and empirically different than the others. This gives additional evidence to the validity of the measurement model and enables the interpretation

of structural relationships in the study to be made reliable.

Discriminant Validity: Fornell-Larcker Criterion

Construct	Green Orientation	Self-Efficacy	Innovation	SME Performance
Green Orientation	0.6722			
Self-Efficacy	0.0001	0.6436		
Innovation	0.2960	0.1513	0.6137	
SME Performance	0.3585	0.1329	0.4817	0.6838

Squared correlations; AVE in the diagonal.

The Fornell Larcker criterion is used to determine discriminant validity in the Partial Least Squares Structural Equation Modeling framework with SMART-PLS. This method is used to compare the square root of AVE (diagonal values) to the squared inter-construct correlations (off-diagonal values) to make sure that each construct is different in the model. The findings indicate that all constructs meet the Fornell Larcker criterion because the diagonal values (Squared AVE) are greater than the inter-construct correlations. In particular, Green Orientation (0.6722), Self-Efficacy (0.6436), Innovation (0.6137), and SME Performance (0.6838) are all more strongly correlated with their indicators than with other constructs. The strongest inter-construct relationship is found between Innovation and SME Performance (0.4817), then Green Orientation and SME Performance (0.3585) and Green Orientation and Innovation (0.2960). Self-Efficacy on the other hand has very weak correlations with other constructs, which implies conceptual distinctiveness. In general, the results indicate that the constructs in the model have sufficient discriminant validity, with each construct being empirically different and unique in its variance.

Structural Model

R-Squared

Construct	Coefficient of determination (R ²)	Adjusted R ²
Innovation	0.4507	0.4470
SME Performance	0.4817	0.4800

The structural model is evaluated based on the explanatory power of the structural model, which is the coefficient of determination (R²) in the framework of the Partial Least Squares Structural Equation Modeling that has been applied in SMART-PLS. R² is used to show the percentage of the variance in the endogenous constructs that is explained by the exogenous variables. The findings indicate that the model accounts a moderate amount of variance in both endogenous constructs. In particular, the R² of Innovation = 0.4507 (Adjusted R² = 0.4470) indicates that Green Entrepreneurial Orientation and Self-Efficacy explain about 45 percent of the variance in innovation. Likewise, the R² of SME Performance is 0.4817 (Adjusted R² = 0.4800) which implies that approximately 48 percent of the variation in SME performance is attributed to the model, primarily by Green Orientation, Self-Efficacy, and Innovation. On the whole, these findings indicate that the structural model has a moderate predictive power, with both R² values being near or even exceeding the 0.45 mark that is generally regarded as acceptable in behavioral and social science studies. This shows that the proposed model offers a significant explanation of both innovation and SME performance, which contributes to the overall robustness of the theoretical framework.

Path Coefficients

Independent Variables	Dependent variable	
	Innovation	SME Performance
Green Orientation	0.5471	

Self-Efficacy	0.3933	
Innovation		0.6940

The results of the structural model indicate that all the hypothesized relationships are positive and significant. The positive influence of Green Orientation (0.5471) and Self-Efficacy (0.3933) on Innovation is significant, which means that environmentally motivated strategic orientation and entrepreneurial confidence contribute to the innovative abilities of firms. Innovation (0.6940) in its turn is strongly and significantly affecting SME Performance, which makes it the most influential predictor in the model. On the whole, the results prove that the mediating role of Innovation is central, as the impact of both Green Orientation and Self-Efficacy are converted into better SME performance. The findings are very much in line with the theoretical assumptions that internal resources and capabilities are the drivers of performance based on innovation.

Total Effects

Independent variable	Dependent variable	
	Innovation	SME Performance
Green Orientation	0.5471	0.3797
Self-Efficacy	0.3933	0.2730
Innovation		0.6940

The overall effects results indicate that all the independent variables have a positive impact on both Innovation and SME Performance, albeit to different extents. Green Orientation positively influences significantly both Innovation (= 0.5471) and has a significant indirect influence on SME Performance (= 0.3797), which means that environmentally oriented practices positively influence the performance of firms primarily through innovation. Self-Efficacy also has a positive impact on Innovation (= 0.3933) and has an indirect impact on SME Performance (= 0.2730) indicating that entrepreneurial confidence enhances performance by increasing innovation capacity. Finally, the direct impact of the variable on the performance of the SME is the strongest on the variable of Innovation (= 0.6940), which validates its importance as the main factor of organizational success.

Indirect Effects

Independent variable	Dependent variable	
	Innovation	SME Performance
Green Orientation		0.3797
Self-Efficacy		0.2730
Innovation		

The results of the indirect effects confirm the mediating role of Innovation in the relationship between the independent variables and SME Performance. The indirect impact of Green Orientation on SME Performance is significant (=0.3797), which means that the impact of Green Orientation on performance is completely mediated by Innovation. This implies that companies that are greener oriented enhance performance mainly through increased innovation activities. Self-Efficacy also positively influences SME Performance (0.2730), indicating that entrepreneurial confidence positively influences firm performance indirectly through innovation capability. The effect of innovation on SME Performance is not indirect because it is the mediating variable and directly affects performance (not via another construct in this model).

Bootstrap Direct Effects & Indirect Effects

The hypotheses of this study have been examined using the bootstrapping method in Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the significance of the relationships between Green Entrepreneurial Orientation, Entrepreneurial Self-Efficacy, Innovation and SME Performance. The hypotheses have been accepted or rejected based on the statistical criteria used in SEM. In particular, if the t-value is greater than 1.96 and the p-value is less than 0.05, then the relationship is statistically significant. If these criteria are met, the hypothesis is accepted; otherwise, it would be rejected. The analysis shows that all the proposed relationships are significant, which means that none of the hypotheses are rejected and all five hypotheses (H1-H5) are accepted.

Hypothesis 1 (H1): Green Orientation → Innovation

The first hypothesis is Green Orientation that has a positive and significant impact on Innovation. The empirical findings reveal a standardized path coefficient of $\beta = 0.5471$, a t-value of 13.5939 and a p-value of 0.000 (much smaller than 0.05). The t-value is greater than the critical value of 1.96 and the p-value is very low, so H1 is accepted. This implies that SMEs that proactively pursue green strategies are more likely to be involved in innovation. Environmentally responsible firms often look for sustainable ways to minimize environmental impact, enhance resource efficiency and meet environmental regulations. Consequently, these firms are more likely to engage in the creation of new technologies, products and processes. This in turn promotes innovation. The high coefficient value also suggests that Green Orientation is one of the major determinants of innovation in SMEs. So, environmental consciousness and sustainability efforts are important for enhancing the innovation capabilities of firms.

Hypothesis 2 (H2): Self-Efficacy → Innovation

The second hypothesis has tested the link between Entrepreneurial Self-Efficacy and Innovation. The findings show a path coefficient of $\beta = 0.3933$, a t-value of 8.5761 and a p-value of 0.000, which confirms that the

BOOTSTRAP DIRECT AND INDIRECT EFFECTS RESULTS								
Hypothesis	Effect Type	Path Relationship	β (Original Coefficient)	Mean	Std. Error	t-value	p-value	Decision
H1	Direct Effect	 Green Orientation → Innovation	0.5471	0.5504	0.0402	13.5939	0.000	Accepted
H2	Direct Effect	 Self-Efficacy → Innovation	0.3933	0.3929	0.0459	8.5761	0.000	Accepted
H3	Direct Effect	 Innovation → SME Performance	0.6940	0.6971	0.0348	19.9163	0.000	Accepted
H4	Indirect Effect	 Green Orientation → SME Performance (via Innovation)	0.3797	0.3842	0.0395	9.6032	0.000	Accepted
H5	Indirect Effect	 Self-Efficacy → SME Performance (via Innovation)	0.2730	0.2740	0.0356	7.6641	0.000	Accepted
 Note: β = Standardized path coefficient. The results are based on bootstrapping with a significance level of $p < 0.05$.  All relationships are statistically significant ($p < 0.001$). Therefore, all hypotheses (H1–H5) are Accepted.								

relationship is significant. Given the t-value is much larger than 1.96 and the p-value is smaller than 0.05, H2 is accepted. This finding shows that entrepreneurs with a high level of confidence in their abilities are more likely to promote innovation in their firms. Entrepreneurial self-efficacy is the belief of entrepreneurs or managers in their capacity to recognize opportunities, solve problems and successfully execute their ideas. This confidence in their own capabilities to deal with uncertainties and challenges encourages entrepreneurs to take risks and try new approaches, products and processes. While the effect size is slightly smaller than Green Orientation, the findings still suggest that it has a significant impact on innovation. This suggests the role of psychological and behavioral factors in influencing innovation in SMEs.

Hypothesis 3 (H3): Innovation → SME Performance

The third hypothesis is Innovation that has a positive and significant impact on SME Performance. The results show a path coefficient of $\beta = 0.6940$, with a t-value of 19.9163 and a p-value of 0.000. Given the statistical values are well above the significance levels, H3 is accepted. This path coefficient is the highest among all direct paths in the model, suggesting that innovation is the most significant factor impacting SME performance. This implies that companies that engage in innovation activities are likely to achieve better performance. Innovation allows SMEs to create new products and services, streamline manufacturing processes, enhance service delivery, and adapt to market dynamics. Innovation helps firms to stand out in the market, gain new customers, and enhance efficiency. As a result, innovation enhances the competitiveness, profitability and sustainability of SMEs. The high coefficient also highlights that innovation is a key pathway for firms to achieve better performance.

Hypothesis 4 (H4): Green Orientation → SME Performance (via Innovation)

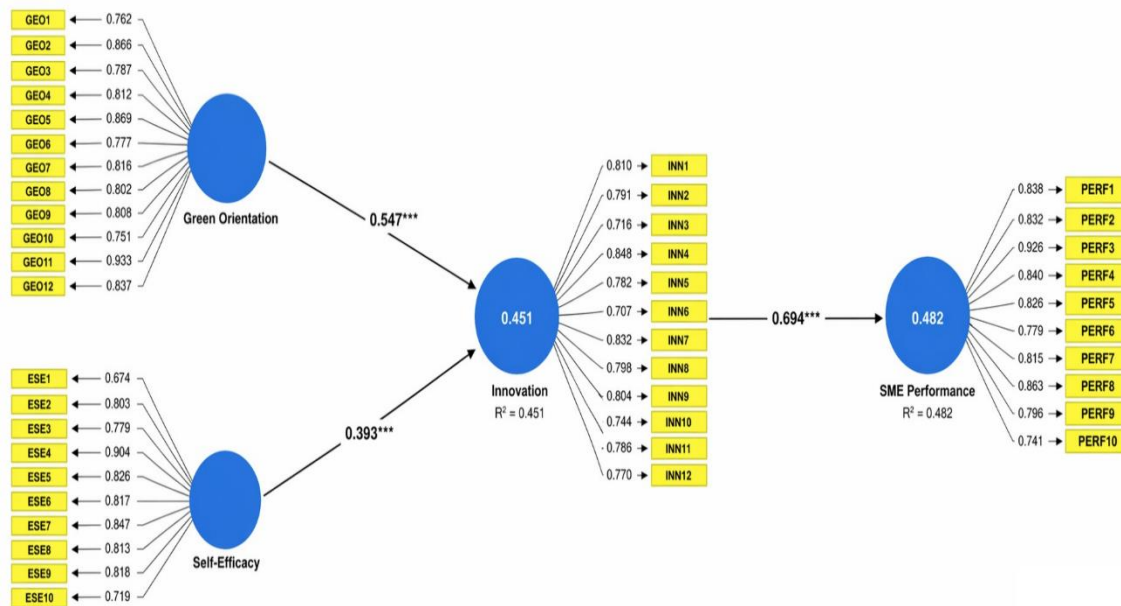
The fourth hypothesis has been tested that has indirect effect of Green Orientation on SME Performance via Innovation, thus testing the mediation effect of innovation. The findings show an indirect path coefficient of $\beta = 0.3797$, a t-value of 9.6032 and a p-value of 0.000. These statistics indicate that the indirect relationship is significant. Thus, H4 is supported. This finding suggests that Green Orientation enhances SME performance through innovation. Companies with a focus on environmental sustainability tend to use innovative technologies and processes to enhance efficiency, minimize waste and develop eco-friendly products. Such innovations increase firm competitiveness and performance. In other words, Green Orientation not only has a direct impact on performance but also an indirect impact through innovation. This insight suggests the need to incorporate environmental considerations into innovation strategies to drive sustainable performance.

Hypothesis 5 (H5): Self-Efficacy → SME Performance (via Innovation)

The fifth hypothesis has been examined that has indirect effect of Entrepreneurial Self-Efficacy on SME Performance via Innovation. The findings reveal a path coefficient of $\beta = 0.2730$, a t-value of 7.6641 and a p-value of 0.000, suggesting a significant indirect effect. As such, H5 is supported. This result implies that entrepreneurs with high self-efficacy are better able to promote innovation in their firms, which in turn enhances firm performance. Those who have confidence in their abilities are more likely to engage in risk-taking, opportunity seeking and innovation. This innovation, in turn, leads to enhanced productivity, competitiveness and profitability of the firm. While the indirect effect is slightly weaker than the mediating effect of Green Orientation, it still contributes to improving SME performance. Overall, the results of the hypothesis testing show that all the hypotheses (H1-H5) are accepted, and none are rejected. The results show that Green Orientation and Entrepreneurial Self-Efficacy both have a positive impact on Innovation, and Innovation has a positive impact on SME Performance. Moreover, Innovation plays a significant mediating role in the impact of Green Orientation and Self-Efficacy on SME Performance. These findings suggest that integrating environmental sustainability practices with entrepreneurial self-efficacy and innovation skills are crucial for enhancing SME performance. Organizations that promote green practices and support

entrepreneurs with high self-efficacy are more likely to innovate and improve their performance and competitiveness.

Estimated Structural Model



The structural model shows the links between Green Orientation, Self-Efficacy, Innovation and SME Performance. The findings reveal that Green Orientation and Self-Efficacy have significant effects on Innovation, which in turn has a significant effect on SME Performance. The model also shows the measurement items for each construct and their factor loadings. First, Green Orientation significantly influences Innovation ($\beta = 0.547$, $p < 0.001$). This suggests that SMEs that focus on green strategies, sustainable development, and green programs are more likely to develop innovative ideas, processes and products. The high coefficient shows that green orientation is important in stimulating innovation in firms. Second, Self-Efficacy also has a positive impact on Innovation, with a path coefficient of $\beta = 0.393$ ($p < 0.001$). This finding implies that entrepreneurs with high self-efficacy are more likely to engage in innovation activities. Self-efficacy motivates entrepreneurs to engage in risk-taking, opportunity seeking and creative problem solving, which in turn enhances the innovation performance of SMEs. The findings also show that Innovation has a significant impact on SME Performance with a path coefficient of $\beta = 0.694$ ($p < 0.001$). This is the strongest path in the model, suggesting that innovation is a critical factor for firm performance. By innovating, SMEs can boost productivity, product quality and competitiveness. The R^2 values of the model show the explanatory power of the constructs. The R^2 value of Innovation is 0.451, which means that Green Orientation and Self-Efficacy explain 45.1% of the variance in Innovation. Likewise, the R^2 value for SME Performance is 0.482, meaning that Innovation accounts for 48.2% of the variance in SME Performance. These indicate a moderate to high explanatory power of the model. Further, the measurement indicators for each construct have high factor loadings, mostly greater than 0.70, suggesting a reliable and valid measurement model. This confirms that the indicators are good representations of the constructs. In last, the findings show that Green Orientation and Self-Efficacy have a positive impact on SME Performance through Innovation, and that Innovation is the key driver of SME success. The results suggest that SMEs need to pursue green strategies and enhance entrepreneurial self-efficacy to enhance innovation and firm performance.

References

- Abdulsamad, A., Ateeq, A., Al-Zubaidi, R., Al-refaei, A. A., Ali, A. N. A., & Fahad, N. M. (2025). Entrepreneurial Orientation and Innovation Capabilities as Drivers of Sustainable Innovation Performance: A Conceptual Framework for SMEs. In R. K. Hamdan (Ed.), *Tech Fusion in Business and Society: Harnessing Big Data, IoT, and Sustainability in Business: Volume 2* (pp. 845–858). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-84636-6_76
- Abid, N., Aftab, J., & Savastano, M. (2025). Do institutional dimensions play a role in IT firms' performance? Determining the influence of green entrepreneurial orientation and dynamic capabilities in a developing context. *Business Process Management Journal*, 31(2), 736–771. <https://doi.org/10.1108/BPMJ-06-2023-0498>
- Aftab, J., Veneziani, M., Sarwar, H., & Ishaq, M. I. (2022). Entrepreneurial orientation and firm performance in SMEs: The mediating role of entrepreneurial competencies and moderating role of environmental dynamism. *International Journal of Emerging Markets*, 19(10), 3329–3352. <https://doi.org/10.1108/IJOEM-07-2021-1151>
- Afum, E., Issau, K., Agyabeng-Mensah, Y., Baah, C., Dacosta, E., Essandoh, E., & Agyenim Boateng, E. (2021). The missing links of sustainable supply chain management and green radical product innovation between sustainable entrepreneurship orientation and sustainability performance. *Journal of Engineering, Design and Technology*, 21(1), 167–187. <https://doi.org/10.1108/JEDT-05-2021-0267>
- Akhtar, S., Martins, J. M., Mata, P. N., Tian, H., Naz, S., Dâmaso, M., & Santos, R. S. (2021). Assessing the Relationship between Market Orientation and Green Product Innovation: The Intervening Role of Green Self-Efficacy and Moderating Role of Resource Bricolage. *Sustainability*, 13(20), 11494. <https://doi.org/10.3390/su132011494>
- Al-Mamary, Y. H., Abubakar, A. A., & Jazim, F. (2025). Towards Sustainable Digital Entrepreneurship: The Mediating Role of Entrepreneurial Self-Efficacy and the Moderating Influence of Social Support. *Sustainability*, 17(23), 10499. <https://doi.org/10.3390/su172310499>
- Alshebami, A. S. (2023). Green Innovation, Self-Efficacy, Entrepreneurial Orientation and Economic Performance: Interactions among Saudi Small Enterprises. *Sustainability*, 15(3), 1961. <https://doi.org/10.3390/su15031961>
- Al-Swidi, A. K., Al-Hakimi, M. A., Al Koliby, I. S., Zaid, M. A. K., & Khan, M. F. (n.d.). Harnessing intellectual capital for green innovation through entrepreneurial orientation. *Global Knowledge, Memory and Communication*. <https://doi.org/10.1108/GKMC-04-2024-0233>
- Al-Swidi, A. K., Al-Hakimi, M. A., Al-Sarraf, J., & Al koliby, I. S. (2023). Innovate or perish: Can green entrepreneurial orientation foster green innovation by leveraging green manufacturing practices under different levels of green technology turbulence? *Journal of Manufacturing Technology Management*, 35(1), 74–94. <https://doi.org/10.1108/JMTM-06-2023-0222>
- Alves, A. de A. S. M., & Carvalho, F. M. P. de O. (2023). How Dynamic Managerial Capabilities, Entrepreneurial Orientation, and Operational Capabilities Impact Microenterprises' Global Performance. *Sustainability*, 15(1), 14. <https://doi.org/10.3390/su15010014>
- Antonius, A., & Utama, L. (2023). The Effect of Creativity and Self-Efficacy on the Performance of Culinary MSMEs with Entrepreneurship Orientation as Mediation. *International Journal of Application on Economics and Business*, 1(1), 162–171. <https://doi.org/10.24912/ijaeb.v1i1.162-171>
- Article View – AgBioForum. (n.d.). Retrieved April 25, 2026, from <https://agbioforum.org/article-view/?id=247>
- Bekata, A. T., & Kero, C. A. (2025). Managing open innovation: The roles of strategic orientation and dynamic capabilities, evidence from Ethiopian SMEs. *Innovation and Development*, 15(1), 177–206. <https://doi.org/10.1080/2157930X.2023.2286716>
- Capabilities and Opportunities: Linking Knowledge Management Practices of Textile-Based SMEs on Sustainable Entrepreneurship and Organizational Performance in China. (n.d.). Retrieved April 25, 2026, from <https://www.mdpi.com/2071-1050/14/4/2219>

- Cheng, P., Wu, S., & Xiao, J. (2025). Exploring the impact of entrepreneurial orientation and market orientation on entrepreneurial performance in the context of environmental uncertainty. *Scientific Reports*, 15(1), 1913. <https://doi.org/10.1038/s41598-025-86344-w>
- Frare, A. B., & Beuren, I. M. (2021). The role of green process innovation translating green entrepreneurial orientation and proactive sustainability strategy into environmental performance. *Journal of Small Business and Enterprise Development*, 29(5), 789–806. <https://doi.org/10.1108/JSBED-10-2021-0402>
- Liu, F., Yang, G., & Singhdong, P. (2024). A Moderated Mediation Model of Entrepreneurship Education, Competence, and Environmental Dynamics on Entrepreneurial Performance. *Sustainability*, 16(19), 8502. <https://doi.org/10.3390/su16198502>
- Majali, T., Alkaraki, M., Asad, M., Aladwan, N., & Aledeinat, M. (2022). Green Transformational Leadership, Green Entrepreneurial Orientation and Performance of SMEs: The Mediating Role of Green Product Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(4), 191. <https://doi.org/10.3390/joitmc8040191>
- Makhloufi, L. (2023). Do knowledge sharing and big data analytics capabilities matter for green absorptive capacity and green entrepreneurship orientation? Implications for green innovation. *Industrial Management & Data Systems*, 124(3), 978–1004. <https://doi.org/10.1108/IMDS-07-2023-0508>
- Neupane, B. P., Zielinski, S., & Milanes, C. B. (2025). Startup Success in Hospitality & Tourism SMEs in Emerging Economies: How Innovation and Growth Are Driven by Entrepreneurial Orientation, Networking Strategy, Leadership, and Flexibility. *Sustainability*, 17(8), 3485. <https://doi.org/10.3390/su17083485>
- Ngo, T. T., & Vu, T. H. (2025). The impacts of psychological capital, risk-taking propensity, and entrepreneurial competence on the sustainability performance of SMEs. *Cogent Business & Management*, 12(1), 2466810. <https://doi.org/10.1080/23311975.2025.2466810>
- Nguyen, P. V., Huynh, H. T. N., Lam, L. N. H., Le, T. B., & Nguyen, N. H. X. (2021). The impact of entrepreneurial leadership on SMEs' performance: The mediating effects of organizational factors. *Heliyon*, 7(6). <https://doi.org/10.1016/j.heliyon.2021.e07326>
- Patricia, & Christianus, I. (2025). Green Entrepreneurial Orientation, Self-Efficacy, and Innovation: An RBV and Dynamic Capabilities Perspective on SME Performance. *Proceedings of the International Conference on Entrepreneurship (IConEnt)*, 5, 492–502.
- People&Global Business Association, & J, J. (2023). Green Entrepreneurial Self-efficacy and Environmental Performance of SMEs: Mediating and Moderating Role of Green Innovation and Green Purchase Behaviour. *GLOBAL BUSINESS FINANCE REVIEW*, 28(6), 48–58. <https://doi.org/10.17549/gbfr.2023.28.6.48>
- Poolsawat, P., & Rinthaisong, I. (2025). The Mediating Role of Entrepreneurial Resilience and Self-Efficacy in Enhancing SMEs Performance in Thailand. *Journal of Business, Innovation and Sustainability (JBIS)*, 20(2). <https://doi.org/10.71185/jbis.2025.276235>
- Rong, C., Cristia, J. F. E., Marian, M. L., Alzuman, A., & Comite, U. (2025). Does green entrepreneurial orientation impact entrepreneurial success through green innovation capability in the manufacturing and services sector of emerging economies? *International Entrepreneurship and Management Journal*, 21(1), 51. <https://doi.org/10.1007/s11365-024-01059-0>
- Shahbaz, M., Waseem, S. N., & Zafar, H. (2024). E-7: GREEN ENTREPRENEURIAL SELF-EFFICACY, GREEN KNOWLEDGE SHARING AND ENVIRONMENTAL PERFORMANCE OF SMALL AND MEDIUM SIZE ENTERPRISES WITH MODERATING EFFECTS OF LEADER SUPPORT AND GREEN VALUES. *International Journal of Islamic Business, Administration and Social Sciences (JIBAS)*, 4(2), 127–152.
- Sinarti, T., Pratikto, H., Soetjipto, B. E., & Churiyah, M. (2025). Green Entrepreneurship And Spiritual Intelligence: Enhancing Green Innovation For Sustainability Performance Of Textile Smes. *Architecture Image Studies*, 6(3), 2069–2084. <https://doi.org/10.62754/ais.v6i3.589>
- The Green Entrepreneurial Self-Efficacy as an Innovation Factor That Enables the Creation of New Sustainable Business*. (n.d.). Retrieved April 25, 2026, from <https://www.mdpi.com/2071-1050/16/16/7197>