

Green Innovation and Competitive Advantage in MSMEs: An NRBV-Based Conceptual Framework on the Institutionalization of Sustainable Practices

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ABSTRACT

Purpose – This study examines how green innovation can be translated into a competitive advantage for micro, small and medium-sized enterprises (MSMEs) through the institutionalisation of sustainable practices. This study is motivated by the continuing conceptual overlap between green innovation and sustainable practices, as well as a tendency in the literature to describe the relationship between the two as one of influence or mediation without this always being supported by appropriate research designs.

Design/methodology/approach – The study employs a qualitative approach using library research. Data were obtained from scientific journal articles, academic books, and relevant publications from the period 2015–2026 that discuss green innovation, sustainable practices, competitive advantage, MSMEs, and the Natural-Resource-Based View (NRBV). The data were analysed using thematic analysis through identification, categorisation, comparison, and conceptual synthesis.

Findings/Results– The research findings indicate that green innovation acts as a catalyst for change, whilst sustainable practices serve to routinise and institutionalise that change. This process has the potential to build capabilities in pollution prevention, product stewardship and sustainable development, which in turn support cost efficiency, differentiation, reputation, learning and market access.

Originality/Value – This study presents a conceptual framework comprising green innovation, sustainable practices, environmental capabilities and competitive advantage. This framework clarifies the boundaries between these constructs and provides a basis for further empirical testing amongst Indonesian MSMEs.

ARTICLE INFO

Keywords:

Green Innovation,
Sustainable Practices,
Competitive
Dvantage,
MSMEs,
Natural Resource-
Based View (NRBV)

Article Information:

Received: 24/07/2026

Revise: 25/08/2026

Accepted: 10/09/2026

ISSN:

2985-3168 (Online)

2985-3222 (Print)

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1. Introduction

Environmental sustainability is increasingly becoming a key factor in the dynamics of business competition. Climate change, resource constraints, growing consumer awareness, environmental regulations and supply chain demands are driving businesses to adapt the way they produce and market their products. These changes are not limited to large companies, but also affect micro, small and medium-sized enterprises (MSMEs) (Ainil Mardiah dkk., 2025). For Indonesian MSMEs, the demands of sustainability present both challenges and opportunities. On the one hand, limitations in capital, technology, knowledge and human resources can hinder the adoption of more environmentally friendly innovations. On the other hand, the ability to make flexible changes to products and processes can serve as an asset for MSMEs in responding to market demands and building a competitive advantage.

In this context, green innovation is receiving increasing attention in management and sustainability studies. Environmental innovation can take the form of developing more environmentally friendly products, utilising more efficient technologies, modifying production processes, improving management systems, or developing business models that reduce ecological impacts. In this regard, environmental innovation in e-business involves the use of environmentally friendly technologies such as the Internet of Things (IoT), big data analytics and cloud computing to improve energy efficiency and reduce carbon emissions, as well as to enhance operational efficiency and reduce energy costs (Nabila dkk., 2025).

Various studies indicate that such innovations have the potential to deliver economic benefits through resource savings, waste reduction, improved product quality, differentiation and the enhancement of a company's reputation. According to a review, the government needs to create policies that support the development of innovation, improve access to resources, and increase support for research and development. Educational institutions need to prepare a workforce with the skills and knowledge to develop innovations (Al Aidhi dkk., 2023). However, the existence of green innovation does not in itself guarantee the creation of competitive advantage.

An innovation may require investment, adjustments to work processes, skills development, and changes in relationships with suppliers and consumers. Meanwhile, a more important issue is how such innovations can be integrated into organisational activities so that their benefits do not remain merely a temporary change. This issue becomes increasingly complex due to the blurred boundaries between the concepts of 'green innovation' and 'sustainable practices' in some of the literature. Various studies use activities such as energy efficiency, waste reduction, the use of environmentally friendly materials, emissions reduction, and clean production to explain these two concepts (Kautsar dkk., 2025). The use of the same indicators has the potential to lead to conceptual overlap. If the same activities are used to define both green innovation and sustainable practices, then the argument that innovation leads to sustainable practices becomes less robust from a theoretical perspective. Indeed, this relationship may be tautological, as the concept positioned as a mechanism or outcome has already been incorporated into the definition of the preceding concept.

This study considers that the two concepts need to be distinguished based on their functions and organisational processes. Green innovation is more appropriately understood as a change,

renewal, or the implementation of something new or significantly improved with an environmental orientation, whether in products, processes, managerial systems, or business models (Sari dkk., 2026). Meanwhile, sustainable practices are understood as routines, procedures and patterns of behaviour that are carried out consistently and have been integrated into the organisation's operations (Halawa dkk., 2025). Innovation, therefore, signifies change, whilst sustainable practice signifies the process of institutionalising that change. An energy-efficient technology, for example, constitutes an innovation when it replaces or improves upon a previous process. That technology becomes part of sustainable practice when its use is supported by operational procedures, maintenance, monitoring, training and evaluation carried out on an ongoing basis.

This distinction is important because it illustrates that the journey from innovation to competitive advantage is not an automatic process. Innovation provides the potential for change, but organisations must have the capacity to integrate and sustain that change. It is at this stage that the Natural-Resource-Based View (NRBV) becomes relevant. The NRBV expands upon the Resource-Based View by positioning the natural environment as a key context in the formation of a company's resources and strategic capabilities. This perspective outlines three main capability orientations: pollution prevention, product stewardship and sustainable development. These three provide the basis for understanding how environmental considerations can evolve from mere operational activities into organisational capabilities of strategic value.

Within this framework, green innovation can be seen as a catalyst for change, whilst sustainable practices are the processes that enable that change to become embedded within the organisation (Nurhabibah & Rosyalita, 2026). Successfully institutionalised innovation can help MSMEs build the capacity to prevent waste and pollution, develop products whilst taking into account their impact throughout their life cycle, and integrate sustainability into their long-term business strategy. These capabilities, in turn, have the potential to generate value through several mechanisms, including cost efficiency, product differentiation, reputation and legitimacy, organisational learning, and access to markets and supply chains that are increasingly focused on sustainability.

These issues highlight gaps that require attention. Firstly, a clearer understanding is still needed regarding the conceptual boundaries between green innovation and sustainable practices. Secondly, an explanation is required of the processes that enable environmental innovation to become organisational routines and capabilities. Thirdly, a synthesis is needed to link these processes to various forms of competitive advantage within the context of the resource constraints faced by SMEs. Fourthly, methodological rigour is required to ensure that the conclusions of the literature review do not go beyond the evidence available in the literature.

In light of these issues, this study poses three main questions. Firstly, what is the conceptual mechanism linking green innovation to competitive advantage in MSMEs? Secondly, how can green innovation be conceptually distinguished from sustainable practices? Thirdly, under what conditions can sustainable practices strengthen the process of translating environmental innovation into competitive advantage?

This study aims to conduct a conceptual synthesis of the literature on green innovation, sustainable practices, competitive advantage and NRBV to explain this process. Specifically, the study aims to clarify the conceptual boundaries between innovation and sustainable routines, identify mechanisms that can link environmental innovation to value creation, and formulate conceptual propositions that can be tested in subsequent empirical research.

The contribution of this research lies in developing an understanding that green innovation and sustainable practices are two interrelated but not identical processes. Innovation is positioned as a change that opens up possibilities for value creation, whilst sustainable practices constitute an institutionalisation process that enables such changes to develop into organisational capabilities. Through the NRBV perspective, this process can be understood through the development of capabilities in pollution prevention, product stewardship and sustainable development. This framework yields a conceptual pathway: green innovation → institutionalisation of sustainable practices → environmental capabilities → competitive advantage. This pathway is not a statistically proven mediation model, but rather a theoretical synthesis that provides a basis for future empirical testing.

2. Literature Review and Development of Conceptual Propositions

2.1 Green Innovation

Green innovation is a concept that has emerged from the intersection of innovation and sustainability. Secara umum, inovasi merujuk pada penerapan produk atau proses baru maupun yang ditingkatkan secara signifikan dan telah diimplementasikan dalam praktik organisasi (Manual, 2018).

Innovation essentially relates to the development or application of new or significantly improved products, processes, organisational methods or business models. When the focus of innovation is directed towards reducing environmental impact and improving resource efficiency, the concept evolves into green innovation. Thus, the key distinguishing feature of green innovation is not merely the presence of environmentally friendly activities, but the presence of elements of change, renewal and implementation that generate environmental value (Nurhabibah & Rosyalita, 2026).

In an organizational context, green innovation can encompass product innovation, process innovation, organizational innovation, and business model innovation. Product innovation may involve the development of products that utilize more environmentally friendly materials or have a lower environmental impact. Process innovation can take the form of adopting production technologies that are more efficient in their use of energy and raw materials, whereas organizational innovation may involve changes to management systems that integrate environmental objectives into corporate activities. Meanwhile, business model innovation can transform how a company creates, delivers, and captures value by incorporating sustainability considerations. This categorization aligns with the understanding of innovation as the implementation of new or significantly improved products or business processes, including changes to organizational processes and activities (Eurostat, 2018)). From an eco-innovation perspective, such changes take on an environmental dimension when directed towards reducing environmental pressure or improving resource-use efficiency (Rennings, 2000).

For SMEs, green innovation exhibits characteristics that differ from those of large enterprises. While resource constraints may limit the ability to invest in new technologies, relatively simple organizational structures and more flexible decision-making processes can create

opportunities for the incremental implementation of changes (Bos-Brouwers, 2010). Therefore, green innovation in SMEs does not always have to be high-tech investment. In fact, environmentally friendly innovation in SMEs can be realized through process improvements, increased resource efficiency, product development, and changes in organizational practices which can simultaneously support sustainability and value creation (Wibowo dkk., 2024). Changes in product design, reuse of materials, energy efficiency, reduction in material use, digitalization of processes, or changes in relationships with suppliers can also be forms of innovation when they result in significant changes compared to previous practices (OECD/Eurostat, 2018)

From the perspective of the Natural-Resource-Based View (NRBV), these various forms of innovation can be understood as part of the process of developing a firm's environmental-related resources and capabilities. Hart positions pollution prevention, product stewardship, and sustainable development as interconnected strategies for building competitive advantage through the firm's relationship with the natural environment (Hart, 1995). Subsequent literature indicates that firms need to update and align their capabilities to respond to regulatory, technological, and market demands related to sustainability (Demirel & Kesidou, 2019). Thus, in this study, green innovation is understood not as a standalone construct, but as a mechanism that can foster the development of environmental practices and capabilities, which in turn have the potential to support the competitive advantage of SMEs.

2.2 Institutionalization of Sustainable Practices

The institutionalization of sustainable practices refers to the process by which sustainability principles and actions—initially perhaps sporadic, experimental, or reactive to external pressures—gradually become a relatively stable part of an organization's structures, processes, routines, and decision-making. This concept must be distinguished from sustainable practices themselves. Sustainable practices refer to organizational actions related to resource efficiency, waste reduction, environmental management, the use of eco-friendly materials, or the development of more responsible production processes.

In contrast, institutionalization refers to the process of integrating and embedding these practices into the way the organization operates. Based on this distinction, this study does not treat institutionalization as a construct identical to sustainable practices, but rather as a process that explains how such practices gain durability, legitimacy, and consistency within the organization.

From an institutional perspective, sustainability becomes more robust when environmental values and practices are no longer viewed as peripheral activities outside the organization's core operations, but are instead accepted as part of the norms and the way the organization conducts business. Research indicates that the institutional perspective can be used to understand how the meaning of sustainability is constructed, disseminated, and translated within an organization (Jennings & Zandbergen, 1995). This process involves the formation of values, norms, and patterns of practice that increasingly establish sustainability as part of organizational expectations. Thus, institutionalization does not merely entail the existence of formal policies, certifications, or regulatory compliance; rather, it encompasses the process by which sustainability principles gain legitimacy and are translated into recurring organizational actions.

In an organizational context, the institutionalization of sustainable practices unfolds through the interaction of formal structures, operational practices, organizational values, and the day-to-day actions of organizational members. The institutional perspective asserts that

sustainability becomes part of an organization not merely when a company adopts formal policies or procedures, but when those ideas and practices gain legitimacy, are accepted as relevant, and evolve and diffuse into organizational activities. However, the mere existence of such structures does not automatically prove that sustainability has been institutionalized. There may well be a gap between what is formally established and what is actually implemented in practice. Therefore, institutionalization must be understood as a process of embedding—whereby sustainability principles are integrated into work systems, decision-making patterns, competencies, and the behaviors of organizational members.

This embedding process requires more than just the formulation of rules. Haugh and Talwar suggest that integrating sustainability across an organization is closely linked to processes of technical learning, learning-by-doing, and social learning (Haugh & Talwar, 2010). This means that organizational members must understand the rationale, procedures, and implications of sustainability practices so that these principles do not remain merely policies known only to management. In this context, the formation of environmental teams or designated leads, along with competency development, training, internal communication, monitoring systems, certification, evaluation, and feedback mechanisms, can serve as tools to transform sustainability from a formal policy into actual organizational practice.

Furthermore, the implementation of sustainability policies presupposes the understanding and engagement of organizational members, while the learning process serves as a vital means of integrating sustainability across various parts of the organization. The concept of routinization is crucial because organizational sustainability is determined not only by what a company declares but also by what it consistently does.

In the theory of organizational routines, Feldman and Pentland distinguish between the ostensive and performative aspects of routines. The ostensive aspect relates to the general pattern or structure of how an activity should be performed, whereas the performative aspect refers to the actual actions taken by individuals in specific situations. The relationship between the two demonstrates that routines not only generate stability but also create space for variation, learning, change, and the development of new practices (Feldman & Pentland, 2003). This perspective is crucial for sustainability because environmental practices established in formal procedures must be translated into concrete actions to become part of the organization's way of working. Consequently, routinization does not imply rigidity; rather, it signifies that practices follow a reasonably stable pattern while remaining adaptable to changing organizational and environmental conditions.

Based on this synthesis, the institutionalization of sustainability practices in this study encompasses at least four interconnected dimensions: formalization, routinization, internalization, and integration. Formalization refers to the existence of policies, procedures, standards, indicators, and the allocation of responsibilities that provide structure to sustainability practices. Routinization refers to the repeated application of practices within operational activities, ensuring they no longer rely entirely on ad-hoc decisions. Internalization refers to the extent to which sustainability values are understood and embraced by organizational members as part of their mindset and behavior. Meanwhile, integration refers to the extent to which sustainability considerations are linked to strategy, decision-making, resource allocation, product development, procurement, supplier relations, and core business processes. These four dimensions are not intended to represent sequential stages, but rather aspects that collectively indicate the depth to which sustainability practices are embedded within the organization.

This distinction is also vital for understanding the relationship between green innovation and environmental capabilities. Green innovation can lead to changes in products, processes, technologies, organizational methods, or business models, yet such changes do not automatically translate into organizational capabilities. An innovation may remain merely a project, experiment, or temporary response unless accompanied by learning, documentation, resource allocation, knowledge transfer, and the repetition of practices. Institutionalization acts as a process of reinforcement and integration, enabling these changes to evolve from temporary actions into more stable patterns of behavior. As new practices are repeatedly applied, evaluated, refined, and extended across various organizational activities, the company begins to accumulate the experience, knowledge, and coordination patterns that serve as the foundation for capability building. Feldman and Pentland's (2003) view of routines as sources of both stability and change reinforces the argument that established routines do not merely perpetuate practices but can also serve as sites for variation and organizational learning.

From the NRBV perspective, this process holds strategic significance because pollution prevention, product stewardship, and sustainable development cannot be sustained through sporadic environmental actions alone (Gita, 2023). These three orientations require the integration of environmental considerations into production processes, product management, relationships with stakeholders, as well as the strategic orientation of the organization. Thus, the institutionalization of sustainable practices can be positioned as a process that translates environmental orientation into relatively stable patterns of organizational action, while providing conditions for the accumulation of environmental knowledge, learning and capabilities. This position clarifies the relationship between the NRBV and the research's conceptual framework: the NRBV provides a strategic logic regarding why the environment can be a source of advantage, while institutionalization explains how this orientation can be embedded into the organization through structure, routines, learning, and integration.

However, institutionalization should not be understood as a completely linear process. Organizations can experience decoupling, which is a condition when formal structures or policies are in place but are not yet fully reflected in daily actions. On the other hand, informal practices can develop first before taking formal form in organizational policy. The institutional literature instead shows the importance of seeing the relationship between values, practices, structures and actors as an evolving process. This is very relevant for MSMEs because limited formal structures do not always indicate a low level of sustainability. MSMEs can have relatively strong environmental practices through owner knowledge, worker experience, operational habits, close relationships with suppliers, and informal learning even though they do not yet have a complex environmental management system.

Based on this synthesis, this research defines the institutionalization of sustainable practices as the process when sustainable practices gain legitimacy, are integrated into organizational structures and routines, are internalized by organizational members, and are maintained and developed through continuous learning, evaluation and adaptation. With this definition, institutionalization is not a "stage" that automatically occurs after green innovation, but rather an organizational process that can take place before, during, or after innovation. In the main conceptual line of research, institutionalization is placed after green innovation because research focuses on how innovation-generated changes can be translated into stable practices and further support the formation of environmental capabilities. However, theoretically the

relationship can be reciprocal: institutionalized environmental practices and capabilities can also create conditions that enable firms to generate new green innovations.

2.3 Environmental Capability

In this study, environmental capability is understood as an organization's ability to integrate resources, knowledge, technology, routines, and learning processes to consistently identify, respond to, and manage environmental issues, while simultaneously supporting the achievement of the company's strategic goals. Conceptually, this understanding is grounded in the logic of the Resource-Based View (RBV), which positions internal resources and capabilities as the foundation for creating competitive advantage when they possess strategic value and are difficult for competitors to imitate (Barney, 1991).

However, applying RBV logic to environmental issues requires broadening the perspective, as natural resources, ecological pressures, and sustainability demands are not merely external factors to which a company must respond. The Natural-Resource-Based View (NRBV) perspective frames the relationship between a firm and the natural environment as a source of both strategic challenges and opportunities to develop resources and capabilities that support competitive advantage. Accordingly, in this study, environmental capability is not positioned as a construct explicitly formulated by Hart, but rather as a conceptual construct developed from NRBV logic and enriched by literature on organizational capabilities, dynamic capabilities, organizational learning, and eco-innovation.

Within the NRBV framework, Hart outlines three key strategic orientations that link environmental concerns with corporate strategy: pollution prevention, product stewardship, and sustainable development (Hart, 1995). These three orientations cannot automatically be treated as empirical indicators of a high-level environmental capability construct. Instead, in this study, they are understood as NRBV-based strategic foundations that help explain the direction and substance of the conceptually developed environmental capability. Pollution prevention, for instance, reflects a firm's orientation toward reducing waste and emissions at the source; product stewardship extends environmental considerations across the product life cycle; while sustainable development guides firms to cultivate capabilities that enable economic value creation while simultaneously accounting for ecological sustainability.

Consequently, environmental capability in this study is not interpreted merely as regulatory compliance, but rather as an organizational ability that allows these strategic orientations to be translated into organizational resources, routines, processes, learning, and decision-making. This conceptual stance also underscores that the relationship between NRBV orientations and broader environmental capabilities remains a theoretical proposition requiring empirical validation in future research.

From a dynamic capabilities perspective, environmental capability is further understood as an evolving and adaptive ability. Firms contend with changing environmental regulations, technological advancements, shifting consumer preferences, stakeholder pressures, and ever-changing ecological conditions. Teece, Pisano, and Shuen define dynamic capabilities as a firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece et al., 1997). This perspective reinforces the argument that environmental capabilities should not be viewed as static or one-time organizational attributes. Rather, these capabilities evolve through a firm's ability to acquire environmental

knowledge, evaluate and adopt technologies, refine production processes, reallocate resources, and adjust strategies in response to changing environmental demands.

In the context of green innovation, such capabilities enable organizations not only to adopt more environmentally friendly technologies but also to identify ecological opportunities, combine diverse forms of knowledge, and transform organizational processes so that green innovation generates strategic value. Furthermore, the development of environmental capabilities is closely linked to organizational learning processes and the capacity to absorb external knowledge. Through the concept of "absorptive capacity," Cohen and Levinthal demonstrated that a firm's ability to recognize the value of external knowledge, assimilate it, and apply it for commercial purposes constitutes a vital source of innovation and organizational learning (Cohen & Levinthal, 1990). In an environmental context, this capacity enables a company to understand regulatory changes, developments in eco-friendly technology, consumer demands, stakeholder expectations, and evolving sustainability practices. The accumulated knowledge and experience can then assist the organization in identifying environmental opportunities, evaluating technological alternatives, developing solutions tailored to the company's specific characteristics, and improving operational routines.

Thus, environmental capabilities do not rely solely on tangible investments; they are also shaped by the accumulation of knowledge, experience, and learning, as well as the organization's ability to absorb and apply new knowledge. This learning dimension is crucial because an effective environmental response requires the ability to transform operational experiences and external information into organizational knowledge that can be leveraged for decision-making.

Literature on eco-innovation increasingly clarifies the link between organizational capabilities and the ability to generate environmental innovations. Demirel and Kesidou highlight the importance of sustainability-oriented capabilities in explaining a firm's capacity to produce eco-innovations. These capabilities enable firms to respond to regulatory pressures, technological advancements, and market demands by combining sustainability-oriented resources and knowledge. This perspective is significant for research as it helps distinguish environmental capabilities—viewed as an ability—from green innovation, which represents a form of change or an innovative outcome. Green innovation refers to the development or implementation of products, processes, methods, or practices that yield environmental improvements, whereas environmental capabilities refer to an organization's ability to iteratively and adaptively develop, integrate, and implement responses to environmental issues.

Given this distinction, the relationship between the two can be understood with greater nuance: green innovation can serve as a learning arena that strengthens organizational capabilities, while developing capabilities can enhance a firm's readiness to generate subsequent green innovations. This reciprocal relationship constitutes a conceptual proposition rather than a claim of a causally proven link within this study. Furthermore, this article views environmental capabilities as capacities that evolve through the institutionalization of sustainability practices. Practices such as waste reduction, energy efficiency, efficient material use, product life-cycle management, and upstream environmental impact control may initially emerge as discrete operational actions. However, when these

practices are consistently applied, supported by organizational structures and procedures, accompanied by learning mechanisms, and factored into strategic decision-making, they have the potential to evolve into more integrated organizational routines and capabilities.

Thus, the institutionalization of sustainability practices does not automatically prove the existence of environmental capabilities as an empirical construct; rather, it elucidates the conceptual mechanism by which environmental routines can develop into more systematic and inimitable organizational capabilities. Aragón-Correa and Sharma demonstrate that proactive environmental strategies must be understood in relation to both organizational capabilities and the environmental conditions facing the firm (Aragón-Correa & Sharma, 2003). Thus, the conceptual framework of this study positions environmental capability as a construct situated at the intersection of NRBV logic, dynamic capabilities, organizational learning, absorptive capacity, and sustainability practices.

Overall, this conceptual positioning establishes the NRBV as the primary foundation, while the RBV, dynamic capabilities, absorptive capacity, and eco-innovation literature serve to enrich the explanation of how environmental capabilities are formed and developed. Pollution prevention, product stewardship, and sustainable development—as outlined by Hart (1995)—are treated as strategic orientations providing a substantive basis for this conceptual construct, rather than as evidence that Hart had already established a high-level environmental capability construct. Within these conceptual boundaries, this study offers a theoretical synthesis of how resources, knowledge, routines, learning, and sustainability practices shape organizational capabilities in responding to environmental challenges. Empirical validation regarding the dimensions, indicators, and construct structure—as well as the relationships between environmental capability, green innovation, and competitive advantage—remains an agenda for future research.

2.4 Green Innovation and Competitive Advantage

Conceptually, green innovation refers to the innovation—whether new or significantly improved—of products, processes, technologies, organizational methods, or business models that deliver environmental benefits compared to existing alternatives (Subkiyanto & Romli, 2025). In the environmental innovation literature, the concept is not limited to the development of cleaner technologies, but also includes organizational and process changes that reduce pressure on the environment and increase the efficiency of resource use (Rennings, 2000). Meanwhile, competitive advantage refers to a company's ability to create greater economic value than its competitors through the utilization of valuable resources and capabilities.

From the perspective of the Resource-Based View (RBV), competitive advantage is not determined solely by the possession of resources, but by the company's ability to effectively combine, develop, and utilize them to generate value that is difficult to imitate. Furthermore, green innovation can serve as a source of value creation through several interconnected mechanisms.

First is cost efficiency, as technological changes and more environmentally friendly processes can reduce the consumption of energy, raw materials, and water, while also leading to a reduction in waste and environmental management costs (Pahrijal, 2023). Within the NRBV framework, this efficiency relates primarily to pollution prevention—specifically, efforts to prevent waste and emissions at the source while simultaneously enhancing operational efficiency (Hart, 1995). Second, product differentiation, as environmental characteristics can

provide added value to consumers and help companies distinguish their products from competitors, particularly as market demand for more sustainable products rises. Third, reputation and legitimacy, as consistency in integrating environmental considerations into products, processes, and stakeholder relationships can strengthen trust and the company's market position. These mechanisms align with the product stewardship orientation within the Natural Resource-Based View (NRBV), which extends environmental focus beyond internal processes to encompass the entire product life cycle and stakeholder relationships.

Fourth, the learning and development of organizational capabilities. The green innovation process requires companies to acquire new knowledge, develop technological competencies, transform work processes, and adapt to evolving regulations and market demands. This process can strengthen an organization's ability to identify opportunities, combine resources, and respond more effectively to environmental changes. According to Aragón-Correa and Sharma, a proactive environmental strategy can be understood through the development of organizational capabilities to navigate dynamic environmental conditions. Meanwhile, Demirel and Kesidou (2019) place greater emphasis on the importance of sustainability-oriented capabilities in responding to regulatory, technological, and market demands through environmental innovation.

However, these benefits are highly dependent on the organisation's ability to implement innovation. Innovation that is merely a temporary project may not yield a lasting competitive advantage. Conversely, when innovation becomes an integral part of the organisational system, its benefits can accumulate through experience, learning and the development of capabilities.

On the basis of this argument, this study does not claim that green innovation has been empirically proven to lead to competitive advantage. The literature is more appropriately synthesised to show that environmental innovation has the potential to be a source of advantage if supported by organisational processes that enable its benefits to be sustained (Septiyani, 2026).

Proposition 1: Green innovation has the potential to be a source of competitive advantage when organisations are able to integrate such innovation into their capabilities and organisational routines.

2.5 Institutionalising Sustainable Practices as a Conceptual Mechanism

The next issue is how environmental innovation translates into a competitive advantage. The organisational literature suggests that change does not automatically translate into capability. Change must be repeated, learnt, supported by organisational systems, and applied consistently (Arjunata, 2026). In the context of green innovation, this process can take place through the institutionalisation of sustainable practices. Innovation in production processes, for example, can lead to energy savings. However, these benefits are more likely to be sustained if companies establish energy monitoring procedures, operating standards, technology maintenance, staff training and regular evaluations. The same applies to product innovation. Environmentally friendly products can be a source of differentiation if companies consistently maintain the quality of materials, production processes, packaging and communication with consumers.

In this sense, sustainable practices can be understood as a conceptual mechanism, rather than a statistical mediator. The term refers to a process that can theoretically explain how environmental innovation is translated into strategic capabilities and value.

Proposition 2: The institutionalisation of sustainable practices can strengthen the process of translating green innovation into organisational capabilities of strategic value.

2.6 Sustainable Practices, NRBV, and Value Creation

Sustainable practices refer to a series of organizational activities and routines carried out repeatedly to integrate economic, environmental, and social considerations into business operations, thereby supporting the creation of sustainable value (Kholifatunnisa dkk., 2025). Such practices may encompass the efficient use of energy and raw materials, the reduction of waste and emissions, the use of more environmentally friendly materials, responsible resource management, the reduction of hazardous substances, and consideration of the social impacts of business activities. Thus, sustainable practices refer to an organization's operational actions, whereas the institutionalization of sustainable practices refers to the process by which these practices become embedded and integrated into the organization's systems. This distinction is important because the mere existence of a practice—such as waste reduction or energy efficiency—does not in itself indicate that the practice has become part of the organization's capabilities.

The institutionalization of sustainable practices occurs when practices—initially sporadic, driven by individual initiatives, or confined to specific operational activities—begin to be implemented consistently and are supported by structures, procedures, policies, defined responsibilities, oversight mechanisms, and organizational learning processes. Through this process, sustainable practices can evolve from mere operational actions into relatively stable organizational routines that are integrated into decision-making. In this context, institutionalization serves as a mechanism enabling the accumulation, dissemination, and reuse of experience and knowledge gained from implementing sustainable practices across various organizational activities. Therefore, the strategic focus of this research is not merely the existence of sustainable practices, but the extent to which they are institutionalized, thereby becoming an integral part of how the organization conducts and develops its business. From the perspective of the Natural Resource-Based View (NRBV), the institutionalization of sustainable practices can conceptually foster the development of various environmental strategic orientations.

First, when practices such as waste reduction, resource efficiency, and emission control are consistently implemented and integrated into operational procedures, an organization can strengthen its pollution prevention orientation. Under these conditions, environmental management ceases to be merely a reactive response to existing problems and instead becomes an integral part of production and resource management processes. Furthermore, efficient use of materials and energy offers the potential to generate cost savings, reduce waste, and enhance operational efficiency.

Second, the institutionalization of practices that integrate environmental considerations into product design, material selection, procurement, supply chain management, and supplier relationships can foster a product stewardship orientation. The focus extends beyond the finished product to encompass environmental impacts associated with raw materials, production processes, distribution, usage, and the product's end-of-life stage. Once these considerations are embedded in decision-making routines, the organization gains a stronger foundation for developing products that better align with environmental and market

demands. Conceptually, this supports differentiation and strengthens relationships with consumers, suppliers, and business partners.

Third, the long-term institutionalization of sustainable practices can shift the organization's focus from operational improvements toward a sustainable development orientation. At this stage, sustainability is no longer treated as an ancillary activity or a standalone project; instead, it becomes a factor in determining business direction, investment, innovation, product development, and organizational learning. This process enables the organization to cultivate a long-term perspective on the interplay between economic performance, environmental responsibility, and social needs. However, consistent with this study's conceptual stance, these three orientations are understood as strategic orientations within the Natural Resource-Based View (NRBV) framework, rather than as empirical evidence that the institutionalization of sustainable practices automatically yields high-level capabilities.

Thus, the relationships among sustainable practices, institutionalization, and capabilities need to be conceptually distinguished. Sustainable practices constitute forms of activity or routines carried out by an organization; institutionalization is the process that renders these practices consistent, structured, and embedded within the organization; whereas environmental capabilities are organizational abilities—derived from a combination of resources, knowledge, routines, experience, and learning—that enable the organization to respond to environmental issues in a repetitive and adaptive manner. This distinction prevents sustainable practices from being directly equated with capabilities. Instead, institutionalization is positioned as the conceptual mechanism explaining how repeatedly performed practices can contribute to the formation and strengthening of organizational capabilities.

Based on this argument, this study does not posit that every sustainable practice automatically yields environmental capabilities or competitive advantage. The strategic impact of such practices depends on the consistency of implementation, the depth of integration into organizational structures, managerial support, learning processes, and the organization's ability to transform operational experiences into reusable knowledge and routines. Consequently, the institutionalization of sustainable practices is positioned as a crucial mechanism within the research's conceptual framework, while its ultimate relationship with environmental capabilities and competitive advantage is understood as a proposition requiring testing and validation through empirical research.

Proposition 3: The institutionalization of sustainable practices can strengthen the formation and development of environmental capabilities by integrating these practices into organizational routines, structures, decision-making processes, and learning; this integration conceptually supports a pollution-prevention orientation, product stewardship, and sustainable development, as well as the creation of competitive advantage.

2.7 Conditions that Strengthen the Concept of Green Innovation

Various sources of literature do not indicate that green innovation always results in a competitive advantage under all circumstances (Mandasari & Oktapiani, 2025). The ability to translate innovation into value is influenced by factors both within and outside the organisation.

Firstly, managerial resources and capabilities determine the ability of SMEs to adopt and develop innovations. Limitations in capital, technology and expertise can hinder the institutionalisation process. According to a study, quantitative evidence shows that human

resource competence and product innovation have a positive impact on SME performance, based on a regression analysis of 83 respondents (Widodo dkk., 2024).

Secondly, organisational learning is necessary so that experiences gained from innovation can be developed into knowledge and established practices. Without a learning process, innovation may remain an activity separate from the organisational system. According to Winda, a learning-oriented organisational culture enhances creativity and adaptability, leading to sustainable innovation and competitive advantage (Fransiska, 2025).

Thirdly, market pressures and consumer preferences can enhance the strategic value of green innovation. Whilst it is true that green innovation does not have a significant impact on corporate value, environmental efficiency does have a positive influence; this suggests that structured efficiency can serve as a positive signal to stakeholders, who are likely to be influenced by market pressures and consumer preferences (Purnomo dkk., 2026). Products with sustainability characteristics are more likely to provide differentiation when consumers or business partners value those characteristics.

Fourthly, institutional support such as government policy, access to finance, training, technology and business networks can reduce the barriers faced by SMEs.

Fifthly, organisational consistency determines whether innovation can be sustained. Innovation that is not backed by procedures, evaluation and management commitment risks losing its benefits. Given these conditions, the relationship between green innovation and competitive advantage needs to be understood as a contextual one.

Proposition 4: The ability of green innovation to develop into a source of competitive advantage depends on the availability of resources, managerial capabilities, organisational learning, institutional support and market pressures.

2.8 Conceptual Synthesis

Based on the literature review, the conceptual relationship proposed by this study can be formulated as follows:

Green Innovation → Institutionalisation of Sustainable Practices → Environment-Based Capabilities → Competitive Advantage

This sequence illustrates that innovation is the starting point for change, but not the ultimate goal. Change must be institutionalised through sustainable practices in order to develop into capabilities. From the NRBV perspective, these capabilities are reflected in pollution prevention, product stewardship and sustainable development. Furthermore, these capabilities can generate value through cost efficiency, differentiation, reputation, learning, legitimacy and market access.

This framework also clarifies the study's position in relation to previous literature. The study does not treat sustainable practices as a statistically proven mediator, but rather as a conceptual mechanism that explains the process of translating innovation into capabilities and competitive advantage.

Overall, the literature review indicates that the key gap is no longer simply a question of whether green innovation is linked to competitive advantage, but rather how and under what conditions such innovation can be successfully transformed into organisational capabilities that generate value. This focus provides a stronger theoretical foundation for research into the sustainability of MSMEs, whilst avoiding overlap between green innovation and sustainable practices

3. Methodology

This study employs a qualitative approach with a structured literature review design to conceptually synthesize the mechanisms linking green innovation, sustainable practices, environmental capabilities, and competitive advantage within MSMEs. Rather than statistically testing causal relationships or variable influences, the study identifies patterns of argumentation, findings, and conceptual mechanisms within the literature, subsequently integrating them through the lens of the Natural-Resource-Based View (NRBV).

Research data were derived from secondary sources, including relevant scholarly journal articles, academic books, and institutional publications. The literature search was conducted between August 11 and 24, 2026, via Google Scholar using a combination of keywords and Boolean operators—such as "green innovation" AND "SMEs," "green innovation" AND "sustainable practices," "green innovation" AND "competitive advantage," "sustainable practices" AND "competitive advantage" AND "SMEs," and "natural-resource-based view" AND "green innovation." Priority was given to publications from 2015–2026, although older theoretical works were included if they served as foundational pillars for RBV, NRBV, innovation, and sustainability.

Literature selection was based on inclusion criteria comprising substantive relevance to the research focus, source credibility, clarity of argumentation, and the adequacy of conceptual or empirical information. Sources that were irrelevant, duplicates, lacked sufficient information, or merely mentioned the research concepts peripherally were excluded. The selection process involved examining titles, abstracts, keywords, and full texts. The number of sources at each stage—identification, duplicate removal, screening, exclusion, and final selection—was recorded to ensure the transparency and traceability of the review process.

Analysis was conducted through concept identification, thematic categorization, comparison of findings, relationship mapping, and theoretical synthesis. Particular attention is paid to product and process innovation, resource efficiency, sustainability practices, environmental capabilities, cost efficiency, differentiation, reputation, organizational learning, and market access. The findings are then synthesized using the Natural Resource-Based View (NRBV) perspective to explain the pattern of relationships: green innovation → sustainable practices → environmental capabilities → competitive advantage. Each conceptual relationship is examined based on supporting literature. The framework represents a theoretical proposition derived from a literature synthesis rather than a statistically tested mediation model. This study does not employ primary data, regression analysis, structural equation modeling (SEM), meta-analysis, or formal mediation testing.

4. Result and Discussion

4.1 Mechanisms Linking Green Innovation to Competitive Advantage in MSMEs

Green innovation in the context of MSMEs can be understood as a process of change or renewal in products, production processes, technology, management systems or business models, aimed at reducing environmental impact whilst enhancing the organisation's value. Such innovation may take the form of more efficient use of raw materials, reduction of production waste, more energy-efficient practices, the development of environmentally friendly products, or changes to management systems that support sustainability. For example, a programme that empowers batik SMEs through training on natural dyes and wastewater treatment, resulting in increased sales and reduced pollution.

The literature suggests that green innovation has the potential to contribute to competitive advantage through several mechanisms. However, this relationship should not be understood as direct or automatic. The mere existence of environmental innovation does not in itself indicate that an organisation has achieved a competitive advantage. The strategic value of innovation depends on an organisation's ability to implement, integrate and sustain that innovation within its business activities. According to Wijaya, to win the competition and create a competitive advantage, companies must be able to understand how to manage the various resources at their disposal (Marpaung & Setiana, 2024). Therefore, the mechanism linking the two is more accurately understood as a process of transformation from innovation towards organisational capability and value creation.

The first stage in this process is innovation as a catalyst for change. When MSMEs introduce more energy-efficient production methods or develop products using more environmentally friendly materials, the organisation undergoes changes in its use of resources and work processes. Changes in resource use can be seen in the replacement of kerosene stoves with electric ones and of firewood with gas (Windrianto dkk., 2016). At the outset of this stage, innovation still takes the form of changes that require testing and adjustment. Its success is heavily influenced by the organisation's ability to provide resources, manage change, and adapt the innovation to internal and external conditions.

The second stage involves embedding innovation as a sustainable practice. Innovations that are successfully implemented on a consistent basis can become part of the organisation's routine (Amwa & Aslami, 2022). For example, an innovation involving the use of raw materials that reduce waste can develop into procurement and production procedures that are implemented on an ongoing basis. This process is important because the benefits of innovation are determined not only by its novelty, but also by the organisation's ability to sustain those changes.

The third stage is the development of environmental capabilities. As sustainable practices are repeatedly implemented, the organisation gains new experience, knowledge and skills. From the perspective of the Natural-Resource-Based View (NRBV), these capabilities can develop into areas such as pollution prevention, product stewardship and sustainable development (Lubis, 2023). Environmental capabilities enable organisations not only to respond to environmental issues, but also to develop more effective ways of managing environmental resources and opportunities.

These capabilities can, in turn, generate various forms of strategic value. One such benefit is cost efficiency. More efficient use of energy and raw materials can help reduce waste. Reducing waste can also cut costs arising from the unproductive use of resources. For SMEs, this kind of efficiency is crucial, as limited capital and resources make cost control a vital part of business sustainability.

The next mechanism is product differentiation. Products with environmentally friendly characteristics can offer added value if consumers value sustainability (Mardikaningsih & Aisyah, 2025). In such circumstances, green innovation can help MSMEs offer products with characteristics that set them apart from their competitors. However, environmental differentiation must be combined with quality, price, functionality and other attributes

relevant to market needs. In addition to efficiency and differentiation, green innovation can bolster an organisation's reputation and legitimacy. Consistent environmental practices can strengthen the trust of consumers and stakeholders (Fathurohman dkk., 2025). For MSMEs, close relationships with consumers and the community can make reputation a key asset. However, reputation can only be a source of value if it is underpinned by tangible and consistent practices.

Another mechanism is organisational learning. The process of implementing innovation enables MSMEs to acquire new knowledge regarding technology, resources, production, consumers and environmental management (Adiguna dkk., 2024). Such knowledge can enhance an organisation's ability to make improvements and respond to change. Thus, the benefits of innovation lie not only in the resulting products or processes, but also in the organisational capabilities developed through experience.

Based on this synthesis, the mechanism by which green innovation leads to competitive advantage can be formulated as follows: green innovation process → institutionalisation of sustainable practices → development of environmental capabilities → value creation → competitive advantage. This sequence is not a statistically tested mediation model, but rather a conceptual framework that explains possible mechanisms based on a synthesis of the literature.

Table 1. Conceptual Mechanism of Green Innovation Leading to Competitive Advantage

Stage	Focus	Organisational Process	Potential Value	Strategic
<i>Green innovation</i>	Product/process changes	Introduction of environmental solutions	New features and improvements	
Implementation	Innovation implementation	Adjustment of resources and work processes	Initial efficiency	
Institutionalization	Innovation routinization	Integration into organizational activities	Consistency of practice	
Learning	Knowledge accumulation	Evaluation and improvement	Competence enhancement	
Environmental capabilities	Organizational capability	Pollution prevention, product stewardship, sustainable development	Strategic capability	
Value creation	Capability utilization	Efficiency, differentiation, reputation, market access	Economic and strategic value	
Competitive advantage	Relative advantage	Sustainable utilization	value	Competitive position

4.2 Conceptual Distinction between Green Innovation and Sustainable Practices

Distinguishing between green innovation and sustainable practices is crucial for understanding the mechanisms behind creating competitive advantage. The two terms are often used in close association because they both relate to an organization's environmental orientation. However, conceptually, they have different focuses. Green innovation primarily emphasizes change, renewal, and novelty, whereas sustainable practices emphasize consistency, routines, and the integration of environmental actions into organizational activities (Azkiya, 2025).

Green innovation can encompass the development of new, more environmentally friendly products, changes in production processes to reduce waste, the use of more efficient technologies, innovations in environmental management systems, or the development of business models that prioritize sustainability. A key element of this concept is the presence of change relative to the status quo. Thus, green innovation demonstrates an organization's capacity to generate or adopt new methods for addressing environmental issues.

In contrast, sustainable practices are patterns of action consistently implemented within an organization's activities. These practices may include energy conservation, waste reduction, material sorting and reuse, responsible raw material sourcing, efficient resource management, and the implementation of sustainability-oriented work procedures. Such practices do not necessarily require an element of novelty; an action qualifies as a sustainable practice once it has become part of the organization's routine, even if it is no longer new.

The primary distinction lies in novelty: green innovation entails an element of change or renewal, whereas sustainable practices emphasize the consistent implementation and maintenance of actions. For instance, when an MSME discovers a new method to reduce water usage during production, that method can be categorized as "green innovation." When the method subsequently becomes a standard operating procedure applied on a daily basis, the activity evolves into a sustainable practice.

A second distinction relates to the function within organizational processes. Green innovation acts as a catalyst for change, whereas sustainable practices serve to maintain and institutionalize that change. While innovation introduces new methods, sustainable practices ensure that these methods do not remain mere experiments. Consequently, the presence of sustainable practices can indicate that an innovation has begun to be integrated into the organization's activities.

A third distinction lies in the time dimension. Innovations may emerge as projects, technological changes, product developments, or responses to specific issues. Sustainable practices have a longer-term orientation because they require consistency. When an innovation is implemented repeatedly and becomes an organizational procedure, a process of routinization occurs, enabling the organization to gain experience and knowledge.

A fourth distinction concerns the relationship with organizational capabilities. Green innovation can generate change but does not necessarily yield stable capabilities. Conversely, consistently implemented practices allow an organization to accumulate experience and develop capabilities. From the perspective of the Natural Resource-Based View (NRBV), this process is crucial because environmental capabilities are formed through a combination of

resources, knowledge, routines, and organizational learning. The literature indicates that the Resource-Based View (RBV) regards competitive advantage as the outcome of managing internal resources and capabilities, encompassing both tangible and intangible assets.

This distinction is also crucial for avoiding construct overlap in research. If green innovation and sustainable practices are defined as identical, it becomes difficult to explain how innovation evolves into a capability. Therefore, this study positions green innovation as an environmentally oriented change or renewal, whereas sustainable practices are viewed as patterns of environmental action that are consistently and integrally implemented.

Given this distinction, the relationship between the two can be understood as a dynamic process. Green innovation does not automatically result in sustainable practices; it requires management support, resources, implementation capabilities, learning, and alignment with business processes. When these conditions are met, the innovation is more likely to become routinized and institutionalized. Conversely, resource constraints or weak organizational support may cause the innovation to stall as merely a project or experiment.

Sustainable practices can subsequently serve as the foundation for developing environmental capabilities. Consistent routines enable an organization to improve efficiency, develop knowledge, and enhance its ability to respond to environmental demands. At this stage, the organization moves beyond merely possessing an innovation to acquiring the capability to manage environmental issues systematically. Thus, green innovation and sustainable practices should be positioned as distinct yet interconnected concepts. Green innovation addresses the question of what changes the organization introduces, while sustainable practices explain how those changes are sustained and integrated into organizational routines.

Table 2. Conceptual Distinction between Green Innovation and Sustainable Practices

Dimension	Green Innovation	Sustainable Practices
Definition	Environmentally oriented change or renewal	Environmentally conscious actions performed consistently
Focus	Novelty and change	Consistency and routinization
Function	Triggering change	Sustaining change

4.3 Conditions Strengthening the Translation of Green Innovation into Competitive Advantage

Green innovation holds the potential to serve as a source of competitive advantage; however, realizing this potential depends heavily on organizational conditions and the business environment. Consequently, this study does not view sustainable practices as an automatic outcome of environmental innovation. Instead, sustainable practices are understood as organizational processes capable of strengthening an organization's ability to sustain, develop, and leverage the benefits of such innovation.

The first condition is management support. Implementing environmental innovation requires organizational decision-making and the setting of priorities. The role of owners or managers is often decisive in shaping the business's direction. Entrepreneurial spirit and business risk management significantly influence innovation decisions within MSMEs. (Fatkhurahman

dkk., 2025). When sustainability is integrated into business strategy, environmental innovation is more likely to secure the necessary attention and resources. Conversely, if innovation is viewed merely as an ancillary activity, its implementation may prove short-lived.

The second condition is resource availability. Implementing innovation requires capital, technology, knowledge, manpower, and time. Resource constraints are a key factor to consider in the context of MSMEs; therefore, the ability to select innovations that align with organizational capacity is crucial. Innovations that do not match available resources can drive up costs without yielding commensurate benefits.

The third condition is implementation capability. Innovative ideas must be translated into operational actions. This requires the ability to modify work procedures, develop employee competencies, manage technology, and integrate changes into business activities. Thus, the success of an innovation depends not only on the quality of the idea but also on the organization's ability to implement it.

The fourth condition is organizational learning. Implementing environmental innovation generates experience that can be used to refine processes. MSMEs can learn how to reduce resource consumption, manage waste, improve product quality, and understand consumer responses. Consistent learning strengthens the organization's capacity to develop future innovations.

The fifth condition is the routinization of sustainable practices. Innovations that are not routinized struggle to yield long-term benefits. Conversely, when environmental practices become part of organizational procedures, the benefits of innovation are more easily sustained. Routinization also reduces reliance on specific individuals, as the practices become embedded in the work system.

The sixth condition is market orientation. Competitive advantage relies on value recognized by the market. Therefore, environmental innovation is more likely to deliver benefits if it aligns with consumer needs and preferences. Eco-friendly products, for instance, can offer differentiation if consumers consider environmental attributes in their purchasing decisions. However, these attributes must still be accompanied by competitive product quality, pricing, and functionality.

The seventh condition involves external pressures and opportunities. Regulations, consumer demands, suppliers, business partners, and technological advancements can drive MSMEs to develop environmental practices. Such external pressures can trigger change, while market opportunities can provide incentives to sustain innovation.

The eighth condition is the integration of sustainability with business strategy. Environmental practices are more likely to generate competitive advantage when linked to an organization's economic objectives. Energy reduction, for instance, holds strategic value when it yields cost efficiencies. The use of eco-friendly materials can create value by enhancing product appeal and expanding market reach. Thus, sustainability needs to be integrated with value creation rather than positioned as an activity separate from the business.

From the NRBV perspective, this condition enables companies to develop environmental capabilities—specifically pollution prevention, product stewardship, and sustainable development—that serve as the foundation for sustainable value creation. These capabilities

demonstrate that the organization has moved beyond mere innovation toward a more systematic approach to environmental management. Pollution prevention entails the reduction of waste and emissions starting at the production stage (Baso, 2026). Product stewardship extends environmental considerations to the product life cycle. Meanwhile, sustainable development concerns an organization's ability to integrate sustainability with long-term business opportunities.

These capabilities can contribute to various forms of strategic value. First, resource-use efficiency can support cost control. Second, a product's environmental characteristics can support differentiation. Third, consistent practices can strengthen reputation and legitimacy. Fourth, the experience and knowledge gained can enhance organizational learning. Fifth, the ability to meet environmental demands can open up opportunities for market access or specific business relationships.

Table 3. Conditions Strengthening the Translation of Green Innovation into Competitive Advantage

Reinforcing Conditions	Functions	Reinforced Mechanism	Potential Outcome
Management support	Providing direction and priorities	Innovation integration	Strategic consistency
Resources	Supplying capital, technology, and human resources	Innovation implementation	Implementation effectiveness
Implementation capability	Translating innovation into action	Institutionalization	Sustainable practices
Organizational learning	Generating knowledge and experience	Innovation improvement	Environmental capabilities
Routinization	Turning innovation into standard procedure	Change maintenance	Benefit sustainability
Market orientation	Aligning innovation with consumer needs	Value creation	Differentiation
External pressure	Driving organizational response	Capability development	Legitimacy and adaptation
Strategy integration	Linking the environment with business goals	Capability utilization	Efficiency and economic value
Consistency	Sustaining implementation over the long term	Experience accumulation	More sustainable advantage

5. Conclusion and Suggestion

5.1 Conclusion

This study affirms that the relationship between green innovation and competitive advantage in MSMEs is a capability-based process rather than an automatic causal link. Green innovation refers to the renewal of products, processes, organizational systems, or business models that yield environmental benefits, whereas sustainable practices refer to the routinization and institutionalization of these changes within organizational activities. This distinction avoids construct overlap and clarifies the respective roles of each in value creation.

From the perspective of the Natural Resource-Based View (NRBV), sustainable practices can serve as a mechanism that converts environmental innovation into organizational capabilities—specifically pollution prevention, product stewardship, and sustainable development. These capabilities have the potential to generate value through resource efficiency, cost reduction, differentiation, reputation, organizational learning, and market access. Thus, the strategic advantage of green innovation lies not merely in novelty, but in the organization's ability to institutionalize innovation into capabilities that are valuable and difficult to imitate.

The theoretical contribution of this study lies in developing an NRBV framework that links environmental innovation, the institutionalization of sustainable practices, environmental capabilities, and competitive advantage. The study also explicitly distinguishes between conceptual mechanisms and statistical mediation. As it relies on library research, the study makes no claims regarding empirically proven mediation effects. This stance ensures consistency among the research design, literature-based evidence, and the scope of theoretical claims.

In practical terms, the findings indicate that MSMEs need not initiate their sustainability transformation through large-scale technology investments. Raw material and energy efficiency, waste reduction, product design, supplier management, and improvements to work procedures can serve as starting points. However, economic value is more likely to be realized when these changes are supported by standardization, learning, evaluation, and managerial commitment. Consequently, sustainability strategies should shift from mere innovation adoption toward the establishment of routines and capabilities that drive efficiency, differentiation, and market opportunities.

This study is subject to limitations, as it is based on library research and does not test the proposed mechanisms using firm-level data. No meta-analysis, regression, structural equation modeling, or mediation testing was conducted. Consequently, the findings are not intended as universal proof that green innovation invariably yields a competitive advantage. Generalizations drawn from this study are theoretical and contextual in nature, particularly given the diversity among MSMEs regarding sector, size, technology, location, and managerial capacity.

Future research should empirically test this framework using firm-level data, including longitudinal studies to assess the sustainability of innovation benefits. Cross-comparisons—spanning sectors, regions, business sizes, digitalization levels, and market characteristics—are also necessary to identify the conditions that either reinforce or hinder this process. Furthermore, measurement instruments need to clearly distinguish between green innovation (characterized by novelty and change) and sustainable practices (characterized by routinization and institutionalization). Such a distinction would strengthen construct validity

and enable more precise analysis of how environmental innovation is transformed into MSME capabilities and competitive advantage.

5.2 Suggestion

Future research should empirically test the framework of green innovation → institutionalization of sustainable practices → environmental capabilities → competitive advantage among MSMEs using firm-level data. Such testing requires indicators that clearly distinguish green innovation—characterized by novelty and change—from sustainable practices—characterized by routinization and institutionalization—to avoid construct overlap. Longitudinal and cross-sector comparative studies are also needed to identify the organizational, market, and institutional conditions that either facilitate or hinder the conversion of environmental innovation into competitive advantage.

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