

## Article

# Do Environmental Strategy and Awareness Improve Firms' Environmental and Financial Performance? The Role of Competitive Advantage

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**Abstract:** Drawing upon the natural-resource-based view (NRBV), this study assesses the role of environmental strategy (ENS) and environmental awareness (ENA) in enhancing firms' environmental and financial performance. Additionally, we hypothesize a mediating role of firms' competitive advantage among these associations. We analyze several hypothesized relationships using survey data from 240 Bangladeshi manufacturing SMEs. The partial least squares structural equation modeling (PLS-SEM) findings suggest that environmental strategy strongly affects organizational competitive advantage and environmental performance. We also observe that environmental awareness substantially affects competitive advantage and environmental and financial performance. Finally, our statistical findings reveal that competitive advantage mediates the linkage between ENS and ENP as well as ENA and ENP. However, ENS was found to have an insignificant effect on firms' financial performance. These crucial findings extend the NRBV, ENS, and ENA literature. Our research provides managers of manufacturing organizations and policymakers with a valuable model for managing environmental strategy and environmental awareness to enhance environmental and financial performance. It may assist manufacturing SME managers in strengthening their internal resources, such as ENS and ENA, to improve their competitive advantage and organizational outcomes.

**Keywords:** environmental strategy; environmental awareness; environmental performance; natural-resource-based view; Bangladeshi SMEs

**Citation:** Tan, K.; Siddik, A.B.; Sobhani, F.A.; Hamayun, M.; Masukujjaman, M. Do Environmental Strategy and Awareness Improve Firms' Environmental and Financial Performance? The Role of Competitive Advantage. *Sustainability* **2022**, *14*, 10600. <https://doi.org/10.3390/su141710600>

Academic Editor: Alina Badulescu

Received: 24 July 2022

Accepted: 22 August 2022

Published: 25 August 2022

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## 1. Introduction

The discourse on environmental sustainability stresses worldwide environmental challenges requiring immediate remedies [1–3]. Since excessive industrial activities lead to ecological imbalance [4,5], the effect of business strategies and practices on the environment has garnered growing social attention [6,7]. Increasing environmental concerns, including climate change and depletion of natural resources, have prompted businesses to reduce their influence on the natural environment [5]. Climate change is currently the most pressing issue on a worldwide scale, with Bangladesh being the most susceptible [8–11]. Bangladesh will incur substantial losses if the current situation persists, and it is projected that the annual loss will amount to 2% and 9.4% of the country's gross domestic

product (GDP) by 2050 and 2100, respectively, even though Bangladesh is liable for less than 0.35% of global carbon emissions [12]. Thus, businesses, particularly SMEs, have a pivotal role in attaining sustainable development goals by enhancing environmental practices. Prior research has demonstrated that SMEs are unaware of ecological legislation and reluctant to embrace eco-friendly production and environmental conservation [13]. Today, however, the situation has altered for manufacturing SMEs, as they rely heavily on formal credit from banks and other financial institutions. According to the Central Bank's guidelines, these SMEs must implement environmental and social risk management (ESRM) to secure a bank loan [14].

Given that businesses are fundamental economic units and play a vital role in economic growth and environmental degradation, it is crucial to analyze the influence of business strategy on environmental performance (ENP) and financial performance (FP). Considering the importance of business strategy in a firm's performance, Kong et al. [15] argued that businesses should modify their operational processes to incorporate environmental sustainability. Given the rising depletion of natural resources, ecological degradation, and pressures from consumers, vendors, and other stakeholders, firms are adopting environmental strategies (ENS) [16,17]. ENS are the environmental objectives, procedures, and practices that go beyond merely adhering to environmental laws and regulations [17]. Companies adopting ENS can better foresee future ecological challenges, explore new prospects, and deal with societal issues more efficiently [18]. They are more likely to lessen their environmental impact, while attaining superior financial results [5,19]. Recent studies reported that firms' ENS could substantially enhance their green innovations [16,20], corporate sustainability development [21], and overall organizational performance [5,17]. In a similar vein, this study contends that firms' environmental strategy can positively impact their environmental and financial performance.

Firms' environmental awareness (ENA) has been documented to be pivotal in driving sustainable competitive advantage and firm performance in the firm-level ENA literature [22,23]. Businesses must increase environmental awareness to give employees a lasting understanding of the organization's environmental-management strategy, environmental policy, and ecological ramifications [24]. Organizations need to supply all employees with the information necessary to identify environmental concerns and circumstances, make the proper decisions, and take the relevant actions, in addition to their core job responsibilities [25]. ENA promotion necessitates an in-depth comprehension of environmental concerns, which is an effective means of enhancing environmental behaviors and sustainable performance [26]. The prior literature has established that environmental awareness positively relates to green competitive advantage [22]. Managers' environmental awareness and enterprises' environmental strategy jointly affect environmental protection and overall organizational performance [27]. An organization's green conduct may suffer without green environmental awareness among its business managers. Firms' ENA is crucial for implementing circular economy practices and sustainable operations [28]. Zameer et al. [29] noted a research gap and urged studies on the emergence of ENA and the subsequent evolution of businesses in implementing energy-efficient and environmental strategies for improving performance. Previously, most of the research has focused on the environmental awareness of customers [30]. In the firm-level ENA context, just a few studies have been conducted, and their emphasis has been on techniques to foster environmental consciousness among managers [31]. Academic study on translating ENA into ENP through corporate strategy is sparse. Moreover, corporate environmental concern is crucial to a company's and society's sustainable growth [29].

Prior research has highlighted the role of ENS in enhancing a business's environmental and financial performance [4,5,17,32]. Nonetheless, some contradictory findings also exist in the literature [33]. Scholars have provided several explanations for this discrepancy, such as the characterization of environmental strategy [18], the exclusion of critical mediating factors [34], and the moderating functions of conditions [5]. However, this scholarly discrepancy is problematic. It is crucial for management scholars to determine

if the impacts of different ENS on a company's competitiveness and performance stem from various resource requirements and endowments. In addition, practitioners must be aware of the intervening factors needed to execute an environmental strategy successfully. Otherwise, such techniques are likely to affect an organization's performance negatively. We contend that the competitive advantage of firms mediates the linkages between ENS and ENP, ENS and FP, ENA and ENP, and ENA and FP. Furthermore, it should be highlighted that studies on the effects of environmental strategies are limited to a few distinct contexts. Scholars have mainly focused on several industries, including the hotel sector [35], IT sector [36], logistic services [17], and the wine industry [37]. However, there is a dearth of studies assessing the impacts of ENS and ENA on SME manufacturers, indicating the need for additional research that considers the context of the manufacturing industry. Manufacturing companies in Bangladesh are now taking corporate environmental and social responsibility into account, while making decisions and taking action [38]. Moreover, Masud et al. [9] and Bae et al. [8] argue that local regulation (CSR rules, green finance standards, money-laundering laws, and environmental risk-assessment rules) and international CSR standards have had a significant impact on Bangladeshi manufacturing firms to enhance ecological management practices. In addition, the SME policy and the Bangladesh bank have enacted several environmental laws to facilitate SME access to formal credit [14].

In addition, most prior research has focused on enterprises in developed and Western nations, which have differing managerial attitudes and cultural and legal contexts compared to developing and Eastern nations [39]. Despite several scholarly efforts to demonstrate the advantages of ENS and ENA, there is a paucity of empirical findings from emerging economies [39,40]. For instance, Ryszko [41] studied the effect of ENS on firms' operational and financial performance in 292 firms operating in Poland. Leonidou [6] studied 216 Vietnamese firms to assess the effect of environmental strategies on firms' competitive advantage and performance. Similarly, Laguir et al. [17] investigated the role of ENS and green practices on the ENP and FP of 232 logistic service providers in France. Only a few studies have assessed the critical functions of ENS and ENA on organizational performance in the emerging economy context [5,23,42].

The center of this research is the question, "do environmental strategy and environmental awareness affect organizational performance?" We dissect the variation across two critical organizational performance indicators to answer this question. Consequently, our study question may be put more precisely as follows: do environmental strategy and awareness individually and collectively contribute to firms' environmental and financial performance? In addition, by investigating the mediating function of businesses' competitive advantage, we address the following issue: does competitive advantage mediate the relationship between environmental strategy and firm performance, as well as the relationship between environmental awareness and firm performance? Our study adds to the emerging literature on ENS and ENA in multiple ways by addressing these questions. We used the NRBV theory as a theoretical lens to explore the interplays between ENS and firms' ENP and FP and the associations between ENA and ENP and FP. Hence, our investigation of the complex linkages between these variables and the role of firms' competitive advantage extends the extant knowledge body.

## 2. Theoretical Framework and Hypotheses Development

### 2.1. Natural Resource Based View

The resource-based view (RBV) of the firm [43] implies that a company's competitive advantage is a product of its essential resources. The core tenet of the RBV is that a company's resources that are deemed valuable, scarce, unique, and non-replaceable can generate a competitive advantage [43,44]. Despite the significance of the RBV in describing how a company's resources and skills produce competitive advantage, the NRBV [45] has

recently developed as an extension of the RBV. Hart (1995) introduced the “natural-resource-based view of firms” (NRBV) to elucidate the effect of organizational skills on a company’s environmental strategy, drawing on concepts from the resource-based approach. The NRBV highlights the necessity for businesses to enhance their competitive edge by addressing the constraints given by the natural environment. Hart (1995) asserts that businesses may achieve a competitive edge by being environmentally proactive.

Through the lens of NRBV, the ability of businesses to handle difficulties related to the natural environment may generate scarce and unique organizational resources and capabilities, hence boosting competitive advantage and performance [46]. According to NRBV research, organizations with robust organizational capacities are more likely to embrace an environmental strategy (ENS). NRBV described three interconnected aspects of ENS: pollution prevention, product stewardship, and clean technology [47]. Instead of depending on traditional end-of-pipe strategies to manage emissions and wastage, pollution prevention emphasizes attaining zero emissions and waste material by eliminating contaminants from manufacturing processes. Consequently, it delivers cost savings through improved utilization of inputs, simplification of procedures, reduction in regulatory costs, negative repercussions of noncompliance, and environmental incidents [17,21]. Product stewardship expands the scope of pollution avoidance by integrating environmental considerations into the design and manufacturing of products [47]. Clean technology, a further step toward sustainability, is contingent on radical breakthroughs to reorient energy consumption and innovate new industrial technologies [5,17].

Since the mid-1990s, when Hart (1995) introduced their seminal NRBV theory, a growing number of environmental scholars examining environmental performance have concentrated on the firm’s internal features [21]. Drawing upon the NRBV, this study suggests that managers’ ENA is another key internal component for enterprises to ensure competitive advantage and firm performance. Incorporating this critical organizational aspect into the research would enhance comprehension of the boundary conditions involved with the effective transition of environmental motivations into environmental strategies and, ultimately, positive organizational outcomes.

## 2.2. Environmental Strategy

Businesses have several strategic alternatives to reduce the harmful consequences of business operations on the environment [39]. Environmental strategies not only aid businesses in addressing corporate social responsibility but also in gaining a competitive edge, market presence, and financial success [48]. With green initiatives, firms establish and embrace environmental objectives and strategies via employee programs for continuous learning. The objectives and strategies of a firm incorporate innovation in emission reduction, social responsibility, and competitive edge [16]. Buysse and Verbeke [49] categorize ENSs as those that strive to avoid and safeguard the environment via stakeholder management. ENSs are environmental conservation techniques that businesses use to impact employee behavior through management role models and by incorporating environmental concerns into company strategies [50].

However, corporations have diverse environmental strategy options throughout the breadth and depth of environmental awareness areas [51]. The environmental strategy’s breadth is the variety of environmental issues it addresses, while its depth is the degree to which businesses respond to environmental requirements [39]. Formerly, strategy scholars characterized the breadth and depth of environmental strategies by various techniques corresponding to varying degrees of proactivity. Henriques and Sadorsky [52] classified the environmental strategies of businesses as reactive, defensive, adaptive, and proactive. Buysse and Verbeke [49] categorize ENS as “reactive, pollution prevention, and environmental leadership”.

Lee and Rhee [51] categorized four environmental strategies as “reactive, focused, opportunistic, and proactive”. Despite these diverse categorizations, environmental strat-

egies range from reactive to proactive, depending on the level of commitment to environmental concerns [39,41]. Reactive environmental strategies (RENS), for example, are standard solutions for enterprises with few required changes to achieve compliance. In contrast, proactive environmental strategies (PENS) are employed by businesses that willingly undertake environmental measures to reduce their adverse impact on the natural environment [39]. Since it is widely believed that ENS considerably reduces the detrimental effects of human activity on the environment, researchers have made tremendous efforts to comprehend how ENS affects performance [5,17,21]. Given that ENS offers environmental safety measures to assist enterprises in their strategic planning [5], the literature has also investigated whether or not applying ENS results in competitive advantage [16,39,47].

### 2.3. Environmental Awareness

Corporate ENA has emerged as a prominent research field in attaining environmental sustainability [29,53]. ENA is the set of concepts concerning the relationship between humans and the environment, and it is a precondition for developing and applying the concept of environmental preservation [54]. ENA is also the comprehension of environmental practices [55] and the recognition of the costs and benefits of environmental concerns [56]. Many scholars argue that corporate managers with ENA have an active support system and an open and informed mindset [23]. It facilitates the integration of information resources and knowledge absorption to support green innovation and actively promotes the development and employment of environmental strategies [27]. As the decision-makers and decision-implementers of businesses, managers' ENA may impact the environmental-management practices used in their organizations, and managers' ENA can facilitate the transition of environmental practices into firms' sustainability performance [54]. A highly ecologically conscious management team views mitigating negative environmental consequences as an element of corporate responsibility and upgrading industrial technology as the principal mechanism by which the firm lessens its environmental damage [57]. Consequently, a company with a high ENA is expected to be more proactive on environmental concerns (e.g., ecological norms and legislation) and to propose new solutions for developing green innovation activities. In contrast, a company with a low ENA is perceived to be environmentally passive or reactive [58]. The definitions of our study's constructs are presented in Table 1.

**Table 1.** Definition of constructs.

Constructs	Definitions
Environmental Strategy	A collection of efforts that can lessen the effects of operations on the environment through goods, procedures, and business policies, such as lowering waste and emissions, utilizing green and sustainable assets, and implementing an environmental-management system [19].
Environmental Awareness	The collection of ideas regarding the relationship between human beings and the earth, which is a prerequisite for acquiring the idea of environmental protection and implementing it [54].
Competitive Advantage	A company's capacity to produce significantly greater economic value than its marginal rivals by generating "greater net benefits, through superior differentiation and/or lower costs" [59].
Environmental Performance	It relates to the ability of production plants to mitigate emissions and waste, besides the ability to reduce the consumption of toxic/harmful materials and chemicals in a supply chain [60,61].
Financial Performance	Financial performance refers to a firm's profitability [62], and it frequently uses indicators such as profit margin, shareholder value, efficient cash flow, and sales revenue [39].

## 2.4. Development of Hypotheses

### 2.4.1. Environmental Strategy and Performance

Environmental strategies are a collection of efforts that can lessen the effects of operations on the environment through goods, procedures, and business policies, such as lowering waste and emissions, utilizing green and sustainable assets, and implementing an environmental-management system [19]. ENS refers to managing the interaction between enterprise and the natural environment [63]. A proactive corporate ENS contains environmental objectives, visions, strategies, and procedures that go beyond fundamental adherence to environmental legislation to mitigate adverse environmental consequences [18]. As per the NRBV, a company with a proactive ENS may effectively utilize its tangible and intangible resources, resulting in a decreased environmental threat, enhanced performance, and a more substantial competitive advantage [64]. Prior research has shown the contribution of a proactive and reactive ENS in enhancing a company's environmental performance [4,19,34].

ENS approaches can influence enterprises' pollution control actions to minimize waste, energy consumption, and material usage at the source, enhancing ENP [41]. In addition, a strong ENS orientation denotes a readiness to rethink goods, practices, and even business strategies, to lower the environmental footprint over the whole operational lifespan and value chain [65]. Furthermore, ENS orientations may guide product stewardship and guarantee product differentiation, while operational procedures are modified to lessen environmental impact [17]. Most businesses concentrate on critical ENS concerns such as eco-efficiency, pollution control, innovation, and corporate social responsibility [34]. Often, firms' strategic efforts for a sustainable environment are inadequate for developing a strategy that can effectively address social and environmental concerns [46]. The environmental performance will reflect how a firm executes its environmental strategy, and the environmental performance evaluation process demonstrates the significance of a proactive corporate environmental strategy [32,34].

The environmental sustainability literature often distinguishes between businesses that only attempt to achieve minimal legal–environmental criteria and those that undertake more proactive environmental policies (see [66]). Prior NRBV scholars argue that organizations' proactive engagement in pollution-prevention operations can gain competitively functional capabilities in resolving the performance disparity between PENS and RENS [21]. These capabilities primarily consist of organizations' continual innovations [62] and, as a result, an expanded capacity to service an ever-increasing number of environmentally sensitive consumers as well as an improved corporate reputation [17,66].

According to Aragón-Correa and Sharma [63], a PENS is a dynamic capability that enables businesses to align their strategies with a volatile, unpredictable, and complicated business environment. Ryszko [67] argues that ENS substantially impacts technological eco-innovation, resulting in superior firm performance. A proactive ENS may assist businesses in reducing production expenses, possible liability, product return expenses, and legal expenditures, etc. [39]. Banerjee [68] states that businesses are incentivized to embrace a proactive environmental strategy, since it reduces expenses by enhancing operations, lowering waste and energy consumption, and employing recyclable resources. However, there is limited evidence in the literature on the effect of ENS on organizational ENP and FP in the emerging economy context. Gunarathne et al. [42] assess the impact of environmental-management strategy on business performance, while ignoring the ENP of Sri Lankan firms. Similarly, Adomako et al. [5] investigate the role of ENS in improving firms' financial performance, by drawing a sample from 266 SMEs in Ghana; however, they ignore the ENP of these SMEs. Hence, our study extends the literature by examining the effect of ENS on firms' ENP and FP in an emerging economy, Bangladesh. Based on these arguments, we hypothesize that:

**Hypothesis 1a (H1a).** *Environmental strategy positively affects firms' environmental performance.*

**Hypothesis 1b (H1b).** *Environmental strategy positively affects firms' financial performance.*

#### 2.4.2. Environmental Strategy and Competitive Advantage

Several scholars employing the NRBV framework analyzed the connections between ENS and competitive advantages [35,47]. A proponent of this approach argues that an ENS might provide cost and differentiation competitive advantages by lowering emissions, promoting resource productivity and creativity, and offering social legitimacy and brand value [35]. Peteraf and Barney [59] define competitive advantage as the capacity of a company to produce significantly greater economic value than its marginal rivals by generating “greater net benefits, through superior differentiation and/or lower costs”. Porter (1985, p. 18) [69] argues that “achieving cost leadership and differentiation are usually inconsistent because differentiation is usually costly”. However, Hill [70] states that organizations might need to execute cost leadership and differentiation strategies concurrently to attain a sustainable competitive advantage. Do and Nguyen [39] contend that organizations implementing a proactive environmental approach can gain both a low-cost and differentiation competitive edge. In addition, a cost–benefit can be achieved by avoiding the adverse effects of noncompliance and ecological hazards, savings through regulatory incentives, fewer environmental audits, and lower insurance payments [71]. Moreover, ENS can generate eco-friendly goods and, therefore, give a differentiation advantage by providing access to unexplored markets [47]; enhancing customer retention, loyalty, and brand equity; and promoting more vital social credibility [72].

Although the empirical research on the linkage between ENS and competitive advantage, which is mostly based on economics, stresses external forces such as legislation, researchers still have a limited grasp of the organizational processes that relate the implementation of ENS to competitive advantage [73]. This shortcoming may result in incorrectly constructed models disregarding such organizational structures' impact on ENS and competitive advantage [74]. According to Delmas et al. [73], the development of competitive advantage from ENS is mainly driven by the company's absorption capability. ENS contributes to developing a positive image and a reliable reputation for environmental stewardship and their performance, enhancing market competitiveness [66]. Furthermore, organizations following a proactive ENS frequently get environmental certifications, eco-labels, or green recognitions such as ISO14001, which enable them to distinguish themselves in their respective markets [75]. Hence, we posit that:

**Hypothesis 2 (H2).** *Environmental strategy positively affects firms' competitive advantage.*

#### 2.4.3. Environmental Awareness and Performance

Executives' awareness of environmental issues is critical for making decisions in ecologically sensitive sectors. Appropriate comprehension exposes channels for filtering all available information and enables leaders to make the best decisions for the firm's benefit [58]. Encouragement from the organization's top management significantly influences the willingness to adopt sustainable initiatives [53]. Indeed, ENA among managers is one of the essential aspects that might affect an organization's commitment to environmental sustainability [57]. Qi et al. [76] analyzed the effects of managerial concern on the adoption of green innovation in the Chinese construction sector and found that ENA is the most important determinant of green innovation adoption. Xue et al. [58] argued that ENA on the part of managers may stimulate green innovation, which, in turn, enhances firm performance. Some studies, e.g., [77], have found that socially conscientious organizations and their employees demonstrate ENA by taking steps to mitigate the negative consequences of commercial operations on the environment. Research reveals that ENA cultivates a culture of focusing on pro-environment initiatives and eliminating entities

that lead to environmental deterioration, hence enhancing environmental performance [22,28,29].

The rising attention on business investment in green technology and environmental-management systems is correlated with increased ENP improvement across businesses [78]. In addition to enhancing information openness, tactics, and charity, ENA can ultimately minimize corporate risk [79]. Striving for sustainable business by lowering resource usage, ENA results in operational efficiency, increased stock prices, better environmental reputation, possible cost savings from potential legal expenditures, increases in incentives, an expansion of the consumer and investor base that cares about the environment, and, ultimately, superior economic performance and competitive advantage [53,56,79]. Thus, we hypothesize that:

**Hypothesis 3a (H3a).** *Environmental awareness positively affects firms' environmental performance.*

**Hypothesis 3b (H3b).** *Environmental awareness positively affects firms' financial performance.*

#### 2.4.4. Environmental Awareness and Competitive Advantage

Environmental-management researchers have long held the view that a company's strategic approach to environmental issues will be enhanced by an increase in environmental awareness [80]. Moreover, these investigations have demonstrated that ENA has a good effect on environmental performance. However, there are very few research examining the relationship between environmental consciousness and competitiveness [23]. The organization's ecological concerns contribute to the formalization of principles and standards for ethical behavior, which influences its ecological performance and competitive advantage [81]. Firms with a greater extent of ENA minimize potential problems associated with environmental preservation actions and simultaneously enhance their corporate image [82]. Implementing environmental strategies and practices offers a competitive advantage to environmentally conscious SMEs that bear the expenses of environmental stewardship and improvement [83]. Utilizing insights from the NRBV, we propose that ENA is an intangible ecological resource that can be leveraged to minimize the environmental consequences of firms and improve their green competitive advantage. Therefore, this study argues that:

**Hypothesis 4 (H4).** *Environmental awareness positively affects firms' competitive advantage.*

#### 2.4.5. Competitive Advantage and Performance

In a discussion regarding sustained competitive advantage from three decades ago, Coyne [84] posed the topic of whether competitive advantage affects company performance. He observed that the sustainable competitive advantage established by companies results in higher performance but argued that this is not the sole element that determines firm performance. A considerable amount of empirical research has since demonstrated the favorable relationship between competitive advantages and firm performance [39,85,86]. The extant literature defines competitive advantage as "a firm's ability to create relatively more economic value than a targeted group of competitors. This ability exists in two forms, namely differentiation advantage, and cost advantage" (Ong et al. 2018, p. 388). Differentiation advantage refers to the benefit of increased economic value generation through a product or service that purchasers perceive as having a greater value [69,85]. Cost advantage, on the other hand, relies on creating goods and services at substantially reduced business costs [87]. Newbert [88] emphasized that while a competitive advantage may be viewed as the economic value provided by the execution of a business's strategy, organizational performance is the economic value gained by the exploitation of this advantage.



However, there is an inconsistency in findings, primarily due to contextual differences. For instance, Wahyuni et al. [89] report that the competitive advantage of firms is an insignificant predictor of financial performance in Indonesian real-estate firms. Drawing a sample from Chinese manufacturing firms, Duanmu et al. [90] contend that cost leadership strategy can attenuate firms' environmental performance in a highly competitive market. Firms expressly embracing a cost-leading competitive strategy in this sort of hypercompetitive market would suffer intense pressure on their manufacturing costs to preserve their leading position, preventing them from achieving superior environmental performance compared to their rivals [90]. Our research adds to the literature by proposing that competitive advantages obtained from ENS and ENA improve not just product performance but also managerial, operational, environmental, and financial performance. Thus, we posit that:

**Hypothesis 5a (H5a).** *Competitive advantage positively affects firms' environmental performance.*

**Hypothesis 5b (H5b).** *Competitive advantage positively affects firms' financial performance.*

#### 2.4.6. Environmental Strategy, Competitive Advantage, and Performance

Prior study has emphasized the significance of ENS in improving the environmental and financial performance of a company [4,5,17,32]. However, the literature contains inconsistent findings [33]. Scholars have offered a variety of explanations for this inconsistency, including the characterization of environmental strategy [18], the omission of crucial mediating elements [34], and the moderating effects of variables [5]. This study posits that firms' competitive advantage plays a mediating role in translating ENS into ENP and FP. The competitive advantage resulting from ENS is essential for superior performance, since it enables businesses to continually enhance current capabilities and integrate new ones, hence adapting to dynamic environments [91]. The NRBV suggests that it is envisaged that proactive environmental practices that contribute to the development of strategic resources and competencies that provide strong economic returns would favorably affect firm profitability [45]. Thus, we hypothesize that:

**Hypothesis 6 (H6).** *Competitive advantage mediates the association between environmental strategy and firms' environmental performance.*

**Hypothesis 7 (H7).** *Competitive advantage mediates the association between environmental strategy and firms' financial performance.*

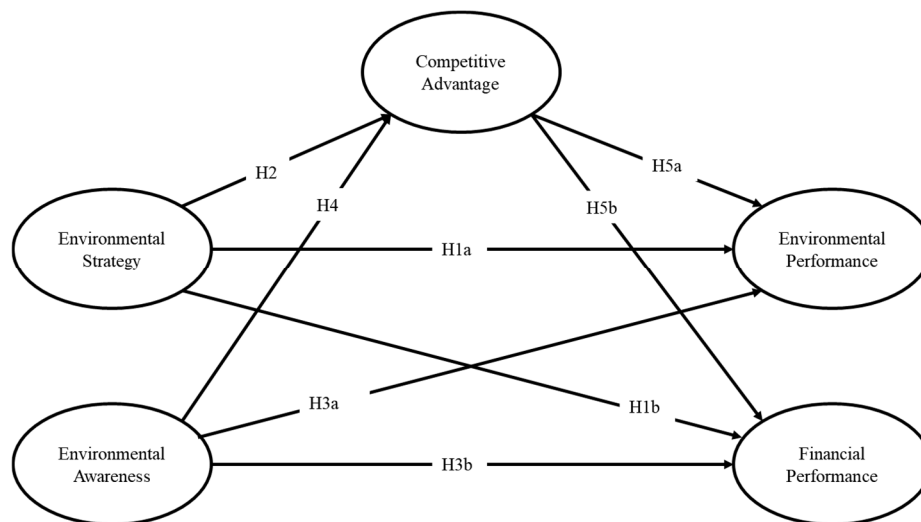
#### 2.4.7. Environmental Awareness, Competitive Advantage, and Performance

Numerous studies have reported that SME managers are conscious of their businesses' environmental consequences [56,92]. However, empirical research relating awareness to environmental performance has shown contradictory results. [93] observed no correlation between positive environmental concerns and environmental performance. Gadenne et al. [56] similarly found a disparity between the attitudes of small business owners and their environmental actions. Conversely, Naffziger et al. [92] reported that managers with a high level of ENA devote more resources and time to environmental projects than those with a low level of ENA. This discrepancy in findings could result from the existence of mediating factors in the interplay between ENA and firm performance. Drawing upon the extant literature, we argue that firms' ENA drives sustainable competitive advantage [94], which in return enhances firms' ENP [39,86] and FP [85]. Hence, we posit that:

**Hypothesis 8 (H8).** *Competitive advantage mediates the association between environmental awareness and firms' environmental performance.*

**Hypothesis 9 (H9).** *Competitive advantage mediates the association between environmental awareness and firms' financial performance.*

The proposed conceptual model is presented in Figure 1.



**Figure 1.** Conceptual model.

### 3. Research Methods

#### 3.1. Sample and Data

To assess the proposed hypotheses, the authors surveyed Bangladeshi manufacturing SMEs. We chose these SMEs because they operate in a competitive setting in which strategic approaches such as ENS and ENA are essential for enhancing competitive advantage and performance. Three large districts of Bangladesh, namely Dhaka, Chittagong, and Rajshahi, were chosen to obtain the data. These three districts were selected as they include 71% of Bangladesh's SMEs: Dhaka (38%), Rajshahi (18%), and Chittagong (15%) [95]. Moreover, we have selected Bangladesh as an empirical study setting for various reasons [96]. Firstly, SMEs are the backbone of Bangladesh's economy, employing 7.8 million individuals directly and aiding 31.2 million more [97]. These SMEs make for around 25% of the nation's GDP and have the potential to contribute much more.

Moreover, Bangladesh, as a developing nation, is making substantial progress toward achieving the UN Sustainable Development Goals (SDGs) [98], which has facilitated the growth of several businesses, particularly SMEs. However, vulnerable SMEs in Bangladesh suffered the brunt of the COVID-19 pandemic [99]. Many companies ceased operations permanently, while others suffered financial losses. Moreover, Bangladeshi SMEs are still reluctant to adopt green practices and comply with environmental regulations. However, the situation is improving gradually, since international organizations are now funding SMEs for implementing environmental practices. Previously, a number of development organizations provided funding to Bangladesh's large garment manufacturing industry for investment in workplace safety, green manufacturing practices, and environmental compliance [100]. Currently, several international organizations are aiding Bangladeshi SMEs for green and inclusive business. For instance, Agence Française de Développement (AFD) has provided EUR 50 m for green SME investment in Bangladesh [100]. The World Bank's Sustainable Enterprise Project (SEP) is directly supporting 40,000 Bangladeshi SMEs to promote green growth initiatives and to diversify their portfolios to incorporate environmental protection, waste and emission reduction, and improved workplace safety [101]. Thus, it is crucial to analyze how Bangladeshi SMEs might implement sustainable and environmentally friendly business practices to maintain a vibrant business climate at home and abroad.

To gather information on the impact of ENS and ENA on the ENP and FP of Bangladeshi manufacturing SMEs, we developed a self-administered questionnaire. To ensure the validity of the survey questionnaires, they were pretested by two scholars and five manufacturing industry managers. The authors made modest revisions to the survey questions based on the pilot survey results. We obtained the survey data from SME managers who thoroughly understood their firms' procedures and performances. The survey was sent to 400 SMEs, with a cover letter explaining the study's aims and underlining that participation was voluntary. Furthermore, participants were notified that their responses would be kept strictly confidential and utilized exclusively for academic study. Following a reminder, 240 complete and usable surveys were returned, giving a response rate of 60%. This study's data were collected between September 2021 and January 2022. Males comprised 79.3% of the respondents, while females comprised 20.7%. Most respondents had been with their company for at least one year and held their current/most recent managerial role for at least one year (72%). Most managers (84%) were between the ages of 25 and 50 and had completed post-secondary education (68%). In total, 61% of enterprises serviced consumers directly, 12% served other businesses, and 27% served both consumers and organizations directly. The questionnaire addressed four firm-age groups: 3 years (11%), 3–5 years (29%), 6–10 years (33%), and >10 years (27%). Aside from these characteristics, 24% of businesses employed less than 50 employees, 62% employed between 51 and 100 people, and 14% employed more than 100 workers (Table 2).

**Table 2.** Demographic profiles of the respondents.

Variables	Categories	Frequency	Percentage
Gender	Male	190	79.30%
	Female	50	20.70%
Managerial Experience	At least 1 year	173	72.00%
	Less than 1 year	67	28.00%
Age	25 to 50 years	202	84.00%
	Above 50 years	38	16.00%
Highest level of education	Post-secondary	163	68.00%
	Secondary or lower	77	32.00%
Firm Type	B2C	146	61.00%
	B2B	29	12.00%
	Hybrid	65	27.00%
Firm Age	3 years or less	26	11.00%
	3 to 5 years	70	29.00%
	6 to 10 years	79	33.00%
	More than 10 years	65	27.00%
No. of Staff	Less than 50	58	24.00%
	51–100	149	62.00%
	More than 100	34	14.00%

### 3.2. Measures

We assessed the proposed model's hypotheses using several questionnaire items, and all the indicators were extracted from previous studies. Several items were also adjusted to meet the setting of the research. The variables in Table 1 were derived from prior research and consisted of 26 items measuring ENS, ENA, competitive advantage, ENP, and FP. The questionnaire items reflect the ENS, ENA, CA, ENP, and FP constructs. The measuring items for this study were derived from the relevant academic literature. The environmental strategy of corporations was measured using eight items derived from prior research [68,102]. The measurements were used to determine whether the firms included environmental concerns in their strategic planning, produced goods with minimal

environmental impact, and linked environmental objectives with organizational objectives, among other things (Table 3). We adopted 5 items from Lillemo [103] and Zameer et al. [29] to measure the environmental awareness construct. The competitive advantage of the firms was measured by utilizing 5 items from the study conducted by [104,105]. Finally, we measured firms' environmental performance with 4 items from Sajan et al. [106] and financial performance with 4 items from Agyabeng-Mensah et al. [107]. Excluding the demographic section, all survey items were scored on a 5-point Likert scale, with 1 representing "strongly disagree" and 5 representing "strongly agree". Participants were questioned about their gender, age, degree of education, and years of experience, among other demographic characteristics.

**Table 3.** Measurement items.

Variable	Code	Items	Source
Environmental Strategy	ENS1	Our firm has integrated environmental issues into our strategic planning process.	Kraus [102]; Banerjee [68]
	ENS2	In our firm, 'quality' includes reducing our environmental impact.	
	ENS3	At our firm, we link environmental objectives with our other corporate goals.	
	ENS4	Our firm is engaged in developing products and processes that minimize environmental impact.	
	ENS5	Environmental issues are always considered when we develop new products.	
	ENS6	We emphasize the environmental aspects of our products and services in our ads.	
	ENS7	Our marketing strategies for our products and services have been influenced by environmental concerns.	
	ENS8	In our firm, product-market decisions are always influenced by environmental concerns.	
Environmental Awareness	ENA1	We must reduce energy consumption to solve climate problems.	Lillemo [103]; Zameer et al. [29]
	ENA2	We are very concerned about climate change.	
	ENA3	We have a personal responsibility to help to solve environmental problems.	
	ENA4	Everyone should do whatever they can to protect the environment.	
	ENA5	We buy environmentally friendly products if possible.	
Competitive Advantage	CA1	The quality of the company's products or services is better than that of the competitor's products or services.	Azeem [104]; Papadas [105]
	CA2	We make great efforts in building a firm brand name.	
	CA3	Manufacturing costs are lower than those of our competitors.	
	CA4	The company has better managerial capability than the competitors.	
	CA5	The company's profitability is better than the competitors.	
Environmental Performance	ENP1	Reduction in environmental business wastage.	Sajan et al. [106]
	ENP2	Reduction in emission/unit of production.	
	ENP3	Reduction in material usage.	
	ENP4	Reduction in energy/ fuel usage.	
Financial Performance	FP1	Profit margin.	Agyabeng-Mensah [107]
	FP2	Return on investment.	
	FP3	Sales.	
	FP4	Reduced environmental fines and charges.	

### 3.3. Data Analysis Techniques

This research evaluated the hypotheses using partial least squares path modeling (PLS-SEM). This method is particularly appropriate to this model, since it allows for the estimate of several complicated structural relationships between the variables and examines their mediating effect. In addition, PLS-SEM does not need a large sample size to generate reliable findings [108]. The model was created from a causal perspective [109], and the PLS-SEM analysis was conducted using SmartPLS 3.3.3 software. This analysis comprises a variety of statistical tools for elucidating the complicated relationships between one or more predictor factors and one or more dependent variables [110]. Using a bootstrap approach with 10,000 subsamples, these assumptions were examined. The SEM produces a measurement model and a structural model. The measurement model identified the linkages between measurable and latent variables, whereas the structural model explored the interactions between latent variables. Since random errors had been calculated and eliminated, only the overall variance remained. Several divergent and convergent validity metrics were used to evaluate the structural model parameters' validity. Additional statistical analysis was undertaken to determine whether the study might involve a common method bias. Harman's single-factor testing was performed in line with the guidance of Podsakoff et al. [111], and the results revealed that an exploratory factor analysis integrating all variables yielded a single factor accounting for 40.35% of the variance, which is below the threshold of 50%. Therefore, no common method bias was observed. The results of the study are detailed below.

## 4. Results

### 4.1. Descriptive Results

The descriptive analysis of the latent constructs presented in Table 4 shows that the mean scores of ENS, ENA, CA, ENP, and FP were 3.458, 3.648, 3.418, 3.793 and 3.841, respectively. As per [112], the skewness and kurtosis values were both lower than the thresholds of  $\pm 3$  and  $\pm 10$ , respectively. The correlation analysis indicated a maximum correlation value of 0.707 between the latent constructs, suggesting the absence of multicollinearity [113]. Thus, the lack of multicollinearity issue indicates that the model is suitable for further statistical analysis. The sample adequacy was confirmed by the KMO value of 0.913, which exceeded the minimum acceptable level of 0.5 for the factoring value [114].

**Table 4.** Descriptive statistics and correlation analysis.

	Mean	SD	Skewness	Kurtosis	1	2	3	4	5
1. Environmental Strategy	3.458	0.64	0.659	−0.222	1				
2. Environmental Awareness	3.648	0.786	0.114	−0.912	0.667	1			
3. Competitive Advantage	3.418	0.707	0.501	−0.562	0.553	0.618	1		
4. Environmental Performance	3.793	0.867	−0.081	−1.356	0.610	0.707	0.605	1	
5. Financial Performance	3.841	0.754	−0.267	−0.896	0.229	0.242	0.139	0.134	1

### 4.2. Measurement Model

As per Bagozzi et al. [115], analyzing a model's reliability and validity is vital for relating the theoretical underpinning to statistically linked measures. For this approach, Cronbach's alpha (CA) and Composite Reliability (CR) are used to examine the internal consistency or reliability of an indicator, while average variance extracted (AVE) scores are used to check convergent validity. Convergent validity is the condition by which two construct elements are statistically related [116]. The minimal requirement for both reliability tests, i.e., CA and CR, is 0.7, whereas AVE must exceed 0.5 [109]. Table 5 demonstrates that our model has substantial internal consistency and convergent validity because the values of CA and CR for all variables are higher than 0.70, and the values of AVE are higher than 0.50.

**Table 5.** Summary results of measurement model.

Constructs	Items	Factor Loading	CA	CR	AVE
Environmental Strategy	ENS1	0.690	0.866	0.895	0.515
	ENS2	0.727			
	ENS3	0.715			
	ENS4	0.721			
	ENS5	0.749			
	ENS6	0.716			
	ENS7	0.719			
	ENS8	0.703			
Environmental Awareness	ENA1	0.809	0.861	0.9	0.642
	ENA2	0.817			
	ENA3	0.793			
	ENA4	0.796			
	ENA5	0.790			
Competitive Advantage	CA1	0.627	0.775	0.842	0.518
	CA2	0.830			
	CA3	0.757			
	CA4	0.681			
	CA5	0.686			
Environmental Performance	ENP1	0.753	0.854	0.902	0.698
	ENP2	0.858			
	ENP3	0.872			
	ENP4	0.855			
Financial Performance	FP1	0.729	0.783	0.856	0.599
	FP2	0.763			
	FP3	0.726			
	FP4	0.870			

Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) = 0.913; Bartlett’s test of sphericity =  $p < 0.000$

Note: CA = Cronbach’s alpha, CR = composite reliability, AVE = average variance extracted.

In addition to convergent validity, which demonstrates the empirical association between theoretically related items, discriminant validity (DV) demonstrates the degree to which theoretically distinct constructs are empirically distinct. Using the Fornell–Larcker and heterotrait–monotrait correlation ratio (HTMT) criterion, the DV of our constructs was calculated. Concerning the first criteria, the square root of the AVE for each construct was determined. To get an appropriate DV, the diagonal elements in the corresponding rows and columns must be larger than the off-diagonal components [117]. As seen in Table 6, this criterion pertains to all measurement model constructs.

**Table 6.** Fornell–Larcker criterion.

	ENA	CA	ENP	ENS	FP
ENA	<i>0.801</i>				
CA	0.618	<i>0.72</i>			
ENP	0.707	0.605	<i>0.836</i>		
ENS	0.667	0.553	0.61	<i>0.718</i>	
FP	0.242	0.139	0.134	0.229	<i>0.774</i>

Note: Values in italics represent square root of AVE.

DV is cross-checked by the HTMT ratio, and our evaluation demonstrated that the model had a strong DV, since the HTMT ratios of the constructs given in Table 7 are

smaller than the 0.85 thresholds proposed by Henseler et al. [118]. The largest HTMT value reported was 0.82, supporting the DV of the constructs. Overall, our model's variables revealed high reliability and validity.

**Table 7.** HTMT criterion.

	ENA	CA	ENP	ENS
CA	0.702			
ENP	0.822	0.684		
ENS	0.771	0.635	0.708	
FP	0.276	0.162	0.151	0.262

Variance inflation factors (VIF) were conducted to evaluate the issue of collinearity. Khan and Yu [60] suggested that VIF in PLS-Smart can eliminate the concern of common method variance (CMV) without difficulty. Table 8 illustrates that every value is less than 3.3, indicating no collinearity issue with the model. A higher than 3.3 value indicates excessive collinearity, which suggests that the predicted model has a common method variance. All the values are below 3.3; thus, it is apparent that there is no general method bias in the predicted model.

Table 9 reports the constructs' predictive significance, revealing the predictive power of the model's explanatory variables.  $R^2$  and  $Q^2$  are two predictive power indices; according to Cohen [119],  $R^2$  must be greater than 0.26 to be substantial. The  $R^2$  values of CA and ENP are 0.417 and 0.565, respectively, suggesting the strong predictive ability of the constructs. With an  $R^2$  score of 0.068, the FP construct indicates less predictive potential. Furthermore, the  $Q^2$  value demonstrates the predictive significance of the endogenous elements, with a value greater than 0 reflecting their predictive significance. The results also suggested that the predictive significance of the variables in this study is significant (CA  $Q^2 = 0.196$ , ENP  $Q^2 = 0.387$ , and FP  $Q^2 = 0.031$ ). In addition, the model fit was tested using the PLS-SEM SRMR. The model fits quite well, evidenced by the obtained SRMR coefficient of 0.069, below the maximum limit of 0.10.

**Table 8.** Variance inflation factor (VIF).

	CA	ENP	FP
ENA	1.802	2.148	2.148
CA		1.716	1.716
ENS	1.802	1.912	1.912

**Table 9.** Predictive relevance of the model.

	$R^2$	$Q^2 (=1 - SSE/SSO)$
CA	0.417	0.196
ENP	0.565	0.387
FP	0.068	0.031

#### 4.3. Structural Model

After developing the measurement model, the following step is to evaluate the structural model and test the hypothesis. The analysis employed PLS-SEM, which performed a bootstrapping resampling procedure with 2000 subsamples. Figure 2 and Table 10 exhibit the outcomes of the hypothesis testing.

The results indicate that 8 of the model's 12 hypothesized relationships are significant. Table 8 illustrates that the ENS significantly impacts enterprises' environmental performance; hence, H1a is supported. The coefficients indicate that a 1% change in ENS will result in a 0.191% increase in ENP. ENS positively affects a firm's competitive advantage,

since a 1% rise in ENS would enhance the firm's competitive advantage by 0.258%, supporting Hypothesis 2. However, ENS was found to have an insignificant effect on firms' financial performance ( $\beta_1 = 0.144$ ,  $t = 1.636$ ,  $p = 0.102$ ). Thereby, H1b is rejected.

Further, the ENA is creating a positive significant influence on both ENP and FP of firms. Environmental performance is affected by ENA with a rate of 0.439%, and financial performance is affected by ENA with a rate of 0.181%. ENA has a significant effect on ENP at the 1% significance level ( $p = 0.000$ ) and on FP at the 10% significance level ( $p = 0.059$ ). Thus, hypotheses H3a and H3b are confirmed. The effect of ENA on firms' competitive advantage is also significant, as a 1% increase in ENA would lead to a 0.439% increased competitive advantage. Hence, H4 is supported.

Next, we observe that firms' competitive advantage substantially impacts their environmental performance, as a 1% improvement in competitive advantage will enhance firms' ENP by 0.231%. Therefore, H5a is confirmed. However, the statistical analysis could not confirm any strong effect of competitive advantage on firms' FA, rejecting H5b.

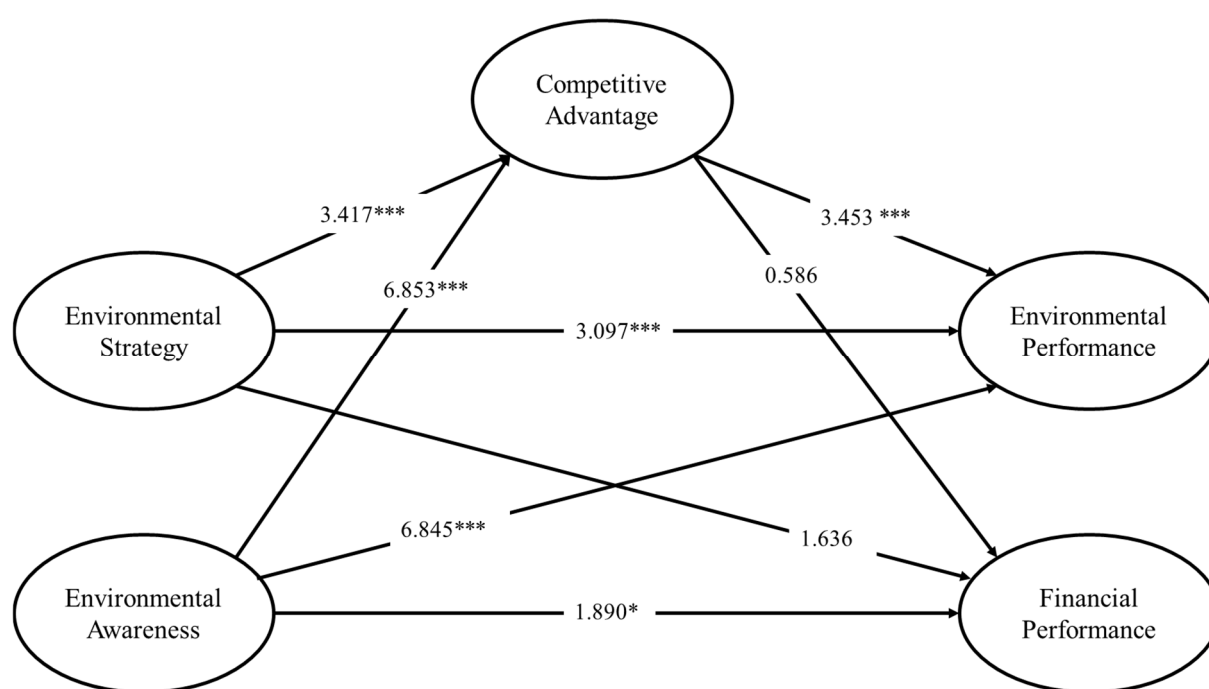


Figure 2. Structural model. \*  $p < 0.10$ , \*\*\*  $p < 0.01$ .

A mediation analysis was conducted to assess the mediating effect of CA between ENS and ENP, ENS and FP, ENA and ENP, and ENA and FP. The mediation analysis revealed that CEP has a robust mediating effect on the ENS–ENP linkage ( $\beta = 0.06$ ,  $t = 2.295$ ,  $p = 0.022$ ), supporting H6. Next, we observed that firms' competitive advantage also mediates the linkage between ENA and ENP ( $\beta = 0.104$ ,  $t = 3.022$ ,  $p = 0.003$ ), thereby, H8 was also confirmed. However, the mediating effect of competitive advantage on the ENS–FP and ENA–FP linkages could not be established (see Table 10).

Table 10. Results of hypothesis testing.

Hypothesis	Structural Path	Coefficient	<i>t</i> -Statistics	<i>p</i> Values	Remarks
H1a	ENS → ENP	0.191	3.097	0.002	Supported
H1b	ENS → FP	0.144	1.636	0.102	Not supported
H2	ENS → ENA	0.258	3.417	0.001	Supported
H3a	ENA → ENP	0.439	6.845	0.000	Supported
H3b	ENA → FP	0.181	1.89	0.059	Supported
H4	ENA → CA	0.451	6.853	0.000	Supported



H5a	CA → ENP	0.231	3.453	0.001	Supported
H5b	CA → FP	−0.05	0.586	0.558	Not supported
H6	ENS → CA → ENP	0.06	2.295	0.022	Supported
H7	ENS → CA → FP	−0.013	0.543	0.587	Not supported
H8	ENA → CA → ENP	0.104	3.022	0.003	Supported
H9	ENA → CA → FP	−0.022	0.58	0.562	Not supported

## 5. Discussion and Conclusions

The study assessed the role of environmental strategy and environmental awareness in improving firms' environmental and financial performance through enhanced competitive advantage. Drawing on the NRBV theory, this research empirically tested the linkage between ENS and ENP, ENS and FP, ENA and ENP, and ENA and FP. We also examined the mediating impact of competitive advantage of firms among these associations.

The study hypothesized (H1a) that environmental strategies significantly impact the environment. The results of the SEM demonstrate that ENS favorably affects the ENP of Bangladeshi manufacturing SMEs, thereby validating Hypothesis 1a. Previous studies in the domains of ENS and sustainability corroborate this suggestion [17,19,34]. Laguir et al. (2021) report that companies with an ENS are more likely to create a shared long-term strategy with their stakeholders, to preserve the environment and ensure sustainable growth, which is a unique source [45] for enhancing environmental performance. This finding adds to the NRBV literature, indicating that business strategy (particularly ENS) is a strong predictor of firms' improved ENP through effective resource allocation [34,45].

On the other hand, this study's findings could not establish a significant association between firms' ENS and financial performance; thus, hypothesis H1b was rejected. This finding contrasts with previous studies by Banerjee [68] and Do and Nguyen [39], which argued that adopting ENS increases company performance by boosting operations, reducing waste and energy consumption, and utilizing recyclable materials. However, most of these studies explored the role of ENS in boosting overall firm performance. There is a paucity of empirical evidence on the impact of ENS on the superior financial performance of organizations. Moreover, ENS cannot alone drive the financial performance of manufacturing firms. The existing literature reports that despite having ENS, Bangladeshi manufacturing SMEs are falling behind in adopting green manufacturing practices, mainly due to financial constraints and green technologies [95]. Besides, there is a lack of strict environmental regulations for SMEs in Bangladesh [9]. Thus, Bangladeshi manufacturing SMEs need to be trained to leverage their ENS into organizations' financial performance by enhancing green innovation and competitive advantage.

As posited in H2, ENA positively affects firms' competitive advantage. This result is in line with previous research examining the role of ENA in enhancing firms' competitiveness [66,73]. The literature also suggests that firms adopting proactive ENS can achieve a low-cost and distinct competitive advantage [39]. Moreover, firms can enjoy a cost advantage by reducing adverse impacts of noncompliance and ecological risks, saving money through regulatory incentives, undergoing minimal environmental inspections, and paying less for coverage [71]. Hence, competitive advantages such as cost benefits and differentiation can be attained through firms' environmentally oriented strategies.

Next, the findings unveiled that organizations' environmental awareness substantially affects ENP. It implies that firms that appoint environmentally concerned managers and staff can attain superior environmental performance, since the management is aware of the environmental threats and climate change issues. This finding confirms previous study findings in this research area that link ENA with firms' ENP [23,58]. We also found that ENA has a positive linkage with organizational financial performance. This output is in accordance with prior works [53,120]. Environmental consciousness is more likely to

lead to improved relationships with external stakeholders, including governments, shareholders, and financial institutions, which can boost a company's financial performance through reduced interest rates and investor confidence.

The findings also suggested that ENA is a crucial driver of firms' competitive advantage (H4). A good number of the previous literature works have confirmed the substantial effect of ENA on the competitive advantage of businesses [23,83]. Firms' ENA strongly drives green product innovation, a unique method for companies to enhance their competitiveness. A higher degree of environmental concern can facilitate firms to achieve competitive advantages, such as cost-benefit and differentiation in the industry. Further, the result indicated that competitive advantage is a necessary antecedent of firms' environmental performance. This is in line with past research conducted by Zameer et al. [121], which reported that a green competitive advantage could strongly drive organizational ENP. However, there is a dearth of research exploring the linkage between competitive advantage and firms' ENP.

However, H5b was not supported, since the empirical evidence suggested that the effect of firms' competitive advantage on financial performance is insignificant. This result contradicts several examples from the literature establishing the role of competitive advantage in enhancing firms' performance [39,86,122]. This conflicting finding could arise due to contextual differences. For instance, according to Wahyuni et al. [82], the competitive advantage of enterprises is an insignificant determinant of financial performance among Indonesian real estate companies. Firms explicitly adopting a cost-leading competitive strategy in a fiercely competitive environment would face severe pressure on their manufacturing costs to maintain their top spot, barring them from outperforming their competitors [90]. As predicted in H6 and H8, we noticed that competitive advantage mediates the linkage between ENS and ENP and ENA and ENP.

These findings corroborate extant literature that reported that the linkages between ENS and ENP and ENA and ENP are not direct but rather are mediated by intervening factors. However, there is limited research investigating the mediating role of competitive advantage in the interplays between ENS and ENP and ENA and ENP. Most research identified environmental-management accounting [19,34], the green supply chain process [123], technological eco-innovations [67], and environmental reputation [124] as significant mediators between ENS and ENP. Thus, this new finding extends the ENS literature. Moreover, the mediating effect of competitive advantage between the ENA and ENP is also a new addition to the extant knowledge body, since most studies explored the direct effects of ENA on CA and ENP [22,29,53]. However, this research could not establish any mediating effect of firms' competitive advantage on ENS-FP and ENA-FP linkages.

## 6. Theoretical Implications

Our research has made crucial theoretical contributions in three ways: a new conceptual model comprising new constructs, a new context, and new outcomes. First, this work contributes to the NRBV literature by addressing current demands to examine the cumulative influence of resources on ENP and determine what initiates this capacity's emergence [46]. This research presents empirical support that ENS is a method that firms may utilize to enhance the generation of competitive advantage, which can impact their ENP. In addition, the NRBV is supported by a large body of work that examines the impact of ENS on enterprises' competitive advantage and ENP. However, there is a dearth of research in the field of environmental management explaining the influence of ENA on the ENP of enterprises. This study expands the NRBV by defining ENA as a company's internal resource that can generate superior ENP through competitive advantage. Second, this is one of the few studies that assess the combined effect of ENS and ENA on organizational competitive advantage, ENP, and FP. Our complex conceptual framework contributes to the environmental-management literature by illustrating the interplays between ENS, ENP, CA, ENP, and FP. Given the abundance of studies investigating the role of corporate environmental aspects on ENP, there is a paucity of research on the linkages between

these environmental characteristics of firms and their financial performance. Our research is one of the few emerging studies that explored this linkage.

Third, this paper provides fresh quantitative insights into the impact of ENS and ENA on the performance of enterprises in developing countries. This study assessed the influence of ENS and ENA on organizational competitive advantage and performance in a developing country such as Bangladesh, as suggested by previous research. As far as the researchers are concerned, no empirical study has been uncovered that investigates the effect of ENS and ENA in enhancing organizational performance in Bangladesh. In addition, this study gathered data from manufacturing SMEs that actively engage in production that adversely affects the natural environment. Thus, this industrial context would also expand the existing corpus of knowledge.

Finally, the outcome of this scholarship contributes extensively to the ENS, ENA, and environmental-management literature. A voluminous literature has explored the role of different mediating factors such as environmental-management accounting [19,34], the green supply chain process [123], technological eco-innovations [67], and environmental reputation [124] in the association between ENS and ENP. Thus, our findings add new insights into the ENS literature by establishing the significant intervening effect of firms' competitive advantage in improving environmental performance. We argue that this study uncovers two of the most influential factors of enterprises' environmental performance in a developing nation and records results that can be applied to the firms in these regions. This experimental study aimed to reconcile the theoretical research gap by analyzing and validating a new model employing SEM analysis. Moreover, environmental performance and financial performance are two of the critical components of the organizational triple-bottom-line (TBL) sustainability performance. Thus, our findings also contribute to the sustainability literature by identifying the crucial drivers of SMEs' environmental and financial sustainability performance.

## 7. Practical and Policy Implications

This study has intriguing practical implications for manufacturing SMEs. Managers of SMEs should incorporate ENS into their strategic planning to achieve improved business performance. Therefore, managers must incorporate environmental concerns into strategic planning. They should integrate environmental goals with other business objectives. In addition, SMEs should design goods and processes with minimal environmental consequences and, simultaneously, address environmental concerns when creating new products. In this manner, they may minimize environmental waste, emissions, material use, and energy consumption, facilitating superior ENP for firms. Since our findings indicate that proactive ENS can contribute to an organization's competitive advantage, SME managers may design ENS to ensure cost savings and diversification benefits. Moreover, SME managers who intend to improve their businesses' ENP must be environmentally conscious. They should feel a personal obligation to assist in resolving environmental issues. Energy use and climate change should be a concern for managers. In addition, they must acquire and manufacture eco-friendly goods to improve performance. SME managers should be a driving force to apply ENS and ENA to ensure competitive advantage and organizational performance. Lastly, our findings can be crucial for policymakers, as they should take initiatives to promote environmental awareness in SMEs. Policymakers need to encourage environmental strategic planning and environmental management to ensure the sustainability of SME businesses.

## 8. Limitations and Future Research Directions

This study has several limitations that should be highlighted. It studied the effects of competitive advantage in translating ENS and ENA into performances. Future studies might conveniently expand the framework to investigate the role of environmental competencies such as eco-learning, green innovation, and environmental accounting management. Moreover, this research did not differentiate between proactive and reactive ENS.

Instead, we evaluated ENS as a broad concept. Based on our understanding, Bangladeshi SMEs mostly implement reactive ENSs to comply with basic environmental regulations imposed by the SME policy and the Bangladesh Bank. Bangladeshi manufacturing SMEs today maintain those compliances to obtain formal access to credit from the financial sector. However, these SMEs are still falling behind in implementing green supply chain practices and proactive environmental strategies that can substantially improve the environmental performance. Future research should distinguish between the various types of ENS in order to better comprehend their significance in ENP. The literature on the relationship between businesses' ENS and financial performance and ENA and financial performance is scarce. Since this study could not substantiate this link, other mediators and moderators might exist that were not included in this work. Thus, we call for further study to offer empirical support for this association. In subsequent research, the contextual and contingent aspects should also be explored. In addition, future studies might utilize a bigger sample size and longitudinal data to investigate the evolution of ENS and ENA. Further, assessing causation should be considered. It will also be possible to generalize this study's conclusions if replicated in different economies and sectors with a larger sample size. Finally, the researchers believe it is vital to replicate this work utilizing mixed approaches, such as integrating case studies or fuzzy-set qualitative comparative analysis with SEM, since this might provide a new path for future research.

**Author Contributions:** Conceptualization, K.T. and A.B.S.; data curation, M.H.; formal analysis, K.T., A.B.S., and M.M.; funding acquisition, F.A.S.; investigation, M.M.; methodology, K.T. and A.B.S.; project administration, F.A.S.; resources, M.M.; supervision, F.A.S.; validation, M.H.; visualization, M.H. and M.M.; writing—original draft, K.T. and A.B.S.; writing—review and editing, K.T., F.A.S., M.H., and M.M. All authors have read and agreed to the published version of the manuscript.

**Funding:** The research is funded by the Institute for Advanced Research Publication Grant of United International University.

**Institutional Review Board Statement:** Ethical review and approval were waived for this study, due to the fact that there is no institutional review board or committee in Bangladesh. Besides, the study was conducted as per the guidelines of the Declaration of Helsinki. The research questionnaire was anonymous, and no personal information was gathered.

**Informed Consent Statement:** Oral consent was obtained from all individuals involved in this study.

**Data Availability Statement:** The data that support the findings of this study are available from the corresponding authors upon reasonable request.

**Acknowledgments:** The researchers would like to express their gratitude to the anonymous reviewers for their efforts to improve the quality of this paper.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Chen, J.; Siddik, A.B.; Zheng, G.-W.; Masukujjaman, M.; Bekhzod, S. The Effect of Green Banking Practices on Banks' Environmental Performance and Green Financing: An Empirical Study. *Energies* **2022**, *15*, 292. <https://doi.org/10.3390/en15041292>.
2. Zheng, G.; Siddik, A.B.; Masukujjaman, M. Factors Affecting the Sustainability Performance of Financial Institutions in Bangladesh: The Role of Green Finance. *Sustainability* **2021**, *13*, 10165.
3. Zheng, G.W.; Siddik, A.B.; Masukujjaman, M.; Fatema, N.; Alam, S.S. Green Finance Development in Bangladesh: The Role of Private Commercial Banks (PCBs). *Sustainability* **2021**, *13*, 1–17. <https://doi.org/10.3390/su13020795>.
4. Aragón-Correa, J.A.; Hurtado-Torres, N.; Sharma, S.; García-Morales, V.J. Environmental Strategy and Performance in Small Firms: A Resource-Based Perspective. *J. Environ. Manag.* **2008**, *86*, 88–103. <https://doi.org/10.1016/J.JENVMAN.2006.11.022>.
5. Adomako, S.; Ning, E.; Adu-Ameyaw, E. Proactive Environmental Strategy and Firm Performance at the Bottom of the Pyramid. *Bus. Strateg. Environ.* **2021**, *30*, 422–431. <https://doi.org/10.1002/bse.2629>.
6. Leonidou, L.C.; Fotiadis, T.A.; Christodoulides, P.; Spyropoulou, S.; Katsikeas, C.S. Environmentally Friendly Export Business Strategy: Its Determinants and Effects on Competitive Advantage and Performance. *Int. Bus. Rev.* **2015**, *24*, 798–811. <https://doi.org/10.1016/J.IBUSREV.2015.02.001>.

7. Bai, C.A.; Cordeiro, J.; Sarkis, J. Blockchain Technology: Business, Strategy, the Environment, and Sustainability. *Bus. Strateg. Environ.* **2020**, *29*, 321–322. <https://doi.org/10.1002/bse.2431>.
8. Bae, S.M.; Masud, M.A.K.; Rashid, M.H.U.; Kim, J.D. Determinants of Climate Financing and the Moderating Effect of Politics: Evidence from Bangladesh. *Sustain. Account. Manag. Policy J.* **2022**, *13*, 247–272. <https://doi.org/10.1108/SAMPJ-04-2019-0157/FULL/XML>.
9. Masud, M.A.K.; Hossain, M.S.; Kim, J.D. Is Green Regulation Effective or a Failure: Comparative Analysis between Bangladesh Bank (BB) Green Guidelines and Global Reporting Initiative Guidelines. *Sustainability* **2018**, *10*, 1267. <https://doi.org/10.3390/SU10041267>.
10. Akter, N.; Siddik, A.B.; Mondal, M.S.A. Sustainability Reporting on Green Financing : A Study of Listed Private Sustainability Reporting on Green Financing : A Study of Listed Private Commercial Banks in Bangladesh. *J. Bus. Technol.* **2018**, *XII*, 14–27.
11. Zhang, X.; Wang, Z.; Zhong, X.; Yang, S.; Siddik, A.B. Do Green Banking Activities Improve the Banks’ Environmental Performance? The Mediating Effect of Green Financing. *Sustainability* **2022**, *14*, 989. <https://doi.org/10.3390/su14020989>.
12. Ministry of Environment Forest and Climate Change Nationally Determined Contributions (NDCs) 2021 Bangladesh Available online: [https://unfccc.int/sites/default/files/NDC/2022-06/NDC\\_submission\\_20210826revised.pdf](https://unfccc.int/sites/default/files/NDC/2022-06/NDC_submission_20210826revised.pdf) (accessed on 9 August 2022).
13. Muhammad, M.; Al-Amin, S. Green Management in SMEs of Bangladesh: Present Scenario, Implementation Obstacles and Policy Options. *Am. Acad. Sci. Res. J. Eng. Technol. Sci.* **2022**, *85*, 278–286.
14. Bangladesh Bank. *Guidelines on Environmental & Social Risk Management (ESRM) for Banks and Financial Institutions in Bangladesh*; Bangladesh Bank: Dhaka, Bangladesh, 2017.
15. Kong, D.; Yang, X.; Liu, C.; Yang, W. Business Strategy and Firm Efforts on Environmental Protection: Evidence from China. *Bus. Strateg. Environ.* **2020**, *29*, 445–464. <https://doi.org/10.1002/bse.2376>.
16. Kuo, F.I.; Fang, W.T.; LePage, B.A. Proactive Environmental Strategies in the Hotel Industry: Eco-Innovation, Green Competitive Advantage, and Green Core Competence. *J. Sustain. Tour.* **2021**, *30*, 1240–1261. <https://doi.org/10.1080/09669582.2021.1931254>.
17. Laguir, I.; Stekelorum, R.; El Baz, J. Going Green? Investigating the Relationships between Proactive Environmental Strategy, GSCM Practices and Performances of Third-Party Logistics Providers (TPLs). *Prod. Plan. Control* **2021**, *32*, 1049–1062. <https://doi.org/10.1080/09537287.2020.1784483>.
18. Ateş, M.A.; Bloemhof, J.; Van Raaij, E.M.; Wynstra, F. Proactive Environmental Strategy in a Supply Chain Context: The Mediating Role of Investments. *Int. J. Prod. Res.* **2012**, *50*, 1079–1095. <https://doi.org/10.1080/00207543.2011.555426>.
19. Latan, H.; Chiappetta Jabbour, C.J.; Lopes de Sousa Jabbour, A.B.; Wamba, S.F.; Shahbaz, M. Effects of Environmental Strategy, Environmental Uncertainty and Top Management’s Commitment on Corporate Environmental Performance: The Role of Environmental Management Accounting. *J. Clean. Prod.* **2018**, *180*, 297–306. <https://doi.org/10.1016/j.jclepro.2018.01.106>.
20. Mulaessa, N.; Lin, L. How Do Proactive Environmental Strategies Affect Green Innovation? The Moderating Role of Environmental Regulations and Firm Performance. *Int. J. Environ. Res. Public Heal.* **2021**, *18*, 9083. <https://doi.org/10.3390/IJERPH18179083>.
21. Chan, R.Y.K.; Lai, J.W.M.; Kim, N. Strategic Motives and Performance Implications of Proactive versus Reactive Environmental Strategies in Corporate Sustainable Development. *Bus. Strateg. Environ.* **2022**, *31*, 2127–2142. <https://doi.org/10.1002/bse.3011>.
22. Cao, C.; Tong, X.; Chen, Y.; Zhang, Y. How Top Management’s Environmental Awareness Affect Corporate Green Competitive Advantage: Evidence from China. *Kybernetes* **2022**, *51*, 1250–1279. <https://doi.org/10.1108/K-01-2021-0065/FULL/XML>.
23. Khan, S.A.R.; Umar, M. How Environmental Awareness and Corporate Social Responsibility Practices Benefit the Enterprise? An Empirical Study in the Context of Emerging Economy. *Manag. Environ. Qual. An Int. J.* **2021**, *32*, 863–885. <https://doi.org/10.1108/MEQ-08-2020-0178>.
24. Perron, G.M.; Côté, R.P.; Duffy, J.F. Improving Environmental Awareness Training in Business. *J. Clean. Prod.* **2006**, *14*, 551–562. <https://doi.org/10.1016/j.jclepro.2005.07.006>.
25. Bansal, P.; Hoffman, A.J. *The Oxford Handbook of Business and the Natural Environment*; Oxford University Press: Oxford, UK, 2012.
26. Darvishmotevali, M.; Altinay, L. Green HRM, Environmental Awareness and Green Behaviors: The Moderating Role of Servant Leadership. *Tour. Manag.* **2022**, *88*, 401. <https://doi.org/10.1016/j.tourman.2021.104401>.
27. Yang, G.; Liu, B. Research on the Impact of Managers’ Green Environmental Awareness and Strategic Intelligence on Corporate Green Product Innovation Strategic Performance. *Ann. Oper. Res.* **2021**. <https://doi.org/10.1007/s10479-021-04243-5>.
28. Dongfang, W.; Ponce, P.; Yu, Z.; Ponce, K.; Tanveer, M. The Future of Industry 4.0 and the Circular Economy in Chinese Supply Chain: In the Era of Post-COVID-19 Pandemic. *Oper. Manag. Res.* **2021**. <https://doi.org/10.1007/s12063-021-00220-0>.
29. Zameer, H.; Wang, Y.; Saeed, M.R. Net-Zero Emission Targets and the Role of Managerial Environmental Awareness, Customer Pressure, and Regulatory Control toward Environmental Performance. *Bus. Strateg. Environ.* **2021**, *30*, 4223–4236. <https://doi.org/10.1002/bse.2866>.
30. Yang, M.X.; Tang, X.; Cheung, M.L.; Zhang, Y. An Institutional Perspective on Consumers’ Environmental Awareness and pro-Environmental Behavioral Intention: Evidence from 39 Countries. *Bus. Strateg. Environ.* **2021**, *30*, 566–575. <https://doi.org/10.1002/BSE.2638>.
31. Du, Y.; Wang, X.; Zhang, L.; Feger, K.H.; Popp, J.; Sharpley, A. Multi-Stakeholders’ Preference for Best Management Practices Based on Environmental Awareness. *J. Clean. Prod.* **2019**, *236*, 117682. <https://doi.org/10.1016/J.JCLEPRO.2019.117682>.

32. Clemens, B.; Bakstran, L. A Framework of Theoretical Lenses and Strategic Purposes to Describe Relationships among Firm Environmental Strategy, Financial Performance, and Environmental Performance. *Manag. Res. Rev.* **2010**, *33*, 393–405. <https://doi.org/10.1108/01409171011030480/FULL/XML>.
33. Claver-Cortés, E.; Molina-Azorín, J.F.; Pereira-Moliner, J.; López-Gamero, M.D. Environmental Strategies and Their Impact on Hotel Performance. *J. Sustain. Tour.* **2009**, *15*, 663–679. <https://doi.org/10.2167/JOST640.0>.
34. Solovida, G.T.; Latan, H. Linking Environmental Strategy to Environmental Performance: Mediation Role of Environmental Management Accounting. *Sustain. Account. Manag. Policy J.* **2017**, *8*, 595–619. <https://doi.org/10.1108/SAMPJ-08-2016-0046>.
35. Fraj, E.; Matute, J.; Melero, I. Environmental Strategies and Organizational Competitiveness in the Hotel Industry: The Role of Learning and Innovation as Determinants of Environmental Success. *Tour. Manag.* **2015**, *46*, 30–42. <https://doi.org/10.1016/J.TOURMAN.2014.05.009>.
36. Ojo, A.O.; Fauzi, M.A. Environmental Awareness and Leadership Commitment as Determinants of IT Professionals Engagement in Green IT Practices for Environmental Performance. *Sustain. Prod. Consum.* **2020**, *24*, 298–307. <https://doi.org/10.1016/j.spc.2020.07.017>.
37. Barba-Sánchez, V.; Atienza-Sahuquillo, C. Environmental Proactivity and Environmental and Economic Performance: Evidence from the Winery Sector. *Sustainability* **2016**, *8*, 1014. <https://doi.org/10.3390/SU8101014>.
38. Masud, A.K.; Rashid, H.U.; Khan, T.; Bae, S.M.; Kim, J.D. Organizational Strategy and Corporate Social Responsibility: The Mediating Effect of Triple Bottom Line. *Int. J. Environ. Res. Public Health* **2019**, *16*. <https://doi.org/10.3390/ijerph16224559>.
39. Do, B.; Nguyen, N. The Links between Proactive Environmental Strategy, Competitive Advantages and Firm Performance: An Empirical Study in Vietnam. *Sustainability* **2020**, *12*, 4962. <https://doi.org/10.3390/su12124962>.
40. Wright, M.; Filatotchev, I.; Hoskisson, R.E.; Peng, M.W. Strategy Research in Emerging Economies: Challenging the Conventional Wisdom. *J. Manag. Stud.* **2005**, *42*, 1–33. <https://doi.org/10.1111/J.1467-6486.2005.00487.X>.
41. Sharma, S. Managerial Interpretations and Organizational Context as Predictors of Corporate Choice of Environmental Strategy. *Acad. Manag. J.* **2000**, *43*, 681–697. <https://doi.org/10.5465/1556361>.
42. Gunarathne, A.D.N.; Lee, K.; Kaluarachchilage, P.K.H. Institutional Pressures, Environmental Management Strategy, and Organizational Performance: The Role of Environmental Management Accounting Interest. *Bus. Strateg. Dev.* **2021**, *30*, 825–839. <https://doi.org/10.1002/bse.2656>.
43. Barney, J. Firm Resources and Sustained Competitive Advantage. *J. Manage.* **1991**, *17*, 99–120. <https://doi.org/10.1177/014920639101700108>.
44. Wernerfelt, B. A Resource-Based View of the Firm. *Strateg. Manag. J.* **1984**, *5*, 171–180. <https://doi.org/10.1002/smj.4250050207>.
45. Hart, S.L. A Natural-Resource-Based View of the Firm. *Acad. Manag. Rev.* **1995**, *20*, 986–1014.
46. Hart, S.L.; Dowell, G. Invited Editorial: A Natural-Resource-Based View of the Firm: Fifteen Years After. *J. Manag.* **2011**, *37*, 1464–1479.
47. Mishra, P.; Yadav, M. Environmental Capabilities, Proactive Environmental Strategy and Competitive Advantage: A Natural-Resource-Based View of Firms Operating in India. *J. Clean. Prod.* **2021**, *291*, 125249. <https://doi.org/10.1016/j.jclepro.2020.125249>.
48. Liu, Y.; Guo, J.; Chi, N. The Antecedents and Performance Consequences of Proactive Environmental Strategy: A Meta-Analytic Review of National Contingency. *Manag. Organ. Rev.* **2015**, *11*, 521–557. <https://doi.org/10.1017/MOR.2015.17>.
49. Buysse, K.; Verbeke, A. Proactive Environmental Strategies: A Stakeholder Management Perspective. *Strateg. Manag. J.* **2003**, *24*, 453–470. <https://doi.org/10.1002/SMJ.299>.
50. Reinhardt, F. Market Failure and the Environmental Policies of Firms: Economic Rationales for “Beyond Compliance” Behavior. *J. Ind. Ecol.* **1999**, *3*, 9–21. <https://doi.org/10.1162/108819899569368>.
51. Lee, S.Y.; Rhee, S.K. The Change in Corporate Environmental Strategies: A Longitudinal Empirical Study. *Manag. Decis.* **2007**, *45*, 196–216. <https://doi.org/10.1108/00251740710727241/FULL/XML>.
52. Henriques, I.; Sadorsky, P. The Relationship Between Environmental Commitment and Managerial Perceptions of Stakeholder Importance. *Acad. Manag. J.* **1999**, *42*, 87–99. <https://doi.org/10.5465/256876>.
53. Rustam, A.; Wang, Y.; Zameer, H. Environmental Awareness, Firm Sustainability Exposure and Green Consumption Behaviors. *J. Clean. Prod.* **2020**, *268*, 122016. <https://doi.org/10.1016/j.jclepro.2020.122016>.
54. Qu, Y.; Liu, Y.; Nayak, R.R.; Li, M. Sustainable Development of Eco-Industrial Parks in China: Effects of Managers’ Environmental Awareness on the Relationships between Practice and Performance. *J. Clean. Prod.* **2015**, *87*, 328–338. <https://doi.org/10.1016/j.jclepro.2014.09.015>.
55. Fishbein, M.; Ajzen, I. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*; Addison-Wesley: Boston, MA, USA, 1975.
56. Gadenne, D.L.; Kennedy, J.; McKeiver, C. An Empirical Study of Environmental Awareness and Practices in SMEs. *J. Bus. Ethics* **2009**, *84*, 45–63. <https://doi.org/10.1007/S10551-008-9672-9>.
57. Tan, Y.; Zhu, Z. The Effect of ESG Rating Events on Corporate Green Innovation in China: The Mediating Role of Financial Constraints and Managers’ Environmental Awareness. *Technol. Soc.* **2022**, *68*, 101906. <https://doi.org/10.1016/J.TECHSOC.2022.101906>.
58. Xue, M.; Boadu, F.; Xie, Y. The Penetration of Green Innovation on Firm Performance: Effects of Absorptive Capacity and Managerial Environmental Concern. *Sustainability* **2019**, *11*, 2455. <https://doi.org/10.3390/su11092455>.
59. Peteraf, M.A.; Barney, J.B. Unraveling the Resource-Based Tangle. *Manag. Decis. Econ.* **2003**, *24*, 309–323. <https://doi.org/10.1002/MDE.1126>.

60. Khan, S.A.R.; Yu, Z. Assessing the Eco-Environmental Performance: An PLS-SEM Approach with Practice-Based View. *Int. J. Logist. Res. Appl.* **2021**, *24*, 303–321. <https://doi.org/10.1080/13675567.2020.1754773>.
61. Guang-Wen, Z.; Siddik, A.B. Do Corporate Social Responsibility Practices and Green Finance Dimensions Determine Environmental Performance? An Empirical Study on Bangladeshi Banking Institutions. *Front. Environ. Sci.* **2022**, *10*. <https://doi.org/10.3389/fenvs.2022.890096>.
62. Chan, R.Y.K. Corporate Environmentalism Pursuit by Foreign Firms Competing in China. *J. World Bus.* **2010**, *45*, 80–92. <https://doi.org/10.1016/J.JWB.2009.04.010>.
63. Aragón-Correa, J.A.; Sharma, S. A Contingent Resource-Based View of Proactive Corporate Environmental Strategy. *Acad. Manag. Rev.* **2003**, *28*, 71–88. <https://doi.org/10.5465/AMR.2003.8925233>.
64. Dai, J.; Cantor, D.E.; Montabon, F.L. Examining Corporate Environmental Proactivity and Operational Performance: A Strategy-Structure-Capabilities-Performance Perspective within a Green Context. *Int. J. Prod. Econ.* **2017**, *193*, 272–280. <https://doi.org/10.1016/J.IJPE.2017.07.023>.
65. Sharma, P.; Sharma, S. Drivers of Proactive Environmental Strategy in Family Firms. *Bus. Ethics Q.* **2011**, *21*, 309–334. <https://doi.org/10.5840/BEQ201121218>.
66. Shah, N.; Soomro, B.A. Internal Green Integration and Environmental Performance: The Predictive Power of Proactive Environmental Strategy, Greening the Supplier, and Environmental Collaboration with the Supplier. *Bus. Strateg. Environ.* **2021**, *30*, 1333–1344. <https://doi.org/10.1002/bse.2687>.
67. Ryszek, A. Proactive Environmental Strategy, Technological Eco-Innovation and Firm Performance—Case of Poland. *Sustainability* **2016**, *8*, 156. <https://doi.org/10.3390/su8020156>.
68. Banerjee, S.B. Corporate Environmentalism: The Construct and Its Measurement. *J. Bus. Res.* **2002**, *55*, 177–191. [https://doi.org/10.1016/S0148-2963\(00\)00135-1](https://doi.org/10.1016/S0148-2963(00)00135-1).
69. Porter, M.E. *Competitive Advantage: Creating and Sustaining Superior Performance*; The Free Press: New York, NY, USA, 1985.
70. Hill, C.W.L. Differentiation Versus Low Cost or Differentiation and Low Cost: A Contingency Framework. *Acad. Manag. Rev.* **1988**, *13*, 401–412. <https://doi.org/10.5465/AMR.1988.4306957>.
71. Godfrey, P.C.; Merrill, C.B.; Hansen, J.M. The Relationship between Corporate Social Responsibility and Shareholder Value: An Empirical Test of the Risk Management Hypothesis. *Strateg. Manag. J.* **2009**, *30*, 425–445. <https://doi.org/10.1002/SMJ.750>.
72. Maas, S.; Schuster, T.; Hartmann, E. Pollution Prevention and Service Stewardship Strategies in the Third-Party Logistics Industry: Effects on Firm Differentiation and the Moderating Role of Environmental Communication. *Bus. Strateg. Environ.* **2014**, *23*, 38–55. <https://doi.org/10.1002/BSE.1759>.
73. Delmas, M.; Hoffmann, V.H.; Kuss, M. Under the Tip of the Iceberg: Absorptive Capacity, Environmental Strategy, and Competitive Advantage. *Bus. Soc.* **2011**, *50*, 116–154. <https://doi.org/10.1177/0007650310394400>.
74. McWilliams, A.; Siegel, D. Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? *Strateg. Manag. J.* **2000**, *21*, 603–609. [https://doi.org/10.1002/\(SICI\)1097-0266\(200005\)21:5<603::AID-SMJ101>3.0.CO;2-3](https://doi.org/10.1002/(SICI)1097-0266(200005)21:5<603::AID-SMJ101>3.0.CO;2-3).
75. Aragón-Correa, J.A.; Rubio-López, E.A. Proactive Corporate Environmental Strategies: Myths and Misunderstandings. *Long Range Plann.* **2007**, *40*, 357–381. <https://doi.org/10.1016/J.LRP.2007.02.008>.
76. Qi, G.Y.; Shen, L.Y.; Zeng, S.X.; Jorge, O.J. The Drivers for Contractors' Green Innovation: An Industry Perspective. *J. Clean. Prod.* **2010**, *18*, 1358–1365. <https://doi.org/10.1016/J.JCLEPRO.2010.04.017>.
77. Shah, S.M.M.; Ahmed, U.; Ismail, A.I.; Mozammel, S. Going Intellectually Green: Exploring the Nexus between Green Intellectual Capital, Environmental Responsibility, and Environmental Concern towards Environmental Performance. *Sustainability* **2021**, *13*, 6257. <https://doi.org/10.3390/su13116257>.
78. Darnall, N.; Kim, Y. Which Types of Environmental Management Systems Are Related to Greater Environmental Improvements? *Public Adm. Rev.* **2012**, *72*, 351–365. <https://doi.org/10.1111/J.1540-6210.2011.02503.X>.
79. Li, D.; Cao, C.; Zhang, L.; Chen, X.; Ren, S.; Zhao, Y. Effects of Corporate Environmental Responsibility on Financial Performance: The Moderating Role of Government Regulation and Organizational Slack. *J. Clean. Prod.* **2017**, *166*, 1323–1334. <https://doi.org/10.1016/J.JCLEPRO.2017.08.129>.
80. Keszey, T. Environmental Orientation, Sustainable Behaviour at the Firm-Market Interface and Performance. *J. Clean. Prod.* **2020**, *243*, 118524. <https://doi.org/10.1016/J.JCLEPRO.2019.118524>.
81. Chang, C.H. The Influence of Corporate Environmental Ethics on Competitive Advantage: The Mediation Role of Green Innovation. *J. Bus. Ethics* **2011**, *104*, 361–370. <https://doi.org/10.1007/S10551-011-0914-X>.
82. Singh, S.K.; Chen, J.; Del Giudice, M.; El-Kassar, A.N. Environmental Ethics, Environmental Performance, and Competitive Advantage: Role of Environmental Training. *Technol. Forecast. Soc. Change* **2019**, *146*, 203–211. <https://doi.org/10.1016/J.TECHFORE.2019.05.032>.
83. Simpson, M.; Taylor, N.; Barker, K. Environmental Responsibility in SMEs: Does It Deliver Competitive Advantage? *Bus. Strateg. Dev.* **2004**, *13*, 156–171.
84. Coyne, K.P. Sustainable Competitive Advantage—What It Is, What It Isn't. *Bus. Horiz.* **1986**, *29*, 54–61. [https://doi.org/10.1016/0007-6813\(86\)90087-X](https://doi.org/10.1016/0007-6813(86)90087-X).
85. Ong, J.W.; Ismail, H.; Yeap, P.F. Competitive Advantage and Firm Performance: The Moderating Effect of Industry Forces. *Int. J. Bus. Perform. Manag.* **2018**, *19*, 385–407. <https://doi.org/10.1504/ijbpm.2018.095069>.

86. Songling, Y.; Ishtiaq, M.; Anwar, M. The Role of Government Support in Sustainable Competitive Position and Firm Performance. *Sustainability* **2018**, *10*, 3495. <https://doi.org/10.3390/su10103495>.
87. Porter, M.E. *Competitive Strategy: Techniques for Analysing Industries and Competitors*; Free Press, New York, 1980;
88. Newbert, S.L. Value, Rareness, Competitive Advantage, and Performance: A Conceptual-Level Empirical Investigation of the Resource-Based View of the Firm. *Strateg. Manag. J.* **2008**, *29*, 745–768. <https://doi.org/10.1002/SMJ.686>.
89. Wahyuni, H.; Melani, E.; Candrawati, T. Competitive Advantage as a Mediating Variable to the Relationship between Intellectual Capital and Financial Performance. In *Proceedings of the 1st Annual Management, Business and Economic Conference (AMBEC 2019)*; Atlantis Press: New York, NY, USA, 2020; pp. 69–74.
90. Duanmu, J.L.; Bu, M.; Pittman, R. Does Market Competition Dampen Environmental Performance? Evidence from China. *Strateg. Manag. J.* **2018**, *39*, 3006–3030. <https://doi.org/10.1002/SMJ.2948>.
91. Danneels, E. Organizational Antecedents of Second-Order Competences. *Strateg. Manag. J.* **2008**, *29*, 519–543. <https://doi.org/10.1002/SMJ.684>.
92. Naffziger, D.W.; Ahmed, N.U.; Montagno, R.V. Perceptions of Environmental Consciousness in US Small Businesses: An Empirical Study. *SAM Adv. Manag. J.* **2003**, *68*, 23.
93. Schaper, M. Small Firms and Environmental Management: Predictors of Green Purchasing in Western Australian Pharmacies. *Int. Small Bus. J. Res. Entrep.* **2016**, *20*, 235–251. <https://doi.org/10.1177/0266242602203001>.
94. Khan, S.A.R.; Yu, Z.; Umar, M. A Road Map for Environmental Sustainability and Green Economic Development: An Empirical Study. *Environ. Sci. Pollut. Res.* **2022**, *29*, 16082–16090. <https://doi.org/10.1007/s11356-021-16961-1>.
95. Hossain, M.I.; San, O.T.; Ling, S.M.; Said, R.M. The Role of Environmental Awareness and Green Technological Usage to Foster Sustainable Green Practices in Bangladeshi Manufacturing SMEs. *Int. J. Adv. Sci. Technol.* **2020**, *29*, 3115–3124.
96. Holgersson, M. Patent Management in Entrepreneurial SMEs: A Literature Review and an Empirical Study of Innovation Appropriation, Patent Propensity, and Motives. *R&D Manag.* **2013**, *43*, 21–36. <https://doi.org/10.1111/J.1467-9310.2012.00700.X>.
97. LightCastle Analytics Wing COVID-19: Impact on Bangladesh's SME Landscape Available online: <https://www.lightcastlebd.com/insights/2020/04/covid-19-impact-on-bangladeshs-sme-landscape/> (accessed on 15 July 2022).
98. Rahman, M.M. Achieving Sustainable Development Goals of Agenda 2030 in Bangladesh: The Crossroad of the Governance and Performance. *Public Adm. Policy* **2021**, *24*, 195–211. <https://doi.org/10.1108/PAP-12-2020-0056/FULL/PDF>.
99. Rahman, M.N.; Mona, S.S.; Noman, S.A. Al; Avi, A. Das COVID-19, Consumer Behavior and Inventory Management: A Study on the Retail Pharmaceutical Industry of Bangladesh. *Supply Chain Insid.* **2020**, *4*, 8–25. <https://doi.org/10.2139/SSRN.3726027>.
100. Islam, S. France Provides €50m for Green SME Investment in Bangladesh. Available online: <https://www.pv-magazine.com/2021/08/17/france-provides-e50m-for-green-sme-investment-in-bangladesh/> (accessed on 19 August 2022).
101. Yoshijima, S.; Sharmin, N.; Paul, T. Bangladesh's Microenterprises Embraced Green Growth and Thrived—Then COVID-19 Hit Available online: <https://blogs.worldbank.org/endpovertyinsouthasia/bangladeshs-microenterprises-embraced-green-growth-and-thrived-then-covid-19> (accessed on 19 August 2022).
102. Kraus, S.; Rehman, S.U.; García, F.J.S. Corporate Social Responsibility and Environmental Performance: The Mediating Role of Environmental Strategy and Green Innovation. *Technol. Forecast. Soc. Change* **2020**, *160*, 120262. <https://doi.org/10.1016/j.techfore.2020.120262>.
103. Lillemo, S.C. Measuring the Effect of Procrastination and Environmental Awareness on Households' Energy-Saving Behaviours: An Empirical Approach. *Energy Policy* **2014**, *66*, 249–256. <https://doi.org/10.1016/j.enpol.2013.10.077>.
104. Azeem, M.; Ahmed, M.; Haider, S.; Sajjad, M. Expanding Competitive Advantage through Organizational Culture, Knowledge Sharing and Organizational Innovation. *Technol. Soc.* **2021**, *66*, 101635. <https://doi.org/10.1016/J.TECHSOC.2021.101635>.
105. Papadas, K.K.; Avlonitis, G.J.; Carrigan, M.; Piha, L. The Interplay of Strategic and Internal Green Marketing Orientation on Competitive Advantage. *J. Bus. Res.* **2019**, *104*, 632–643. <https://doi.org/10.1016/J.JBUSRES.2018.07.009>.
106. Sajan, M.P.; Shalij, P.R.; Ramesh, A.; Biju Augustine, P. Lean Manufacturing Practices in Indian Manufacturing SMEs and Their Effect on Sustainability Performance. *J. Manuf. Technol. Manag.* **2017**, *28*, 772–793.
107. Agyabeng-Mensah, Y.; Afum, E.; Ahenkorah, E. Exploring Financial Performance and Green Logistics Management Practices: Examining the Mediating Influences of Market, Environmental and Social Performances. *J. Clean. Prod.* **2020**, *258*, 120613. <https://doi.org/10.1016/J.JCLEPRO.2020.120613>.
108. Riel, A.C.R. van; Henseler, J.; Kemény, I.; Sasovova, Z. Estimating Hierarchical Constructs Using Consistent Partial Least Squares of Common Factors. *Ind. Manag. Data Syst.* **2017**, *117*, 459–477. <https://doi.org/10.1108/IMDS-07-2016-0286>.
109. Hair Jr., J.F.; Hult, G.T.M.; Ringle, C.M.; Sarstedt, M. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*; Sage Publications: Thousand Oaks, CA, USA, 2016.
110. Kline, R.B. *Principles and Practice of Structural Equation Modeling*; Fourth Edi.; The Guilford Press: New York, NY, USA; London, UK, 2016.
111. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.Y.; Podsakoff, N.P. Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *J. Appl. Psychol.* **2003**, *88*, 879.
112. Kline, R. Convergence of Structural Equation Modeling and Multilevel Modeling. In *The SAGE Handbook of Innovation in Social Research Methods*; SAGE Publications Ltd.: New York, NY, USA, 2011; pp. 562–589.
113. Islam, N.; Rumman, M.; Nower, N.; Rahman, M.N.; Niaz, S.K.; Afrin, S. The Measurement of Employee Turnover Intentions in Telecom Industry of Bangladesh. *J. Bus. Manag. Econ.* **2019**, *7*, 1–7. <https://doi.org/10.15520/jbme.v7i06.2600>.



114. Spicer, J. *Making Sense of Multivariate Data Analysis: An Intuitive Approach*; Sage Publications: Thousand Oaks, CA, USA, 2005.
115. Bagozzi, R.P.; Yi, Y.; Phillips, L.W. Assessing Construct Validity in Organizational Research. *Adm. Sci. Q.* **1991**, *36*, 421. <https://doi.org/10.2307/2393203>.
116. Islam, N.; Mustafi, M.A.A.; Rahman, M.N.; Nower, N.; Rafi, M.M.A.; Natasha, M.T.; Hassan, R.; Afrin, S. Factors Affecting Customers' Experience in Mobile Banking of Bangladesh. *Glob. J. Manag. Bus. Res.* **2019**, *19*, 37–49. <https://doi.org/10.34257/gjmbvol19is5pg37>.
117. Roldán, J.L.; Sánchez-Franco, M.J. Variance-Based Structural Equation Modeling: Guidelines for Using Partial Least Squares in Information Systems Research. In *Research Methodologies, Innovations and Philosophies in Software Systems Engineering and Information Systems*; IGI Global: Hershey, PA, 2012; pp. 193–221. ISBN 9781466601796.
118. Henseler, J.; Ringle, C.M.; Sarstedt, M. Testing Measurement Invariance of Composites Using Partial Least Squares. *Int. Mark. Rev.* **2016**, *33*, 405–431. <https://doi.org/10.1108/IMR-09-2014-0304/FULL/XML>.
119. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*; 2nd ed.; Lawrence Earlbaum Associates: Hillsdale, NJ, USA, 1988.
120. Jo, H.; Kim, H.; Park, K. Corporate Environmental Responsibility and Firm Performance in the Financial Services Sector. *J. Bus. Ethics* **2015**, *131*, 257–284. <https://doi.org/10.1007/s10551-014-2276-7>.
121. Zameer, H.; Wang, Y.; Vasbieva, D.G.; Abbas, Q. Exploring a Pathway to Carbon Neutrality via Reinforcing Environmental Performance through Green Process Innovation, Environmental Orientation and Green Competitive Advantage. *J. Environ. Manag.* **2021**, *296*, 113383. <https://doi.org/10.1016/j.jenvman.2021.113383>.
122. Saeidi, S.P.; Sofian, S.; Saeidi, P.; Saeidi, S.P.; Saeidi, S.A. How Does Corporate Social Responsibility Contribute to Firm Financial Performance? The Mediating Role of Competitive Advantage, Reputation, and Customer Satisfaction. *J. Bus. Res.* **2015**, *68*, 341–350. <https://doi.org/10.1016/J.JBUSRES.2014.06.024>.
123. Li, S.; Jayaraman, V.; Paulraj, A.; Shang, K.C. Proactive Environmental Strategies and Performance: Role of Green Supply Chain Processes and Green Product Design in the Chinese High-Tech Industry. *Int. J. Prod. Res.* **2016**, *54*, 2136–2151. <https://doi.org/10.1080/00207543.2015.1111532>.
124. Nguyen, N.P.; Adomako, S. Environmental Proactivity, Competitive Strategy, and Market Performance: The Mediating Role of Environmental Reputation. *Bus. Strateg. Environ.* **2021**, *30*, 2008–2020. <https://doi.org/10.1002/BSE.2729>.