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Corresponding Author:	Hengky Latan, PhD HLC Consulting Semarang, INDONESIA
First Author:	Mohammad A Algarni, PhD
Order of Authors:	Mohammad A Algarni, PhD
	Murad Ali, PhD
	Gema Albort-Morant, PhD
	Antonio L Leal-Rodríguez, PhD
	Hengky Latan, PhD
	Imran Ali, PhD
	Shakir Ullah, PhD
Abstract:	Lying on the dynamic capabilities perspective, organizational citizenship behavior for the environment and literature on green environmental management and performance as theoretical underpinnings, this study examines how adaptive capability and environmental behavior affect corporate sustainability performance and financial performance. To this aim, it relies on the use of the partial least squares-structural equation modeling (PLS-SEM) approach to analyze the data collected from 311 ISO 14001 certified firms in Saudi Arabia. The empirical analysis of the data reveals that, as it was hypothesized, both adaptive capability and environmental behavior have a positive and significant effect on corporate sustainability performance as well as on financial performance. In addition, the results demonstrate that corporate sustainability performance partially mediates the links between the two antecedent (exogenous) constructs and the endogenous construct (financial performance). This study may provide useful implications for cleaner production scholars and practitioners, that may enable them to better grasp the importance of training their employees in competencies such as adaptation and change detection and management, as well as to develop a pro-environmental behavior.

Make green, live clean! Linking adaptive capability and environmental behavior with financial performance through corporate sustainability performance

Mohammad A. Algarni, Department of HRM, Faculty of Economics and Administration, King Abdulaziz University, P.O Box 80201, Jeddah 21589, Saudi Arabia (maaalqarni2@kau.edu.sa).

Murad Ali, Leadership and Management, Newcastle Business School, Northumbria University, City Campus East, NE1 8ST, Newcastle Upon Tyne, United Kingdom (murad2.ali@northumbria.ac.uk).

Gema Albort-Morant, Departamento de Economía Financiera y Dirección de Operaciones, Facultad de Ciencias Económicas y Empresariales, Universidad de Sevilla, Av./ Ramón y Cajal, nº 1, C.P. 41018, Sevilla, Spain (galbort@us.es).

Antonio L. Leal-Rodríguez, Departamento de Administración de Empresas y Marketing. Facultad de Ciencias Económicas y Empresariales. Universidad de Sevilla. Av./Ramón y Cajal, nº1, C.P.41018, Sevilla, Spain (aleal6@us.es).

Hengky Latan, HLC Consulting, Jl. Kertanegara Selatan V No 5B Semarang 50241, Indonesia (hlatan@hlcacademicpublishing.com).

Imran Ali, Senior Lecturer, Leadership and Management, Newcastle Business School, Northumbria University, City Campus East, NE1 8ST, Newcastle Upon Tyne, United Kingdom (imran3.ali@northumbria.ac.uk).

Shakir Ullah, (1) Associate Professor of Finance University of Maryland Global Campus, 1616 McCormick Dr. Largo, Maryland United States.

(2) Faculty of Finance University of Louisiana Monroe 700 University Ave, Monroe, LA 71209, United States (shakir_fla@hotmail.com).

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The Arabic version of the survey questionnaire can be asked upon request.

Highlights

- This research focuses on corporate sustainability performance and financial performance.

- Adaptive capability and environmental behavior are critical drivers of endogenous constructs.

- Corporate sustainability performance stands as a positive mediating variable.

- We use ISO 14001-certified firms in an emerging economy.

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Abstract

Lying on the dynamic capabilities perspective, organizational citizenship behavior for the environment and literature on green environmental management and performance as theoretical underpinnings, this study examines how adaptive capability and environmental behavior affect corporate sustainability performance and financial performance. To this aim, it relies on the use of the partial least squares-structural equation modeling (PLS-SEM) approach to analyze the data collected from 311 ISO 14001 certified firms in Saudi Arabia. The empirical analysis of the data reveals that, as it was hypothesized, both adaptive capability and environmental behavior have a positive and significant effect on corporate sustainability performance as well as on financial performance. In addition, the results demonstrate that corporate sustainability performance partially mediates the links between the two antecedent (exogenous) constructs and the endogenous construct (financial performance). This study may provide useful implications for cleaner production scholars and practitioners, that may enable them to better grasp the importance of training their employees in competencies such as adaptation and change detection and management, as well as to develop a pro-environmental behavior.

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1. Introduction

People and organizations in all fields and throughout the world must face an environment characterized by unparalleled volatility, uncertainty, complexity, and ambiguity (VUCA context). The combination of these features has led to hypercompetitive markets that give rise to a situation that threatens the very survival of these organizations. In such VUCA settings, it becomes vital to identify which are the mechanisms that enable firms to perceive environmental changes (Jabbour, 2015; Jabbour et al., 2015; 2020) as well as being able to adapt to those changes while providing an appropriate response to them (Felipe et al., 2016). Consequently, the notion of adaptive capability emerges as a pivotal topic regarding firms' survival and performance. Adaptive capability concerns to an organization's degree of flexibility while adjusting to market or contextual shifts and particularly reflects its capability to align internal resources with external demands (Zhou and Li, 2010; Zhu et al., 2017).

Although the literature presents many studies that investigated this area, most analyses have attempted to analyze the impact of adaptive capability on the firm's overall performance (Zhu et al., 2017). Likewise, there is another stream of studies like the ones developed by Chang (2016) and Ali et al. (2021) that examine the impact of adaptive capability on product innovation or the one carried out by Eshima and Anderson (2017) that analyzes the impact of adaptive capability on entrepreneurial orientation. On the contrary, there is a scarcity studies have analyzed the relationship between adaptive capability and financial performance. For instance, a study from Wei and Lau (2010) examines the impact of adaptive capability on innovation and firm performance, yet they only rely on the use of the firms' return on asset (ROA) as a proxy of financial performance, while some additional variables (i.e., return on investment, sales growth, market share or profit growth) could also be included to better approach this construct. Moreover,

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not many studies have addressed to our knowledge the link between the adaptive capability of companies and corporate sustainability performance.

Similarly, another stream of research that draws from the Theory of Reasoned Action (Ajzen and Fishbein, 1980) and the Theory of Planned Behavior (Ajzen, 1985) indicates that human behavior is critical to achieving both individual and organizational outcomes. Since the second industrial revolution, there has been burgeoning research in a wide range of academic fields, such as geography, psychology, sociology, anthropology, political science and natural resources management, that have studied how people's behavior has an impact on the environment (Borden, 1977; Jabbour et al., 2019; Hynes and Wilson, 2016). For this reason, environmental behavior became an important topic that continues to be studied despite changes of scenario or opinions over the decades (Paillé and Boiral, 2013). More recently, Ramkissoon et al. (2018) revealed that environmental behavior could improve people's quality of life. In this vein, following Ajzen (1985, p. 11), "Actions […] are controlled by intentions, but not all intentions are carried out; some are abandoned altogether while others are revised to fit changing circumstances". Hence, in order to boost corporate sustainability and financial performance, along with adaptive capability, the company must also nurture a pro-environmental behavior. Hines et al. (1987) crafted their Model of Responsible Environmental Behavior which roots on Ajzen and Fishbein's (1980) theory of planned behavior and shapes a thorough meta-analysis of 128 pro-environmental behavior research studies and proposes a model of predictors of this variable. Following this line of research, Kollmuss and Agyeman (2002) raise the question of why do people act environmentally and what are the barriers to pro-environmental behavior. The outcome of Kollmuss and Agyeman (2002) is that environmental behavior is shaped by a set of nine somewhat contradictory and competing internal factors, among which they stress: motivation, environmental

knowledge, personal values, attitudes, environmental awareness, emotional involvement, locus of control, responsibility and priorities, and other factors related with human desires for comfort and convenience, habits and personality traits (Albort-Morant and Leal-Rodríguez, 2019). Regarding environmental behavior, it should be noted that most of the studies we have found analyze the impact of this variable on the environmental performance of companies (Ahmad et al., 2021, Nisar et al., 2021), or focus on the study of the main factors that determine environmental behavior (Peng and Lee, 2019; Ansari et al., 2021; Chwialkowska et al., 2020). However, there are not many studies that investigate the impact of environmental behavior on corporate sustainability performance nor on the financial performance of companies.

Therefore, the purpose of this study is to address these issues to fill the literature gap and to contribute to existing literature in several ways. First, we explain that corporate sustainability performance might become a relevant driver of firms' financial performance. Second, we assess both the direct relationship between adaptive capability and financial performance and its indirect link via corporate sustainability performance. In third place, this paper explores both the direct and indirect linkages between environmental behavior and firm performance through corporate sustainability performance in ISO 14001 certified companies in Saudi Arabia. Particularly, this study intends to provide a response to the following research questions: (1) Does adaptive capability directly affect corporate sustainability performance and financial performance?; (2) Does environmental behavior directly affect corporate sustainability performance and financial performance?; (3) Does corporate sustainability performance affects financial performance?; (4) Is corporate sustainability performance a mediating variable in the relation between adaptive capability and financial performance?; and finally, (5) Is corporate sustainability performance a mediating variable in the relation between environmental behavior and financial performance?.

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The decision to select ISO 14001 certified companies lies on the fact that such firms have a strong commitment towards environmental responsibility and strong environmental management systems (Latan et al., 2018a). In addition, adoption of ISO 14001 environmental management systems fails to require substantial financial sums while it may exert a long-term impact on the firm's performance as it reconfigures its daily routines and operations (Zeng et al., 2010). This also makes these firms adequate to test the posited research model and hypotheses aimed at linking corporate sustainability and financial performance.

The following section presents a theoretical review of the relationship between adaptive capacity, environmental behavior, corporate sustainable performance, and financial performance. Section 3 describes the methodology and section 4 analyses the results of the research model. Finally, section 5 presents the conclusions, limitations, and future research directions.

2. Theoretical background and hypothesis development

2.1 Underpinning theories

On the basis of literature on green environmental management and performance, this study draws upon organizational citizenship behavior for the environment (Daily et al., 2009), and the dynamic capabilities perspective (Eisenhardt and Martin, 2000; Teece et al., 1997) as underpinning theorical frameworks for this study.

Research exploring the ties between corporate sustainability and financial performance has led to inconclusive results. Indeed, there arise two opposing viewpoints regarding this relationship. On the one hand, several studies (e.g., Russo and Fouts, 1997; Molina-Azorín et al., 2009) conclude that environmental practices could result in the reduction of waste generation, energy consumption, resources used and pollution, which may significantly contribute to reducing costs, and hence, improving financial performance. On the other hand, other studies (e.g., Wagner, 2005;

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Link and Naveh, 2006) found a negative relationship between environmental and business performance, suggesting that corporate sustainability does not necessarily improve firms' financial performance and that companies mostly struggle to sustain its profitability over time (Zeng et al. 2010). Moreover, a study by Iraldo et al. (2009) states that the impact of an environmental management system on competitive (i.e., market performance, resource productivity and intangible assets) is not solidly supported.

A potential explanation for the existence of such inconclusive results could be that environmental practices per se cannot always positively lead to sustainable financial performance. The issue is that environmental practices might be regarded as zero-order or ordinary capabilities (i.e., practices that are helpful and add value to the firm in the short-term) (Winter, 2003). However, such capabilities, although helpful in the short term, fail to contribute to sustainable competitive advantage and seem to be insufficient to bring long-term superior performance (Mohaghegh et al., 2021). The reason for this underlies in the fact that ordinary capabilities are static in nature and only become a real strength once they are established as best practices (Teece, 2014). Furthermore, such environmental practices might be adequate in predictable and unchanging environments, whereas in the currently extremely dynamic environments, those practices proof frail and insufficient to maintain in sustainable superior performance (Eisenhardt and Martin, 2000). We argue that in today's competitive environment characterized by technological development, intense competition, and changes in customer requirements, best practices can only be achieved through persistent development of ordinary capabilities. Thereby, in this context, a sustained superior performance might be achieved by the firm's ability to foster dynamic or "higher-order" capabilities such as adaptive capability. Our argumentation is dynamic capabilities view, which shapes an extension in line with the resource-based view (RBV) (Barney,

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1991), and that claims that in today's global markets, a static approach like the one adopted by the RBV fails to address sustainable and long-term superior performance within highly turbulent, volatile and uncertain environments (Kumar et al., 2018). Therefore, the dynamic capabilities framework enhances the RBV concentrating on "difficult-to-replicate capabilities" that derive from the firm's ability to adapt to uncertain, dynamic and changing environments and are aimed at the recurrent renewal of the existing ordinary capabilities (Teece, 2007). Abundant research believe dynamic capabilities are drivers of sustained competitive advantage. For instance, Teece (2007, 2014) describes them as the organization's capability to sense (i.e. identifying opportunities and threats in the environment), seize (i.e., taking advantage of the identified opportunities), and reconfigure (i.e., deploy, enhance and combine) its base of resources and capabilities to warrant sustainable competitive advantage.

In this sense, adaptive capability helps companies to better cope and interact with their stakeholders, hence leading them to rearrange their resources and reorientate their internal strategy (Ali et al., 2017). Adaptive capability might be understood as the aptitude related to problem-solving, resources reconfiguring and quickly responding to customers' needs and preferences or market opportunities (Zhou and Li, 2010). In this vein, awareness and prompt reaction constitute two key elements of adaptive capability. As a dynamic capability, adaptive capability is concerned with the firm's sensing and seizing of market opportunities and the quick response to such prospects. This study attempts to employ adaptive capability as a form of dynamic capability in green environmental management research. Organizations with an adaptive capability enable employees to find alternative ways of doing their work, develop flexible processes to respond rapidly to changes and opportunities detected in the markets, and change strategy rapidly according

to the business priorities, which may enhance sustainability and organization performance (Akgün et al., 2012).

Employees in organizations play a crucial role in improving environmental management performance (Jabbour, 2015; Luu, 2019; Paillé, 2020). Employees' environmental behavior is a form of organizational citizenship behavior (OCB) (Luu, 2019). Rooted in OCB's framework, OCB for the environment (OCBE) is widely employed in environmental management and performance literature and has emerged as a promising approach to capturing employees' environmental behaviors in the workplace (Paillé et al., 2014). OCBE can be defined as "voluntary actions of employees of an organization that are directed toward environmental improvement" (Daily et al., 2009, p. 246). OCBE corresponds to an employee's willingness to collaborate with colleagues in the workplace and reflects the behaviors and actions that benefit the natural environment (Daily et al., 2009; Gilal et al., 2019; Luu, 2019). Consistent with the dimensions of the OCB model, Boiral and Paillé (2012) propose OCBE as comprising eco-civic engagement (voluntarily engaging in environmental activities of the organization), eco-helping (voluntarily helping other coworkers address environmental concerns), and eco-initiatives (discretionary behaviors and solutions to enhance environmental performance) (Luu, 2019). OCBE provides a theoretical base for an employee's behavior toward an environmental objective ultimately contributing towards the organization's corporate sustainability and financial performance. Employees' environmental behaviors as a form of OCBE encourage sustainability by reducing personal as well as organizational consumption of resources (Gilal et al., 2019). Employees who engage in sustainability behavior show high concerns for environmental pollution levels and perform such tasks that help to reduce any sort of pollution.

2.2 Corporate sustainability performance and financial performance

Companies must prevent and diminish their sustainable impact through corporate sustainable and cleaner practices (Manrique and Martí-Ballester, 2017). The implementation of strategies or practices that try to protect the natural environment reflects corporate sustainability performance. If environmental protection can bring benefits, companies will actively fulfill their responsibility. Therefore, they will pay more attention to them. Thus, environmental protection and economic benefits will be in harmony. Thereby, it is important to examine the relationship between corporate sustainability performance (i.e., implementing sustainable operations, environmental protection, ecological regulations, pollution prevention technologies or waste reduction practices) and financial performance impact (Latan et al., 2018a; Song et al., 2017). To do this, there needs to be a connection and balance between the different sustainable operational activities, the effective management of stakeholders and the corporate finance perspective. Corporations that integrate the concept of sustainability into their main strategies are likely to achieve a favorable corporate sustainability performance.

In sum, lowering capital costs together with access to more and better financial and political resources has an impact on the capital structure, risk exposure (Wang et al., 2020), and profit margins. This, over the course of time, should improve the financial performance of the environmental company. Therefore, we believe that corporate sustainability performance may cause a positive impact on financial performance. Thus, this paper proposes the following hypothesis:

H1. Corporate sustainability performance is positively related to financial performance in ISO14001 certified companies.

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2.3 Links between adaptive capability, corporate sustainability performance and financial performance

Adaptive capability is defined by Luers et al. (2003) as "the extent to which a system can modify its circumstances to move to a less vulnerable condition" (p.259). Starr et al. (2003) point out that this ability allows companies to alter their operations, management systems, strategies, governance structure, and decision-support capabilities to resist agitations and disturbances. Staber and Sydow (2002) explain that adaptive capability is a dynamic process of continuous and quick learning based on organizational unlearning that attempts to identify and capitalize on emerging market and technology occasions to advance and apply new innovative ideas. These new ideas would enable firms to be more responsible towards environment while new ideas in operations always bring financial benefits. In recent years, because of the increase in environmental problems, companies have been forced to reduce their negative impact on the environment while contributing to corporate sustainability. Thus, the quick adaptability of companies has allowed them to develop, implement and adapt corporate sustainability practices that help prevent and reduce the environmental impact caused by internal and external problems as well as to increase the credibility of firms in terms of financial matters. The protection of the environment together with the attempt to minimize corporate environmental damage are signs of the sustainability performance of companies (Féres and Reynaud, 2012). Consequently, the adaptive capability to the new more sustainable scenario together with the implementation of the company's environmental practices could positively affect organizational performance including corporate sustainability performance as well as financial performance. For example, companies could reduce, recycle and reuse the natural resources and waste used in the production system which will ultimately lead to reduce cost. This is in line with the principles of circular economy, which is

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essentially based upon the effective use of resources (Goyal et al., 2018). This would not only allow them to improve the company's green image but could also reduce its financial costs associated with the operating cycle. Thus, companies should see these ==sustainability== practices and strategies based on the protection of the environment and society as a positive corporate ==sustainability== benefit (Gómez-Bezares et al., 2017). The ability to adapt to a more sustainable scenario will not only result in cost reduction but will also lead to improved corporate financial performance. Thus, developing adaptability capacities can play a key role in generating broader organizational benefits that enable companies to reap higher profits (Gómez-Bezares et al., 2017), or shareholder wealth. Therefore, we predict that adaptive capacity improves corporate sustainability performance and financial performance.

The preceding arguments bridge the relationships among adaptive capability, corporate sustainability performance, and financial performance. Implicitly, corporate sustainability performance serves as a mediator in the effects of adaptive capability on financial performance. Firms might not be able to reduce the cost of operations until they do not focus on ==sustainability== strategies which support cleaner, reduction, recycle, reuse the natural resources and waste used in the production system (Gómez-Bezares et al., 2017; Goyal et al., 2018). Thus, firms need to focus on cleaner sustainable strategies in operations which will in return reduce cost of operations ultimately leads to high level of revenues (Gómez-Bezares et al., 2017). Recognizing potential role of corporate sustainability performance in linking antecedents and key outcomes of firm, it is required to investigate the potential mediating mechanism of corporate sustainability performance between organizational factors (such as adaptive capability leading to organizational performance) and firms' outcomes is needful in increasing the understanding and effective pathway to leading high levels of organizational performance. Therefore, this study expects that corporate

sustainability performance holds intervening power between the relationships triggered from adaptive capability, such that the effect of adaptive capability on financial performance could be stronger via corporate sustainability performance than the direct effect of adaptive capability on financial performance. This suggests that corporate sustainability performance mediates the relationship between adaptive capability and financial performance. Based on the above theoretical reasoning, we suggest the following hypotheses:

H2. Adaptive capability is positively related to corporate sustainability performance in ISO14001 certified companies.

H3. Adaptive capability is positively related to financial performance in ISO14001 certified companies.

H4. Corporate sustainability performance positively mediates the relationship between adaptive capability and financial performance in ISO14001 certified companies.

2.4 Links among environmental behavior, corporate sustainability performance and financial performance

Environmental behavior refers to "such behavior which is generally (or according to knowledge of environmental science) judged in the context of the considered society as a protective way of environmental behavior or a tribute to the healthy environment" (Krajhanzl, 2010, p. 252). At the organizational level, corporations should adopt decision-making environmental behavior to meet their own green goals and protect the environment. As a result, companies implement environmentally-friendly initiatives in their operations and human resource management to acquire long-term competitive advantages (Shen et al., 2018; Hameed et al., 2020). Moreover, these initiatives will allow them to comply with the environmental responsibility

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demanded by their stakeholder (Boiral et al., 2018) and the actual environmental legislation and regulations.

Paillé and Boiral (2013) study the effect of environmental behavior in work settings to improve ==sustainability== practices and performance. Ronnenberg et al. (2011) found evidence to explain that ==corporate sustainability== strategies help companies to achieve better environmental performance through standardized organizational practices. Another study by Kim et al. (2019) examined the effect between employees' eco-friendly behavior and environmental performance. Hameed et al. (2020) note that workers' environmental behavior should align with ==corporate sustainable== management. For this, companies ought to motivate employees to carry out sustainable and cleaner activities. In return, environmental behavior will allow increasing the firm's sustainability performance, like so the development of new green products or processes and thinking about the relocation of production to countries with greater environmental awareness. All of this will allow operating costs to be reduced. Not only that, but environmental behavior will permit companies to go one step ahead of their competitors and comply with environmental legislation (if they do not want to be fined). Further, corporate sustainability performance attracts environmentally-conscious customers and investors (Flammer, 2015), increases stock prices (Waddock and Graves 1997), enhances environmental image and reputation and attracts subsidies and tax discounts (Song et al., 2017). This will translate into increased sales rate (Porter and Van der Linde, 1995), profitability growth (King and Lenox, 2001) and return on assets and investment (Waddock and Graves, 1997), and income stability.

Ultimately, it is important to point out that environmental behavior can raise the value of the firm (Song et al., 2017). Investment in workers' environmental behavior can be beneficial for increased organizational incomes. This way, if the benefits are sufficient to cover the initial

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investment, the company will continue to invest in environmental protection (Song et al., 2017). Heal (2005) also shows that corporate environmental behavior can yield benefits that include improved economic performance, reduction of business risk, increase of corporate value, and satisfaction of shareholders' interests. Only in this way can corporate performance generate long-term profitable and successful financial performance.

Limited studies are available which have attempted to explore the intervening role of corporate sustainability performance, despite its potential implications. Therefore, the study attempts to explore the intervening role of corporate sustainability performance on the relationship between environmental behavior and financial performance. Since, environmental behavior in work settings is crucial for environmental and organizational performance including corporate sustainability and financial performance (Paillé and Boiral, 2013) while corporate sustainability performance is critical for financial performance (King and Lenox, 2001; Porter and Van der Linde, 1995; Waddock and Graves, 1997), therefore, this study expects that corporate sustainability performance also holds indirect influential power between the relationships triggered from environmental behavior, such that the effect of environmental behavior on financial performance could be stronger via corporate sustainability performance and weaker in cases in which environmental behavior directly affect financial performance. These arguments lead to conclusion that corporate sustainability performance mediates the relationship between environmental behavior on financial performance. Based on these theoretical arguments, we propose the following hypotheses:

H5. Environmental behavior is positively related to corporate sustainability performance in ISO14001 certified companies.

H6. Environmental behavior is positively related to financial performance in ISO14001 certified companies.

H7. Corporate sustainability performance positively mediates the relationship between environmental behavior and financial performance in ISO14001 certified companies.

Following previous studies (Akgün et al., 2012; Ali, 2021; Dal Maso et al., 2018; Masri and Jaaron, 2017), this study includes four firm-level variables as control variables. Particularly, this study control firm's size, age, industry type and firm type because of their potential effects on imitation and innovation strategies and sustained competitive advantage. Large organizations are believed to have plenty of resources including financial resources and revenue to engage and support their initiatives while small organizations have resource constraints (Masri and Jaaron, 2017). Old organizations are more likely to have accumulative industrial experiences and are believed to be more well established. The industrial experiences enable the organizations to manage their resources and plans effectively. The industrial differences are more likely to influence performance of the organizations. Finally, firm type such as manufacturing versus services may influence performance of the organizations.

3. Methods

3.1 Research context

The study focuses on Saudi Arabia as primary context for this study. Environmental protection is the responsibility of every government, organizations, and individuals. Sustainability including environmental protection, green sustainable development, and eco-friendly environment are top of the agenda of all developed and developing countries and Saudi Arabia is no exception. The Saudi Arabian government gives great importance to protecting the environment, developing it and preserving it from pollution. Saudi Arabia has recently launched multi-million projects, such

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as the "Green Saudi Arabia" and "Green Middle East" initiatives, in continuation of its pioneering role in protecting and preserving the environment and contributing to finding solutions to the global climate crisis. This is due to the fact that it is one of the most important oil-exporting countries in the world. In addition, Saudi Arabia follows balanced and integrated policies through planning and implementing development programs and projects to ensure that they do not have a negative impact on the environment. The Environmental Protection Law in Saudi Arabia was first launched in 1980**s**, and it has been updated numerous times. The government monitors all stakeholders in making sure they strictly follow rules and regulations which cover several environmental aspects, such as preserving natural resources, conserving water, wildlife and conservation resources, marine environmental pollution, air pollution, materials for chemicals, waste management and environment, occupational health, and public utilities. As a result, all stakeholders follow these laws and regulations to promote environmentally friendly initiatives and practices that protect the environment.

3.2 *Data collection and sample*

As quantitative-oriented research, this study employed a deductive approach to investigate the structural associations among adaptation capability, environmental behavior, corporate sustainability performance and financial performance. This methodology is suitable to address the research question since it offers an objective criterion to investigate the structural associations (Enkel et al., 2017). Furthermore, this approach increases the quantitative-oriented research focusing on environmental concerns, corporate sustainability, and financial performance (Jabbour et al., 2020; Latan et al., 2018a, 2018b; Nisar et al., 2021; Umrani et al., 2020; Wang et al., 2021).

The data collection for this study was part of a larger project study investigating green human resource management, corporate sustainability and financial performance, environmental

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issues, and environmental responsibility in companies within Saudi Arabia. The primary data for this study were collected from participants working in various industries in Saudi Arabia to ensure generalizability. Following previous studies (Jabbour, 2015; Jabbour et al., 2015 Latan et al., 2018a; Wang et al., 2021), the required sample was collected from ISO 14001 certified companies, the selection of which was more appropriate because such companies have a strong commitment towards environmental responsibility and strong environmental management systems, focusing on environmental policy, the assessment of environmental aspect and impacts, and management review for environmental issues (Latan et al., 2018a). Due to the unavailability of a comprehensive database, several sources were used to identify desired companies for data collection. These sources include Chambers of Commerce and Industry, General Authority for Statistics database, Ministry of Finance and National Economy, the ISO Organization, ISO consulting firms and local industrial associations. The contact information included city location and industrial classification of all ISO 14001 certified companies in Saudi Arabia. Uncertified companies and those which did not intend to obtain ISO 14001 certification soon were excluded from the data collection. A data collection team of twelve members including four senior undergraduates, four MBA students, and four Executive MBA students were hired and trained for data collection. The master students were included during the questionnaire development process. The data collection team was successful in reaching out to the middle managers, top managers and those who were in charge of environmental management systems and ISO 14001 implementation in the desired companies. Consent to participate in the survey was obtained either by email or mobile phone; personal visits were not possible because of the Covid-19 pandemic. The preferable way of communication in Saudi Arabia is via the WhatsApp messaging service. The contact details of the 750 participants were used to send them an online e-survey. An online e-survey was designed using the free-of-

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charge Google Doc service, and a link was shared with the potential participants through WhatsApp. The data was collected during October–November 2020. Since all questions were made mandatory, the participants could not proceed to the next question until they had responded to the previous one. Though there were no missing values found in the survey, data were examined for possible outliers and unengaged responses. As a result, 327 responses were received which gives a response rate of 43.60%, which is in the acceptable range in similar organizational research studies (Latan et al., 2020). Of which ten were excluded from the MS Excel datasheet because of outliers and unengaged responses. Therefore, the final sample comprised 311 firms, which were diversified in terms of firm profiles (i.e., age, size, industry type, and firm type) as shown in Table 1.

In this study, several sampling biases checks were made to strengthen the results of PLS-SEM and ensure transparency practices (Latan, 2018). First, for a non-response bias test, the comparison between two sample groups (early and late responders) were examined in terms of demographic characteristics and model variables. The results of comparison did not show any significant differences at $p < 0.05$, suggesting that differences in the two groups of responders were not related to non-response bias. Second, the t-test on the means difference between the two groups showed non-statistically significant results at p>0.05, suggesting no mean differences were found in the two sample groups. Third, the homogeneity of variance was assessed through Levene's test. The result showed significant results at p>0.05, suggesting the assumption of equivalent variance in research variables. Finally, the common method bias (Podsakoff et al., 2012) was checked through examining a full collinearity variance inflation factor (AFVIF) approach (Kock, 2015). The analysis result provided evidence that the highest value of AFVIF of all variables was 2.19 which is less than 3.30, suggesting that common method bias does not exist in the dataset.

******** please insert Table 1 about here ********

3.3 Measure

The development and refinement of survey includes several stages. First, the literature on adaptive capability, environmental behavior, corporate sustainable performance, and financial performance was the object of thorough review. Second, as the survey was distributed in Saudi Arabia, the original survey items were first prepared by two research team members into English and then translated into Arabic language by four other local experts from research team members. For translation equivalence accuracy, the three independent local experts back-translated the Arabic version of survey items into English language (Mullen, 1995). Third, the first draft of the questionnaire was pre-tested in a rigorous process to check its structure and design, such as if the questions were easily understandable, and that no ambiguity existed in the questions. The draft was shared with scholars and experts on the subject-matter for discussion and reflecting on, to assess content validity of the survey. Fourth, a pre-test with 5–10 participants is suitable to determine the issues related to the survey questionnaire's design (Burns and Bush, 2003). Therefore, a pre-test of Arabic version was conducted by thirteen participants (one professor and four senior undergraduates, four MBA students, and four Executive MBA students with professional experience) to check the face validity and appropriateness of the draft of the questionnaire for the Saudi context. Finally, after the pre-test by six participants, ten professionals reviewed the draft of the questionnaire to identify if there was any difficulty reading the Arabic version of the survey questionnaire. Based on several feedback meetings with these professionals, some modifications were recommended in the survey items for consistency of semantic connotation between Arabic and English languages, and overall readability of the Arabic version.

The final draft of the designed questionnaire was used for the pilot study. Interested readers can get the Arabic version of the questionnaire from the authors.

A pilot survey was administered to a convenience assessment sample of 81 potential participants to perform preliminary data analysis. The results of reliability of the variables provided evidence that the values of Cronbach's alpha and composite reliability were higher than 0.70, indicating an adequate reliability of all variables.

For all variables, the survey items used in this study are primarily adopted and used from existing validated scales. All survey items and responses, unless specified otherwise, are measured on a seven-point Likert-type scale with response options from 1 (strongly disagree) to 7 (strongly agree). To measure adaptive capability, this study adopted the scale used in Akgün et al. (2012) and Monferrer et al. (2015), which is based on prior work (Gibson and Birkinshaw, 2004). Three items were used to measure this scale. The scale of financial performance was adopted from Ni et al. (2015) using four items. The four items scale to measure employees' environmental behavior was adopted from Zwarun and Hall (2012). The scale of corporate sustainability performance was adopted from Tomšič et al. (2015). Seven items were used to measure this scale. Table 1 presents the profile of the respondent firms. Appendix A shows the items used in the survey questionnaire.

3.3. Statistical method

This study chooses multivariate statistical technique such as structural equation modelling (SEM) to examine measurement and structural models. The application of SEM is widely accepted in social science since it provides researchers with sufficient means for examining and modifying the associations among constructs, while it offers great potential for further development of testing theory and modification of the association among proposed structural relationships (Jabbour et al., 2020). Currently, two widely practiced SEM techniques are available, that is, covariance-based

SEM (CB-SEM) and variance-based SEM (partial least squares-SEM) (Hair et al., 2017; Richter et al., 2015; Rigdon et al., 2017; Sarstedt et al., 2016). PLS-SEM is widely used, including environmental management and sustainable research (Jabbour et al., 2020; Latan et al., 2018b). This study argues that the application of PLS-SEM via SmartPLS 3 software (Ringle et al., 2015) is more appropriate for the scope of this study (Latan, 2018; Latan et al., 2018b; Rigdon, 2016) because: (1) PLS-SEM is a more suitable approach for prediction-oriented research (Chin, 2010; Hair et al., 2012; Richter et al., 2015; Sarstedt et al., 2016). (2) PLS-SEM is a more appropriate technique while testing complex relationships in the structural models concerning the associations among the latent variables (Richter et al., 2015; Sarstedt et al., 2016), whereas the model being tested is considered in large systems (Latan et al., 2018b). Finally, PLS-SEM is a valuable approach for testing the relationship between latent variables which is believed to be an early stage of development of testing theory or theory extension (Richter et al., 2015; Sarstedt et al., 2016). Before analyzing the model, the sample size was calculated according to Cohen's (1992) rule. The minimal sample size recommended for this study is 66 (power 80%, significance level of 5%, R^2 <0.15 and maximum number of independent variables pointing at a dependent variable are 3). In addition, using statistical power analysis via the G*Power 3.1.9.2 program (Faul et al., 2007), the minimum sample size required for this study is 77 (where level of power = 0.80, effect size = 0.15, significance value = 0.05 and number of predictors = 3). The estimation for sample size in both analyses suggests that the sample size in this study is not an issue.

4. Results

4.1 Measurement model assessment

This study follows recent guidelines suggested by Latan (2018) based on Hair et al. (2017) to report the results of measurement model. First, the convergent validity is assessed through

examining individual item reliability by looking at standardized factor loadings and the analysis

of average variance extracted (AVE) index. A general rule of thumb required for the acceptance

of an item is that a standardized factor loading value should be ≥0.70 (Fornell and Larcker, 1981),

while an item with standardized factor loading value should be ≥0.50 in research of an exploratory

nature (Nunnally, 1978). During the preliminary analysis of standardized factor loading values, all

indicators used in the final measurement and structural models have standardized factor loading

values with an acceptable value of ≥ 0.70, except for two items from the sustainable performance

(i.e, SC5 and SC6). The deletion of these two items is consistent with the original scale (Tomšič

et al., 2015). All standardized factor loading values are above the minimum acceptable value and

are strongly statistically significant at 0.01 percent with two-tailed test (Roldán and Sánchez-

Franco, 2012) as shown in Table 2. Therefore, individual item reliability via standardized factor

loading values shows acceptable convergent validity in the measurement model. Secondly, the

analysis of AVE confirms the convergent validity for each multi-item construct. An acceptable

value for AVE is ≥ 50, which reflects that 50 percent of the item variance should be accounted for

(Fornell and Larcker, 1981). As shown in Table 2, the values of AVE for all multi-item constructs

are above the minimum threshold value suggesting acceptable convergent validity in the

measurement model. In addition, the internal consistency reliability of the multi-item constructs is

calculated through construct reliability using three measures: Cronbach's alpha, Dijstra-Henseler's

and composite reliability. Hair et al (2017) recommends a general rule of thumb required for these

reliability measures is a value of ≥0.70. Table 2 reports that the Cronbach's alpha values are ranged

from 0.70 to 0.86, the Dijstra-Henseler's values are ranged 0.71 to 0.87, and the composite

reliability values are ranged from 0.82 to 0.90, suggesting acceptable internal consistency

reliability of the multi-item constructs (Henseler et al., 2015).

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******** please insert Table 2 about here ********

The discriminant validity of the multi-item constructs is calculated by using two criteria: the Fornell-Larcker criterion and the heterotrait-monotrait ratio of correlations (HTMT) criterion. According to the Fornell-Larcker criterion, the square root of a multi-item construct's AVE should be greater than the absolute value of their bivariate correlation with all opposing dependent constructs (Fornell and Larcker, 1981). The results in this study meet this criterion as shown in lower-left half of Table 3, the square root of each multi-item construct's AVE is higher than its absolute value of bivariate correlation with other multi-item constructs (Fornell and Larcker, 1981). Finally, the HTMT is an estimate of the correlation between multi-item constructs, which is consistent with the disattenuated construct score (perfectly reliable). According to the HTMT criterion, a general rule of thumb is that for assessing discriminant validity, the value of HTMT index should be <0.85 or < 0.90 for all multi-item constructs in the structural model (Franke and Sarstedt, 2019). The results in this study meet this criterion as shown in upper-right half of Table 3; the HTMT values via the correlation between two construct measurements is >0.85. These analyses suggest that there is no evidence of a lack of discriminant validity, and it concludes that all multi-item constructs are sufficiently distinct from each other in the structural model.

******** please insert Table 3 about here ********

4.2 Structural model assessment

Structural model is assessed following the updated guidelines in Hair et al. (2017). In this study, collinearity in the structural model is assessed through examining the values of variance inflation factor (VIF). The results reported in Table 3 suggest that VIF values are below the threshold of 3.3 indicating no vertical or lateral collinearity between independent and dependent variables (Kock and Lynn, 2012). The coefficient of determination (R^2) values for corporate

sustainability performance and financial performance indicate that theoretical model explains 42% and 59% of the variance of the construct respectively, which is considered as satisfactory in-sample predictive power of the structural model predictability. The R^2 values are further confirmed by the predictive relevance (Q^2) of structural model fit resulting from the blindfolding technique. The predictive relevance for corporate sustainability performance (0.27) and financial performance (0.30) are above zero, suggesting a satisfactory level of predictive relevance of model fit in terms of out-of-sample prediction. Furthermore, in present study, the effect size (f^2) measures if a predictor (exogenous) construct has a substantive impact on an endogenous construct's R^2. The threshold values of f^2 are as follows: small = 0.02, medium = 0.15, and large 0.35 (Chin, 1998). Table 4 reports the results for the effect size f^2. The effect size (f^2) values are obtained for all the predictors in the structural model, which are ranged from 0.07 to 0.23, covering the small and medium categories.

******** please insert Table 4 about here ********

4.3 Hypothesis testing (direct and mediating effects)

4.3.1 Direct effects (H1–H4)

To assess the direct relationship hypotheses (H1– H5), the significance levels of direct path coefficients are obtained using the bootstrapping procedure (with number of 5000 bootstrap samples and 311 bootstrap cases; using no sign changes). Figure 1 and Table 4 provide the results. The empirical results show that corporate sustainability performance is positively related to financial performance (H1; $\beta = 0.24$; $p<0.001$, BCa-CI$_{95\%}$ [0.14, 0.36]). Therefore, H1 is accepted. The results also demonstrate that adaptation capability is positively related to corporate sustainability performance (H2; $\beta = 0.48$; $p<0.001$; BCa-CI$_{95\%}$ [0.38, 0.56]) and financial performance (H3; $\beta = 0.29$; $p<0.001$; BCa-CI$_{95\%}$ [0.19, 0.40]); therefore, H2 and H3 are accepted.

The results also demonstrate that environmental behavior is positively related to corporate sustainability performance (H5; β = 0.23; $p<0.001$; BCa-CI$_{95\%}$ [0.13, 0.33]) and financial performance (H6; β = 0.36; $p<0.001$; BCa-CI$_{95\%}$ [0.24, 0.47]); therefore, H5 and H6 are accepted.

4.3.2 *Mediating effects (H4 and H7)*

The proposed structural model (Figure 1) reflects a partially mediated model. More specifically, this study investigates whether corporate sustainable performance serve a significant mediating role in the model. Following updated guidelines in Nitzl et al. (2016), which are based on Zhao et al. (2010), the non-parametric bootstrapping method embedded in SmartPLS 3 software (Ringle et al., 2015) is used to generate *t*-values, significance level, *p*-values as well as the corresponding 95% BCa bootstrap confidence intervals for examining the significance of the mediating effects (Hair et al., 2017; Sarstedt et al., 2020). Consistent with H4, that corporate sustainability performance positively mediates the relationship between adaptive capability and financial performance, the results of mediation analysis show that adaptation capability has a significant total effect on financial performance (β = 0.41; $p<0.001$; BCa-CI$_{95\%}$ [0.31, 0.51]); when adding corporate sustainability performance as a mediator, then the adaptation capability $\rightarrow$ corporate sustainability performance $\rightarrow$ financial performance link is significant (H4; β = 0.12; $p<0.001$; BCa-CI$_{95\%}$ [0.04, 022]); adaptive capability decreases its influence, but maintains a significant direct effect on financial performance (H3; β = 0.29; $p<0.001$; BCa-CI$_{95\%}$ [0.19, 0.40]). Therefore, this result supports H4 and suggests a partial mediation between adaptive capability and financial performance. Similarly, H7 predicts that corporate sustainability performance positively mediates the relationship between environmental behavior and financial performance; the results of mediation analysis show that environmental behavior has a significant total effect on financial performance (β = 0.41; $p<0.001$; BCa-CI$_{95\%}$ [0.32, 0.52]); when adding corporate

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sustainability performance as mediator, then the environmental behavior → corporate sustainability performance → financial performance link is significant (H7; β = 0.12; p<0.001; BCa-CI$_{95\%}$ [0.04, 022]); environmental behavior decreases its influence, but maintains a significant direct effect on financial performance (H6; β = 0.36[***]; p<0.001; BCa-CI$_{95\%}$ [0.24, 0.47]). Therefore, this result supports H7 and suggests a partial mediation between environmental behavior and financial performance.

4.4 Control variables

Table 4 reports the results of control variables. As shown in Table 4, several control variables have positive and significant effects in the proposed structural model. In particular, firm size is positively related to financial performance (β = 0.09; p<0.05; BCa-CI$_{95\%}$ [0.02, 0.10]). Industry type is positively related to corporate sustainability performance (β = 0.11; p<0.01; BCa-CI$_{95\%}$ [0.05, 0.18]). Finally, firm type is negatively related to corporate sustainability performance (β = - 0.07; p<0.05; BCa-CI$_{95\%}$ [-0.14, 0.00]). The results of the control variables are in line with similar previous research (Akgün et al., 2012; Ali, 2021; Dal Maso et al., 2018).

******** please insert Figure 1 about here ********

5. Discussion and conclusion

5.1 Discussion of results

The first primary finding of this study confirms that corporate sustainability performance affects financial performance. This finding provides additional evidence to previous studies that corporate sustainability performance has a positive effect on financial performance (Achim and Borlea, 2014; Charlo et al., 2015; Dal Maso et al., 2018; Jung et al., 2018; Kim et al., 2021; Laskar et al., 2017; Weber, 2017). In addition, this finding adds further support and weight to the previous studies which examine that the relationship between corporate sustainability performance and

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financial performance is asymmetric (Fujii et al., 2013; Latan et al., 2018b; Pierce and Aguinis, 2013) and bi-directional (Weber, 2017). The second primary finding of this study confirms that adaptive capability directly impacts corporate sustainability performance as well as financial performance. This finding provides additional evidence to previous studies that adaptive capability has a positive effect on organizational performance including corporate sustainability performance (Lee et al., 2001; Wei and Lau, 2010) and financial performance (Oktemgil and Greenley, 1997). The finding of this study also confirms the antecedent's role of adaptive capability to explore the competitive benefits of adaptive capability. The evidence for adaptive capability as an antecedent helps to explain corporate sustainability performance by which it helps to improve financial performance. Based on the dynamic capability's perspective, the adaptive capability as built on antecedent role enables the organization to gain higher rent. The result of this study strengthens the argument that adaptive capability provides support to both corporate sustainability performance and financial performance. This finding provides one of the main theoretical and empirical contributions of this study. The third primary finding of this study confirms that employee's environmental behavior directly affects corporate sustainability performance and financial performance. This finding provides additional evidence to previous studies that employees' environmental behavior has a positive effect on organizational performance including corporate sustainability performance (Ahmad et al., 2021; Hameed et al., 2020; Kim et al., 2019; Nisar et al., 2021; Paillé and Boiral, 2013) and financial performance (Flammer, 2015; Heal, 2005; King and Lenox, 2001; Song et al., 2017; Waddock and Graves 1997). Given the dearth of studies of organizational outcomes or competitive benefits of environmental behavior, the examination of environmental behavior with corporate sustainability performance and financial performance adds to the literature on environmental behavior research. The result of this finding provides empirical

evidence for the proposition that environmental behavior generates corporate sustainability performance that promotes financial performance. The result of this study also confirms that environmental behavior could be an antecedent of corporate sustainability performance and financial performance, which is also another main theoretical and empirical contributions of this study. The fourth and final primary findings of this study confirm that adaptive capability and employees' environmental behavior have indirectly impact on financial performance respectively. These results suggest that corporate sustainability performance mediates the relationship between adaptive capability and financial performance, and the relationship between employees' environmental behavior and financial performance. The mediating role of corporate sustainability performance is consistent with previous studies (Anwar, 2018; Latan et al., 2018a, 2018b; Magon et al., 2018).

5.2 Theoretical contributions

This study contributes to both theory and literature in several ways. First, although research has been devoted to outcomes of adaptive capacity and employees' environmental behavior, organizational antecedents of adaptive capacity and employee's environmental behavior and have been largely ignored. This empirical study contributes to the literature on organizational citizenship behavior for the environment and the dynamic capabilities view of the firm by assessing the antecedental roles of adaptive capacity and employees' environmental behavior and on corporate sustainability performance and financial performance. The challenge in the currently hypercompetitive landscape deals with the firm's ability to adapt to contextual conditions of uncertainty, dynamism, and overnight change by means of the recurrent reconfiguration of its base of resources and capabilities (Teece, 2007). By merging the two above-mentioned conceptual strings to address the links between adaptive capability, environmental behavior and corporate

sustainability performance, this study presents a novel perspective for financial performance prediction. Second, this study focuses on adaptive capability and environmental behavior as effective tools to improve corporate sustainability performance as it ultimately enhances financial performance. For example, if a company has a rapid capacity to adapt an environmental behavior, it will try to reduce its carbon footprint. In this way, they will improve their brand and reputation, while reducing operating costs (Klassen and McLaughlin, 1996). Third, no studies have yet analyzed the mediating effect of corporate sustainability performance in the framework of adaptive capability and employees' environmental behaviors as a form of dynamic capability and OCBE respectively in cleaner production and environmental management research. Thus, the most significant theoretical contribution comprised at this study deals with the assessment of the mediation role of corporate sustainability performance between financial performance and its two antecedents –adaptive capability and environmental behavior. Hence, the two antecedent constructs can not only positively impact financial performance directly, but also positively influence it indirectly through corporate sustainability performance. In other words, this paper shows that corporate sustainability performance mediates the relationship between both antecedent variables with financial performance, hence shaping a key enabler.

Finally, the present study is a valuable addition to the literature on the influence of corporate sustainability on financial performance, a relationship that, despite having been extensively discussed, has so far generated a great deal of debate and led to inconclusive results.

5.3 Managerial contributions

This study provides practical insights and implications for managers, practitioners, and policy makers. First, this study reinforced the validity of adaptive capability as a driver of corporate sustainability performance and financial performance. This study recommends that practitioners

and policy makers should encourage the adaptive capability which will enable employees to find alternative ways and flexible processes of doing their work and solving problems, which will help the firms to handle the changing environmental conditions, ultimately enhancing the attainment of more sustainable and cleaner operations and superior organizational performance (Akgün et al., 2012; Gibson and Birkinshaw, 2004). Notwithstandingly, adaptive capability demands the effective implementation of certain practices and behaviors on the part of both managers and employees. These practices are related to a greater tolerance or acceptance of change, the ability to question the status quo, organizational routines and prevailing paradigms, the search for new formulas or work methods or innovative problem solving. Thus, firms may need to focus more on how to make their managers and employees effective in generating the appropriate level of adaptive capability. Hence, considering the important role of adaptive capability in sustaining a corporate sustainability and financial performance, managers should proactively invest in training their people to reap the benefits of implementing change, adaptability and environmental behavior. Second, this study reinforced the validity of employees' environmental behavior as a driver of corporate sustainability performance and financial performance. This study recommends organizational practitioners and policy makers to appreciate employees who reflect a high level of pro-environmental behavior because employees' environmental behavior and commitment towards cleaner activities is pivotal in realizing organizations' sustainability initiatives (Afsar et al., 2020; Faraz et al., 2021; Saeed et al., 2019; Zwarun and Hall, 2012). This way, firms are required to provide training and development to their employees regarding environmental practices and initiatives. Moreover, firms should also give their employees the chance to put into practice what they have learned during the training. In this manner, this knowledge received in the courses and training, through practice, can be internalized, subsequently becoming routines and good

practices that form part of the environmental behavior of employees. Firms could also stimulate their employees' environmental behavior and engagement with cleaner production by linking their contributions to corporate sustainability performance to their performance appraisal and compensation. Finally, managers, practitioners and policy makers are focused on the only necessary and sufficient condition for the existence of a business: to achieve financial benefits. And not only that, but companies may also try to maximize their annual profits to continue in the market. For this, scholars have developed numerous research models that seek to explain that internal capabilities, skills or behaviors need to achieve a financial performance (Gómez-Bezares et al., 2017; Song et al., 2017; Torugsa et al., 2012). However, companies can not only worry about increasing their financial performance. They must also be responsible with the preserving a more sustainable and cleaner environment. So, they must apply special measures to take care of and reduce the impact of business activity on the environment. These measures may translate into changes in their abilities, knowledge or behavior.

5.4 Limitations and suggestions for future research

This study has several limitations that are requested to be addressed in future research. First, though the structural relationships in the proposed model are confirmed, the results are still based on exploratory analysis. This study provides a first step towards future research to examine the association among employees' environmental behavior, adaptive capability, corporate sustainability performance and financial performance by using confirmatory analysis. Second, considering mediation and moderation mechanisms in the structural relationships proposed in this study would provide additional contributions to the literature. Third, the limited generalizability of this study is acknowledged. Though the data for this study is collected from ISO 14001 certified firms which have a strong commitment towards environmental management systems, the specific

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working culture and context of Saudi Arabia was difficult to control. The applicability of findings of this study to the Middle East and North Africa (MENA) region and later in other emerging economies would increase the generalizability of this study. Fourth, Fourth, comparative studies between the Arab and non-Arabic companies would provide more deep insights about the findings of this study. The comparative studies would confirm if adopting a Western standard of environmental behavior - the ISO 14001 make any difference in the context of non-Western (Arab). Fifth, using dyadic, time lagged, or longitudinal data in future studies would increase the reliability and validity of the results which would help to capture variation in structural relationships. sixth, given that both fostering adaptive capability and environmental behavior are likely to entail a cultural shift at the corporate level, it might be very interesting to explore the potential effect that corporate culture, and particularly a pro-environmental culture might exert within the linkages comprised at the model. Finally, future studies should also attempt to study the potential non-recursive tie between corporate sustainability performance and financial performance. Given the existence of a separate approach that assesses the opposite link from financial performance to environmental performance (i.e., Earnharty and Segerson, 2012), perhaps a non-recursive model in which a particular variable is sometimes a cause and sometimes an effect would be of utmost interest.

Appendix A: Questionnaire items[*][†]

1 = Strongly Disagree, 2 = Disagree, 3 = Disagree somewhat, 4 = Undecided, 5 = Agree somewhat, 6 = Agree, and 7 = Strongly Agree.

Adaptation capability

1. The workers in our firm are able to find alternative ways of doing their work.
2. Our firm is able to develop flexible processes to respond rapidly to changes and opportunities detected in our markets.
3. Our firm is able to change strategy rapidly according to our business priorities.

Environmental behavior

1. I believe that pollution levels are too high.
2. I believe that when companies manufacture things, they often release dangerous substances into the air and water.
3. I believe that There are harmful substances in the air and water that we may not know we're being exposed to.
4. I am motivated to reduce pollution.

Corporate sustainability performance

1. We know enough about corporate sustainability.
2. Our operations are based on sustainable growth, social responsibility and environmental protection.
3. Our attitude is that sustainability is one of the essential components of corporate culture.
4. We exploit environmental challenges and legislation to our advantage by developing new greener products.
5. Ecological regulations restrict our business.
6. Due to ecological constraints we are thinking to relocate production to countries, where ecological requirements are lower.
7. Sustainability is taken as an important route for long-term development of the enterprise.

Financial performance

Based on the targets set by your firm, please rate the performance in terms of
1. Market share growth
2. Sales growth
3. Reducing selling costs
4. Return on investment

[*] The Arabic version may be asked from the first author.
[†] References of the all the scales are given in the paper - Section 3.3 – Measure.

References

Achim, M. V., & Borlea, S. N. (2014). Environmental performances-way to boost up financial performances of companies. Environmental Engineering and Management Journal, 13(4), 991-1004. http://www.eemj.icpm.tuiasi.ro/pdfs/vol13/no4/23_413_Achim_13.pdf (accessed 1 September 2021).

Adger, W. N. (2003). Social aspects of adaptive capacity. In Climate change, adaptive capacity and development. Imperial College Press, London. (pp. 29-49). https://doi.org/10.1142/9781860945816_0003

Adger, W. N., & Kelly, P. M. (1999). Social vulnerability to climate change and the architecture of entitlements. Mitigation and Adaptation Strategies for Global Change, 4(3), 253-266. https://doi.org/0.1023/A:1009601904210

Adger, W. N., & Vincent, K. (2005). Uncertainty in adaptive capacity. Comptes Rendus Geoscience, 337(4), 399-410. https://doi.org/10.1016/j.crte.2004.11.004

Adger, W. N., Brown, K., Nelson, D. R., Berkes, F., Eakin, H., Folke, C., ... & Tompkins, E. L. (2011). Resilience implications of policy responses to climate change. Wiley Interdisciplinary Reviews: Climate Change, 2(5), 757-766. https://doi.org/10.1002/wcc.133

Afsar, B., Maqsoom, A., Shahjehan, A., Afridi, S. A., Nawaz, A., & Fazliani, H. (2020). Responsible leadership and employee's proenvironmental behavior: The role of organizational commitment, green shared vision, and internal environmental locus of control. Corporate Social Responsibility and Environmental Management, 27(1), 297-312. https://doi.org/10.1002/csr.1806

Ahmad, N., Ullah, Z., Arshad, M. Z., waqas Kamran, H., Scholz, M., & Han, H. (2021). Relationship between corporate social responsibility at the micro-level and environmental performance: The mediating role of employee pro-environmental behavior and the moderating role of gender. Sustainable Production and Consumption, 27, 1138-1148. https://doi.org/10.1016/j.spc.2021.02.034

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In Action control (pp. 11-39). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-69746-3_2

Ajzen, I., Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. Prentice Hall, Englewood Cliffs, NJ. https://nyuscholars.nyu.edu/en/publications/predicting-and-understanding-family-planning-behaviors (accessed 1 September 2021).

Akgün, A. E., Keskin, H., & Byrne, J. (2012). Antecedents and contingent effects of organizational adaptive capability on firm product innovativeness. Journal of Product Innovation Management, 29, 171-189. https://doi.org/10.1111/j.1540-5885.2012.00949.x

Albort-Morant, G., & Leal-Rodriguez, A. L. (2019). Pro-environmental culture and behavior to promote sustainable golf courses: The case study of "La Galiana". In Tourism Innovation (pp. 14-30). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780429022814-2/pro-environmental-culture-behavior-promote-sustainable-golf-courses-gema-albort-morant-antonio-luis-leal-rodriguez (accessed 1 September 2021).

Ali, M. (2021). Imitation or innovation: To what extent do exploitative learning and exploratory learning foster imitation strategy and innovation strategy for sustained competitive advantage?. Technological Forecasting and Social Change, 165, 120527. https://doi.org/10.1016/j.techfore.2020.120527

Ali, S., Wu, W., & Ali, S. (2021). Adaptive marketing capability and product innovations: the role of market ambidexterity and transformational leadership (evidence from Pakistani manufacturing industry). European Journal of Innovation Management. (In press), https://doi.org/10.1108/EJIM-12-2020-0520

Ali, Z., Sun, H., & Ali, M. (2017). The impact of managerial and adaptive capabilities to stimulate organizational innovation in SMEs: A complementary PLS–SEM approach. Sustainability, 9(12), 2157. https://doi.org/10.3390/su9122157

Ansari, N. Y., Farrukh, M., & Raza, A. (2021). Green human resource management and employees pro- environmental behaviours: Examining the underlying mechanism. Corporate Social Responsibility and Environmental Management, 28(1), 229-238. https://doi.org/10.1002/csr.2044

Anwar, M. (2018). Business model innovation and SMEs performance—does competitive advantage mediate?. International Journal of Innovation Management, 22(07), 1850057. https://doi.org/10.1142/S1363919618500573

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99-120. https://doi.org/10.1177/014920639101700108

Boiral, O., & Paillé, P. (2012). Organizational citizenship behaviour for the environment: Measurement and validation. Journal of business ethics, 109(4), 431-445. https://doi.org/10.1007/s10551-011-1138-9

Boiral, O., Raineri, N., & Talbot, D. (2018). Managers' citizenship behaviors for the environment: a developmental perspective. Journal of Business Ethics, 149(2), 395-409. https://doi.org/10.1007/s10551-016-3098-6

Boko, M., Niang, I., Nyong, A., et al. (2007) Africa-climate change 2007: impacts, adaptation and vulnerability. In: Parry ML et al. (eds.), Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge UK. pp 433-467. https://www.ipcc.ch/site/assets/uploads/2018/03/ar4_wg2_full_report.pdf (accessed 1 September 2021).

Borden, R. J. (1977). One more look at social and environmental psychology: Away from the looking glass and into the future. Personality and Social Psychology Bulletin, 3(3), 407-411. https://doi.org/10.1177/014616727700300309

Burns, A. C., & Bush, R. F. (2003). Marketing Research: Online Research Applications. Prentice Hall. https://doi.org/10.12691/education-3-5-12

Chang, C. H. (2016). The determinants of green product innovation performance. Corporate Social Responsibility and Environmental Management, 23(2), 65-76. https://doi.org/10.1002/csr.1361

Charlo, M. J., Moya, I., & Muñoz, A. M. (2015). Sustainable development and corporate financial performance: A study based on the FTSE4Good IBEX Index. Business Strategy and the Environment, 24(4), 277-288. https://doi.org/10.1002/bse.1824

Chen, Y. S., & Chang, C. H. (2013). The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of business ethics*, *116*(1), 107-119. https://doi.org/10.1007/s10551-012-1452-x

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. Modern methods for business research, 295(2), 295-336. https://www.researchgate.net/profile/Wynne-Chin/publication/311766005_The_Partial_Least_Squares_Approach_to_Structural_Equation_Modeling/links/0deec533e0f7c00f59000000/The-Partial-Least-Squares-Approach-to-Structural-Equation-Modeling.pdf (accessed 1 September 2021).

Chin, W. W. (2010). How to write up and report PLS analyses. In Handbook of partial least squares (pp. 655-690). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-32827-8_29

Chwialkowska, A., Bhatti, W. A., & Glowik, M. (2020). The influence of cultural values on pro-environmental behavior. Journal of Cleaner Production, 268, 122305. https://doi.org/10.1016/j.jclepro.2020.122305

Cohen, J. (1992). Quantitative methods in psychology: A power primer. Psychological Bulletin, 112(1), 155-159. https://doi=10.1.1.1043.9095

Daily, B. F., Bishop, J. W., & Govindarajulu, N. (2009). A conceptual model for organizational citizenship behavior directed toward the environment. Business & Society, 48(2), 243–256. https://doi.org/10.1177/0007650308315439

Dal Maso, L., Mazzi, F., Soscia, M., & Terzani, S. (2018). The moderating role of stakeholder management and societal characteristics in the relationship between corporate environmental and financial performance. Journal of Environmental Management, 218, 322-332. https://doi.org/10.1016/j.jenvman.2018.04.005

Earnhart, D., & Segerson, K. (2012). The influence of financial status on the effectiveness of environmental enforcement. Journal of Public Economics, 96(9-10), 670-684. https://doi.org/10.1016/j.jpubeco.2012.05.002

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they? Strategic Management Journal, 21(10-11), 1105-1121. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E

Enkel, E., Heil, S., Hengstler, M., & Wirth, H. (2017). Exploratory and exploitative innovation: To what extent do the dimensions of individual level absorptive capacity contribute?. Technovation, 60, 29-38. https://doi.org/10.1016/j.technovation.2016.08.002

Eshima, Y., & Anderson, B. S. (2017). Firm growth, adaptive capability, and entrepreneurial orientation. Strategic Management Journal, 38(3), 770-779. https://doi.org/10.1002/SMJ.2532

Faraz, N. A., Ahmed, F., Ying, M., & Mehmood, S. A. (2021). The interplay of green servant leadership, self- efficacy, and intrinsic motivation in predicting employees' pro- environmental behavior. Corporate Social Responsibility and Environmental Management, forthcoming. https://doi.org/10.1002/csr.2115

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior research methods, 39(2), 175-191. https://doi.org/10.3758/bf03193146

Felipe, C. M., Roldán, J. L., & Leal-Rodríguez, A. L. (2016). An explanatory and predictive model for organizational agility. Journal of Business Research, 69(10), 4624-4631. https://doi.org/10.1016/j.jbusres.2016.04.014

Féres, J., & Reynaud, A. (2012). Assessing the impact of formal and informal regulations on environmental and economic performance of Brazilian manufacturing firms. Environmental and Resource Economics, 52(1), 65-85. https://link.springer.com/article/10.1007/s10640-011-9520-8 (accessed 1 September 2021).

Flammer, C. (2015). Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. Management Science, 61(11), 2549-2568. https://doi.org/10.1287/mnsc.2014.2038

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of marketing research, 18(1), 39-50. https://doi.org/10.2307/3151312

Franke, G., & Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: a comparison of four procedures. Internet Research. https://doi.org/10.1108/IntR-12-2017-0515

Fujii, H., Iwata, K., Kaneko, S., & Managi, S. (2013). Corporate environmental and economic performance of Japanese manufacturing firms: Empirical study for sustainable development. Business Strategy and the Environment, 22(3), 187-201. https://doi.org/10.1002/bse.1747

Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. Academy of management Journal, 47(2), 209-226. https://doi.org/10.2307/20159573

Gilal, F. G., Ashraf, Z., Gilal, N. G., Gilal, R. G., & Channa, N. A. (2019). Promoting environmental performance through green human resource management practices in higher education institutions: A moderated mediation model. Corporate Social Responsibility and Environmental Management, 26(6), 1579-1590. https://doi.org/10.1002/csr.1835

Gómez-Bezares, F., Przychodzen, W., & Przychodzen, J. (2017). Bridging the gap: How sustainable development can help companies create shareholder value and improve financial performance. Business Ethics: A European Review, 26(1), 1-17. https://doi.org/10.1111/beer.12135

Goyal, S., Esposito, M., & Kapoor, A. (2018). Circular economy business models in developing economies: lessons from India on reduce, recycle, and reuse paradigms. Thunderbird International Business Review, 60(5), 729-740. https://doi.org/10.1002/tie.21883

Grothmann, T., & Patt, A. (2005). Adaptive capacity and human cognition: the process of individual adaptation to climate change. Global Environmental Change, 15(3), 199-213. https://doi.org/10.1016/j.gloenvcha.2005.01.002

Hair Jr, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. International Journal of Multivariate Data Analysis, 1(2), 107-123. https://doi.org/10.1504/IJMDA.2017.087624

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2012). Partial least squares: the better approach to structural equation modeling?. Long Range Planning, 45(5-6), 312-319. https://doi.org/10.1016/j.lrp.2012.09.011

Hameed, Z., Khan, I. U., Islam, T., Sheikh, Z., & Naeem, R. M. (2020). Do green HRM practices influence employees' environmental performance?. International Journal of Manpower. 41(7), 1061-1079. https://doi.org/10.1108/ijm-08-2019-0407

Heal, G. (2005). Corporate social responsibility: An economic and financial framework. The Geneva papers on risk and insurance-Issues and practice, 30(3), 387-409. https://doi.org/10.1057/PALGRAVE.GPP.2510037

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the academy of marketing science, 43(1), 115-135. https://doi.org/10.1007/s11747-014-0403-8

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. The Journal of Environmental Education, 18(2), 1-8. https://doi.org/10.1080/00958964.1987.9943482

Hynes, N., & Wilson, J. (2016). I do it, but don't tell anyone! Personal values, personal and social norms: Can social media play a role in changing pro-environmental behaviours?. Technological Forecasting and Social Change, 111, 349-359. https://doi.org/10.1016/J.TECHFORE.2016.06.034

Iraldo, F., Testa, F., & Frey, M. (2009). Is an environmental management system able to influence environmental and competitive performance? The case of the eco-management and audit scheme (EMAS) in the European union. Journal of Cleaner Production, 17(16), 1444-1452. https://doi.org/10.1016/j.jclepro.2009.05.013

Jabbour, C. J. C. (2015). Environmental training and environmental management maturity of Brazilian companies with ISO14001: empirical evidence. Journal of Cleaner Production, 96, 331-338. http://doi.org/10.1016/j.jclepro.2013.10.039

Jabbour, C. J. C., Jugend, D., de Sousa Jabbour, A. B. L., Gunasekaran, A., & Latan, H. (2015). Green product development and performance of Brazilian firms: measuring the role of human and technical aspects. Journal of Cleaner Production, 87, 442-451. https://doi.org/10.1016/j.jclepro.2014.09.036

Jabbour, C. J. C., Sarkis, J., de Sousa Jabbour, A. B. L., Renwick, D. W. S., Singh, S. K., Grebinevych, O., ... & Godinho Filho, M. (2019). Who is in charge? A review and a research agenda on the 'human side'of the circular economy. *Journal of cleaner production*, *222*, 793-801. https://doi.org/10.1016/j.jclepro.2019.03.038

Jabbour, C. J. C., Seuring, S., de Sousa Jabbour, A. B. L., Jugend, D., Fiorini, P. D. C., Latan, H., & Izeppi, W. C. (2020). Stakeholders, innovative business models for the circular economy and sustainable performance of firms in an emerging economy facing institutional voids. Journal of Environmental Management, 264, 110416. https://doi.org/10.1016/j.jenvman.2020.110416

Jung, S., Nam, C., Yang, D. H., & Kim, S. (2018). Does corporate sustainability performance increase corporate financial performance? Focusing on the information and communication technology industry in Korea. Sustainable Development, 26(3), 243-254. https://doi.org/10.1002/sd.1698

Kim, S., Terlaak, A., & Potoski, M. (2021). Corporate sustainability and financial performance: Collective reputation as moderator of the relationship between environmental performance and firm market value. Business Strategy and the Environment, 30(4), 1689-1701. https://doi.org/10.1002/bse.2702

Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. International Journal of Hospitality Management, 76, 83-93. https://doi.org/10.1016/j.ijhm.2018.04.007

King, A. A., & Lenox, M. J. (2001). Does it really pay to be green? An empirical study of firm environmental and financial performance: An empirical study of firm environmental and financial performance. Journal of Industrial Ecology, 5(1), 105-116. https://doi.org/10.1162/108819801753358526

Klassen, R. D., & McLaughlin, C. P. (1996). The impact of environmental management on firm performance. Management Science, 42(8), 1199-1214. http://doi.org/10.1287/mnsc.42.8.1199

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. International Journal of e-Collaboration 11 (4):1–10. https://doi.org/10.4018/ijec.2015100101

Kock, N., & Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. Journal of the Association for information Systems, 13(7). https://doi.org/10.17705/1jais.00302

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. Environmental Education Research, 8(3), 239-260. https://doi.org/10.1080/13504620220145401

Krajhanzl, J. (2010). Environmental and pro-environmental behavior. School and Health, 21(1), 251-274. https://www.ped.muni.cz/z21/knihy/2011/36/36/texty/eng/krajhanzl.pdf (accessed 1 September 2021).

Kumar, G., Subramanian, N., & Arputham, R. M. (2018). Missing link between sustainability collaborative strategy and supply chain performance: Role of dynamic capability. *International Journal of Production Economics*, 203, 96-109. https://doi.org/10.1016/j.ijpe.2018.05.031

Laskar, N., Chakraborty, T. K., & Maji, S. G. (2017). Corporate sustainability performance and financial performance: Empirical evidence from Japan and India. Management and Labour Studies, 42(2), 88-106. https://doi.org/10.1177/0258042X17707659

Latan, H. (2018). PLS path modeling in hospitality and tourism research: The golden age and days of future past. In F. Ali, M. S. Rasoolimanesh, & C. Cobanoglu (eds.), Application of partial least squares – structural equation modeling (PLS-SEM) in tourism and hospitality research. Bingley: Emerald. https://doi.org/10.1108/978-1-78756-699-620181004

Latan, H., Jabbour, C. J. C., de Sousa Jabbour, A. B. L., Wamba, S. F., & Shahbaz, M. (2018a). Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. Journal of Cleaner Production, 180, 297-306. https://doi.org/10.1016/j.jclepro.2018.01.106

Latan, H., Jabbour, C. J. C., de Sousa Jabbour, A. B. L., Renwick, D. W. S., Wamba, S. F., & Shahbaz, M. (2018b). 'Too-much-of-a-good-thing'? The role of advanced eco-learning and contingency factors on the relationship between corporate environmental and financial performance. Journal of Environmental Management, 220, 163-172. https://doi.org/10.1016/j.jenvman.2018.05.012

Latan, H., Jabbour, C. J. C., de Sousa Jabbour, A. B. L., de Camargo Fiorini, P., & Foropon, C. (2020). Innovative efforts of ISO 9001-certified manufacturing firms: Evidence of links between determinants of innovation, continuous innovation and firm performance. *International Journal of Production Economics*, *223*, 107526. https://doi.org/10.1016/j.ijpe.2019.107526

Lee, C., Lee, K., & Pennings, J. M. (2001). Internal capabilities, external networks, and performance: a study on technology- based ventures. Strategic Management Journal, 22(6- 7), 615-640. https://doi.org/10.1002/smj.181

Link, S., & Naveh, E. (2006). Standardization and discretion: does the environmental standard ISO 14001 lead to performance benefits?. *IEEE Transactions on Engineering Management*, 53(4), 508-519. https://doi.org/10.1109/TEM.2006.883704

Luers, A. L., Lobell, D. B., Sklar, L. S., Addams, C. L., & Matson, P. A. (2003). A method for quantifying vulnerability, applied to the agricultural system of the Yaqui Valley, Mexico. Global Environmental Change, 13(4), 255-267. https://doi.org/10.1016/S0959-3780(03)00054-2

Luu, T. T. (2019). Building employees' organizational citizenship behavior for the environment: The role of environmentally-specific servant leadership and a moderated mediation mechanism. International Journal of Contemporary Hospitality Management, 31(1), 406-426. https://doi.org/10.1108/IJCHM-07-2017-0425

Magon, R. B., Thomé, A. M. T., Ferrer, A. L. C., & Scavarda, L. F. (2018). Sustainability and performance in operations management research. Journal of Cleaner Production, 190, 104-117. https://doi.org/10.1016/j.jclepro.2018.04.140

Manrique, S., & Martí-Ballester, C. P. (2017). Analyzing the effect of corporate environmental performance on corporate financial performance in developed and developing countries. Sustainability, 9(11), 1957. https://doi.org/10.3390/su9111957

Masri, H. A., & Jaaron, A. A. (2017). Assessing green human resources management practices in Palestinian manufacturing context: An empirical study. *Journal of Cleaner Production*, *143*, 474-489. https://doi.org/10.1016/j.jclepro.2016.12.087

McCarthy, J. J., Canziani, O. F., Leary, N. A., Dokken, D. J., & White, K. S. (Eds.). (2001). Climate change 2001: impacts, adaptation, and vulnerability: contribution of Working Group II to the third assessment report of the Intergovernmental Panel on Climate Change (Vol. 2). Cambridge University Press. http://www.repositorio.cenpat-conicet.gob.ar/bitstream/handle/123456789/579/climateChange2001ImpactsAdaptationVulnerability.pdf?sequence=1&isAllowed=y (accessed 1 September 2021).

Mohaghegh, M., Blasi, S., & Größler, A. (2021). Dynamic capabilities linking lean practices and sustainable business performance. Journal of Cleaner Production, 322, 129073. https://doi.org/10.1016/j.jclepro.2021.129073

Molina-Azorín, J. F., Claver-Cortés, E., Pereira-Moliner, J., & Tarí, J. J. (2009). Environmental practices and firm performance: an empirical analysis in the Spanish hotel industry. Journal of Cleaner Production, 17(5), 516-524. http://dx.doi.org/10.1016/j.jclepro.2008.09.001

Monferrer, D., Blesa, A., & Ripollés, M. (2015). Born globals trough knowledge-based dynamic capabilities and network market orientation. BRQ Business Research Quarterly, 18(1), 18-36. https://doi.org/10.1016/j.brq.2014.04.001

Mullen, E. M. (1995). Mullen scales of early learning (pp. 58-64). Circle Pines, MN: AGS. https://doi.org/10.1007/978-1-4419-1698-3_596

41

Ni, N., Egri, C., Lo, C., & Lin, C. Y. Y. (2015). Patterns of corporate responsibility practices for high financial performance: Evidence from three Chinese societies. Journal of Business Ethics, 126(2), 169-183. https://doi.org/10.1007/s10551-013-1947-0

Nisar, Q. A., Haider, S., Ali, F., Jamshed, S., Ryu, K., & Gill, S. S. (2021). Green human resource management practices and environmental performance in Malaysian green hotels: The role of green intellectual capital and pro-environmental behavior. Journal of Cleaner Production, 311, 127504. https://doi.org/10.1016/j.jclepro.2021.127504

Nitzl, C., Roldan, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modeling: Helping researchers discuss more sophisticated models. Industrial management & data systems, 116(9), 1849-1864. https://doi.org/10.1108/IMDS-07-2015-0302

Nunnally, J. C. (1978). Psychometric theory. New York: McGraw-Hill Inc.

Oktemgil, M., & Greenley, G. (1997). Consequences of high and low adaptive capability in UK companies. European Journal of Marketing. https://doi.org/10.1108/03090569710176619

Paillé, P. (2020). Greening the Workplace: Theories, Methods, and Research. Springer Nature. https://doi.org/10.1007/978-3-030-58388-0_1

Paillé, P., & Boiral, O. (2013). Pro-environmental behavior at work: Construct validity and determinants. Journal of Environmental Psychology, 36, 118-128. https://doi.org/10.1016/j.jenvp.2013.07.014

Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: An employee-level study. Journal of Business Ethics, 121(3), 451-466. https://doi.org/10.1007/s10551-013-1732-0

Pandey, R., Maithani, N., Aretano, R., Zurlini, G., Archie, K. M., Gupta, A. K., & Pandey, V. P. (2016). Empirical assessment of adaptation to climate change impacts of mountain households: development and application of an Adaptation Capability Index. Journal of Mountain Science, 13(8), 1503-1514. https://doi.org/10.1007/s11629-015-3499-5

Peng, X., & Lee, S. (2019). Self-discipline or self-interest? The antecedents of hotel employees' pro-environmental behaviours. *Journal of Sustainable Tourism*, 27(9), 1457-1476. https://doi.org/10.1080/09669582.2019.1632320

Podsakoff, P. M., S. B. MacKenzie, and N. P. Podsakoff. (2012). Sources of method bias in social science research and recommendations on how to control it. Annual Review of Psychology 63:539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Ronnenberg, S.K., Graham, M.E. and Mahmoodi, F. (2011). The important role of change management in environmental management system implementation, *International Journal of Operations & Production Management*, 31(6), 631-647. https://doi.org/10.1108/01443571111131971

Porter, M. E., & Van der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. Journal of economic perspectives, 9(4), 97-118. https://doi.org/10.1257/jep.9.4.97

Ramkissoon, H., Mavondo, F., & Uysal, M. (2018). Social involvement and park citizenship as moderators for quality-of-life in a national park. Journal of Sustainable Tourism, 26(3), 341-361. https://doi.org/10.1080/09669582.2017.1354866

Richter, N. F., Cepeda, G., Roldán, J. L., & Ringle, C. M. (2015). European management research using partial least squares structural equation modeling (PLS-SEM). European Management Journal, 33(1), 1-3. https://doi.org/10.1016/j.emj.2014.12.001

Rigdon, E. E. (2016). Choosing PLS path modeling as analytical method in European management research: A realist perspective. European Management Journal, 34(6), 598-605. https://doi.org/10.1016/j.emj.2016.05.006

Rigdon, E. E., Sarstedt, M., & Ringle, C. M. (2017). On comparing results from CB-SEM and PLS-SEM: Five perspectives and five recommendations. Marketing: ZFP–Journal of Research and Management, 39(3), 4-16. https://doi.org/10.15358/0344-1369-2017-3-4

Ringle, C. M., Wende, S., & Becker, J. M. (2015). SmartPLS 3. SmartPLS GmbH, Boenningstedt. Journal of Service Science and Management, 10(3).

Roldán, J.L., & Sánchez-Franco, M.J. (2012). Variance-based structural equation modeling: guidelines for using partial least squares. Research methodologies, innovations and philosophies in software systems engineering and information systems 193. https://doi.org/10.4018/978-1-4666-0179-6.ch010

Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal*, 40(3), 534-559. https://doi.org/10.2307/257052

Saeed, B. B., Afsar, B., Hafeez, S., Khan, I., Tahir, M., & Afridi, M. A. (2019). Promoting employee's proenvironmental behavior through green human resource management practices. Corporate Social Responsibility and Environmental Management, 26(2), 424-438. https://doi.org/10.1002/csr.1694

Sarstedt, M., Hair Jr, J. F., Nitzl, C., Ringle, C. M., & Howard, M. C. (2020). Beyond a tandem analysis of SEM and PROCESS: Use of PLS-SEM for mediation analyses!. International Journal of Market Research, 62(3), 288-299. https://doi.org/10.1177/1470785320915686

Sarstedt, M., Hair, J. F., Ringle, C. M., Thiele, K. O., & Gudergan, S. P. (2016). Estimation issues with PLS and CBSEM: where the bias lies!. Journal of Business Research, 69(10), 3998-4010. https://doi.org/10.1016/j.jbusres.2016.06.007

Shen, J., Dumont, J., & Deng, X. (2018). Employees' perceptions of green HRM and non-green employee work outcomes: The social identity and stakeholder perspectives. Group & Organization Management, 43(4), 594-622. https://doi.org/10.1177/1059601116664610

Song, H., Zhao, C., & Zeng, J. (2017). Can environmental management improve financial performance: An empirical study of A-shares listed companies in China. Journal of Cleaner Production, 141, 1051-1056. https://doi.org/10.1016/j.jclepro.2016.09.105

Staber, U., & Sydow, J. (2002). Organizational adaptive capacity: A structuration perspective. Journal of Management Inquiry, 11(4), 408-424. https://doi.org/10.1177/1056492602238848

Starr, R., Newfrock, J., & Delurey, M. (2003). Enterprise resilience: managing risk in the networked economy. Strategy and Business, 30, 70-79. https://portaldagestaoderiscos.net.br/wp-content/uploads/2021/05/sb30_03107qxd.pdf (accessed 1 September 2021).

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. Strategic Management Journal, 28(13), 1319-1350. https://doi.org/10.1002/smj.640

Teece, D. J. (2014). The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms. Academy of Management Perspectives, 28(4), 328-352. https://doi.org/10.5465/amp.2013.0116

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509-533. https://onlinelibrary.wiley.com/doi/pdf/10.1002/(SICI)1097-0266(199708)18:7%3C509::AID-SMJ882%3E3.0.CO;2-Z (accessed 1 September 2021).

Tomšič, N., Bojnec, Š., & Simčič, B. (2015). Corporate sustainability and economic performance in small and medium sized enterprises. Journal of Cleaner Production, 108, 603-612. https://doi.org/10.1016/j.jclepro.2015.08.106

Torugsa, N. A., O'Donohue, W., & Hecker, R. (2012). Capabilities, proactive CSR and financial performance in SMEs: Empirical evidence from an Australian manufacturing industry sector. Journal of Business Ethics, 109(4), 483-500. https://doi.org/10.1007/s10551-011-1141-1

Umrani, W. A., Channa, N. A., Yousaf, A., Ahmed, U., Pahi, M. H., & Ramayah, T. (2020). Greening the workforce to achieve environmental performance in hotel industry: A serial mediation model. Journal of Hospitality and Tourism Management, 44, 50-60. https://doi.org/10.1016/j.jhtm.2020.05.007

Waddock, S. A., & Graves, S. B. (1997). The corporate social performance–financial performance link. Strategic Management Journal, 18(4), 303-319. https://www.jstor.org/stable/3088143 (accessed 1 September 2021).

Wagner, M. (2005). How to reconcile environmental and economic performance to improve corporate sustainability: corporate environmental strategies in the European paper industry. Journal of Environmental Management, 76(2), 105-118. https://doi.org/10.1016/j.jenvman.2004.11.021

44

Wang, L., Ali, M., Kim, H. J., Lee, S., & Hernandez Perlines, F. (2021). Individual entrepreneurial orientation, value congruence, and individual outcomes: Does the institutional entrepreneurial environment matter?. Business Strategy and the Environment, 30, 2293–2312. https://doi.org/10.1002/bse.2747

Wang, S., Wang, H., Wang, J., & Yang, F. (2020). Does environmental information disclosure contribute to improve firm financial performance? An examination of the underlying mechanism. Science of the Total Environment, 714, 136855. https://doi.org/10.1016/j.scitotenv.2020.136855

Weber, O. (2017). Corporate sustainability and financial performance of Chinese banks. Sustainability Accounting, Management and Policy Journal, 8(3), 358-385. https://doi.org/10.1108/SAMPJ-09-2016-0066

Wei, L. Q., & Lau, C. M. (2010). High performance work systems and performance: The role of adaptive capability. Human Relations, 63(10), 1487-1511. https://doi.org/10.1177/0018726709359720

Winter, S. G. (2003). Understanding dynamic capabilities. Strategic Management Journal, 24(10), 991-995. https://doi.org/10.1002/smj.318

Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., & Sun, L. (2010). Impact of cleaner production on business performance. *Journal of Cleaner Production*, 18(10-11), 975-983.

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. Journal of Consumer Research, 37(2), 197-206. https://doi.org/10.1086/651257

Zhou, K. Z., & Li, C. B. (2010). How strategic orientations influence the building of dynamic capability in emerging economies. *Journal of Business Research*, 63(3), 224-231. https://doi.org/10.1016/j.jbusres.2009.03.003

Zhu, W., Su, S., & Shou, Z. (2017). Social ties and firm performance: The mediating effect of adaptive capability and supplier opportunism. *Journal of Business Research*, 78, 226-232. https://doi.org/10.1016/j.jbusres.2016.12.018

Zwarun, L., & Hall, A. (2012). Narrative persuasion, transportation, and the role of need for cognition in online viewing of fantastical films. Media Psychology, 15(3), 327-355. https://doi.org/10.1080/15213269.2012.700592

H4 (+): Adaptive Capability → Corporate Sustainability Performance → Financial Performance
H7 (+): Pro Environmental Behavior → Corporate Sustainability Performance → Financial Performance
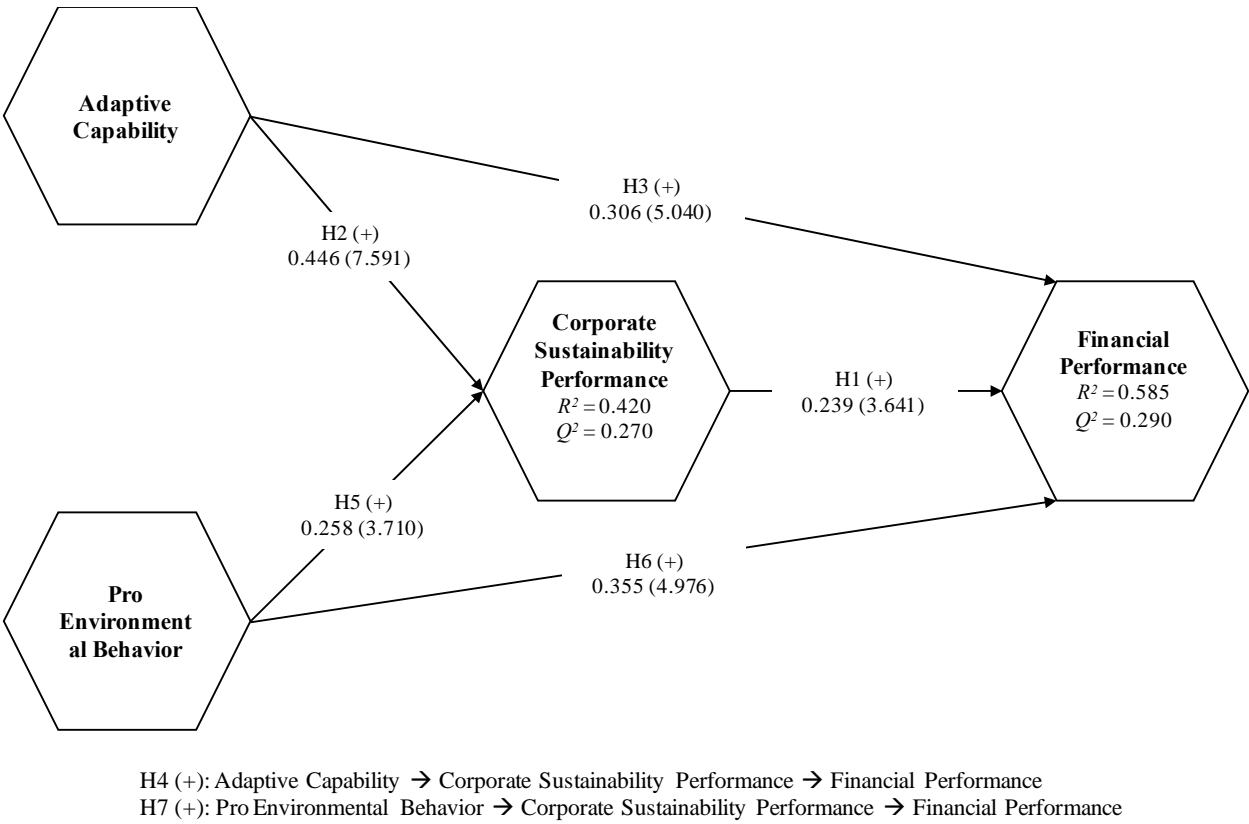
Figure 1: Conceptual model and Structural model results.

Table 1
Demographic characteristics of the sample.

Personal information			Company information		
Variable	**Items**		**Variable**	**Items**	
Gender	Male	276 (69.7%)	**Industry type**	Hospital, health, clinic, and pharmaceutical	32 (10.3%)
	Female	120 (30.3%)		Consulting, service industry	36 (11.6%)
Age	20-30 years	119 (38.3%)		Electronics, equipment, and cable	33 (10.6%)
	31-40 years	134 (43.1%)		IT, software, and telecommunication	31 (10.0%)
	41-50 years	47 (15.1%)		Chemical and associates' products	36 (11.6%)
	50s or above	11 (3.5%)		Transportation and travel	32 (10.3%)
Education	High school	27 (8.7%)		Distribution and logistics	26 (8.4%)
	Diploma	32 (10.3%)		Finance and banking	28 (9.0%)
	Bachelors	169 (54.3%)		Construction	27 (8.7%)
	Masters	78 (25.1%)		Power plants	30 (9.6%)
	Ph.Ds	5 (1.6%)	**Firm age**	1-5 years	71 (22.8%)
Position	Operational level employees	97 (31.2%)		6-10 years	86 (27.7%)
	Basic level leaders	74 (23.8%)		11-15 years	54 (17.4%)
	Middle level manager	77 (24.8%)		16 and more years	100 (32.2%)
	Senior manager	22 (7.1%)	**Firm size**	1-49 employees	84 (27.0%)
	CEO	6 (1.9%)		50-200 employees	92 (29.6%)
	Others[*]	35 (11.3%)		201 and more employees	135 (43.4%)
Experience	0-2 years	54 (17.4%)	**Firm type**	Manufacturing	114 (36.7%)
	2-5 years	106 (34.1%)		Services	197 (63.3%)
	6-9 years	80 (25.7%)	**Certification**	ISO 14001 certified	175 (56.3%)
	10-15 years	46 (14.8%)		In process of getting ISO 14001 certification	89 (28.6%)

				Intention to get ISO 14001 certification	47 (15.1%)
	16 and more years	25 (8.0%)			
Department	HR	69 (22.2%)			
	Sales	40 (12.9%)			
	Marketing	45 (14.5%)			
	Production	46 (14.8%)			
	Customer service	33 (10.6%)			
	Others[*]	78 (25.1%)			

Note: [*]Other includes research and development, logistics department, IT and technology department, and finance and accounting department.

Table 2
Measurement model results.

Constructs	Code	PCA	SFL	SE	*t*-value [a, b]	α	CR	ρ$_A$ [c]	AVE [d]
Adaptive capability						0.74	0.75	0.85	0.65
	AC1	0.76	0.74	0.04	18.99				
	AC2	0.81	0.82	0.03	32.36				
	AC3	0.85	0.86	0.02	48.25				
Environmental behavior						0.75	0.76	0.84	0.56
	EB1	0.73	0.66	0.06	11.73				
	EB2	0.78	0.80	0.03	29.90				
	EB3	0.79	0.76	0.03	23.80				
	EB4	0.71	0.77	0.03	31.28				
Corporate sustainability performance						0.86	0.87	0.90	0.65
	SC1	0.78	0.81	0.02	36.73				
	SC2	0.79	0.80	0.02	33.12				
	SC3	0.81	0.82	0.02	40.31				
	SC4	0.78	0.78	0.03	30.44				
	SC5*	0.42	0.33	0.08	3.89				
	SC6*	0.47	0.39	0.08	4.96				
	SC7	0.78	0.80	0.03	31.22				
Financial performance						0.70	0.71	0.82	0.53
	FP1	0.77	0.79	0.02	36.37				
	FP2	0.75	0.73	0.04	20.54				
	FP3	0.62	0.64	0.05	13.42				
	FP4	0.76	0.74	0.03	24.78				
Control variables									
Firm size	SIZE	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Firm age	AGE	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Industry type	IND	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Firm type	TYPE	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00

Note: * Items have low factor loadings, and were deleted accordingly; PCA = Principal component analysis; SFL = Standardized factor loadings; SE = Standard error; [a] Test-statistics are obtained by 500 Bootstrap runs; [b] Absolute *t*-values > 1.96 are two-tailed significant at 5 percent; α = Cronbach's Alpha; CR = Composite reliability; [c] Dijstra-Henseler's rho; AVE = Average variance extracted; [d] Percentage of variance of item explained by the latent variable.

Table 3
Mean, standard deviations, correlations and discriminant validity results.

Construct	Mean	SD	VIF	1	2	3	4	5	6	7	8
1. Adaptive capability	4.99	1.30	1.96	*0.81*	0.74	0.75	0.90	0.18	0.21	0.03	0.16
2. Environmental behavior	4.81	1.19	1.59	0.57**	*0.75*	0.61	0.88	0.08	0.11	0.04	0.07
3. Corporate sustainability performance	4.48	1.22	1.74	0.61**	0.51**	*0.80*	0.79	0.10	0.14	0.12	0.03
4. Financial performance	4.90	1.12	2.22	0.65**	0.65**	0.61**	*0.73*	0.20	0.17	0.09	0.03
5. Firm size[†]	2.16	0.82	1.96	0.16**	0.08	0.09	0.16**	*1.00*	0.70	0.04	0.06
6. Firm age[†]	2.59	1.16	1.97	0.18**	0.08	0.13*	0.14*	0.69**	*1.00*	0.01	0.02
7. Industry type[†]	6.38	3.85	1.07	0.03	0.00	0.11	0.08	0-.04	0.01	*1.00*	0.20
8. Firm type[†]	1.63	0.48	1.08	0.13*	0.02	0.01	0.02	0.06	0.02	0.20**	*1.00*

Note: Significance levels: $p<0.05$*; $p<0.01$**; SD = Standard deviation; NA = not applicable;
Diagonal and italicized elements are the square roots of the AVE (average variance extracted);
Below the diagonal elements are the correlations between the construct's values;
Above the diagonal elements are the HTMT values;
[†]The AVE value is not meaningful criterion for single-item measures.

Table 4
Significant testing results of the structural model path coefficients.

Structural Path	Standardized Path coefficient	*p*-value	Significant difference (*p* < 0.05)?	95% BCa Confidence interval	Effect size (f^2)	Conclusion
Total effects						
Adaptation capability → Financial performance_	0.41***	0.00	Yes	(0.31, 0.51)	0.12	
Environmental behavior → Financial performance	0.41***	0.00	Yes	(0.32, 0.52)	0.19	
Direct effects						
Corporate sustainability performance → Financial performance	0.24***	0.00	Yes	(0.14, 0.36)	0.08	H1 is accepted
Adaptation capability → Corporate sustainability performance	0.48***	0.00	Yes	(0.38, 0.56)	0.23	H2 is accepted
Adaptation capability → Financial performance	0.29***	0.00	Yes	(0.19, 0.40)	0.12	H3 is accepted
Environmental behavior → Corporate sustainability performance	0.23***	0.00	Yes	(0.13, 0.33)	0.07	H5 is accepted
Environmental behavior → Financial performance	0.36***	0.00	Yes	(0.24, 0.47)	0.19	H6 is accepted
Mediating effects						
Adaptation capability → Corporate sustainability performance → Financial performance	0.12***	0.00	Yes	[0.04, 0.22]		H4 is accepted
Environmental behavior → Corporate sustainability performance → Financial performance	0.06*	0.01	Yes	[0.03, 0.31]		H7 is accepted
Non-hypothesized (control variables)						
Firm size → Corporate sustainability performance	-0.02 ns	0.38	No	(-0.10, 0.07)	0.00	
Firm size → Financial Performance	0.09*	0.02	Yes	(0.02, 0.10)	0.01	
Firm age → Corporate sustainability performance	0.03	0.29	No	(-0.06, 0.13)	0.00	
Firm age → Financial Performance	-0.03	0.25	No	(-0.11, 0.05)	0.00	
Industry type → Corporate sustainability performance	0.11**	0.00	Yes	(0.05, 0.18)	0.02	

Industry type → Financial Performance	0.05	0.08	No	(-0.01, 0.11)	0.01
Firm type → Corporate sustainability performance	-0.07*	0.04	Yes	(-0.14, 0.00)	0.01
Firm type → Financial Performance	-0.04	0.14	No	(-0.10, 0.02)	0.00

Determination coefficients (R^2) and predictive relevance (Q^2) of endogenous (omission distance=7).

R^2 (Corporate sustainability performance) = 0.42; Q^2 (Corporate sustainability performance) = 0.27;

R^2 (Financial performance) = 0.59; Q^2 (Financial performance) = 0.30;

Note: ns = non- significant; $_t$ (0.05, 4999) = 1.645; t (0.01, 4999) = 2.327; t (0.001, 4999) = 3.092.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, based on t (4999), one-tailed test.

BCa = Bias corrected confidence interval. Bootstrapping based on n = 5000 subsamples

Conflict of interest: The authors declare that they have no conflict of interest.

Mohammad A Algarni: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Murad Ali**: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Gema Albort-Morant**: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Antonio L. Leal-Rodríguez**: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Hengky Latan**: Conceptualization, Methodology, Software, Formal analysis, Resources, Writing – original draft, Writing – review & editing, Visualization. **Imran Ali**: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing, Writing – review & editing, Visualization. **Shakir Ullah**: Formal analysis, Writing – original draft, Writing – review & editing, Visualization.