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Stakeholder pressure, green innovation, and performance in small and medium-sized enterprises: The role of green dynamic capabilities

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Abstract

This study examines direct and indirect effects among stakeholder pressure, green dynamic capabilities, green innovation, and performance of emerging market small and medium-sized enterprises (SMEs). Using survey questionnaires, we collected multisource data from 248 SMEs in the manufacturing sector. We used the partial least squares (PLS) path modeling approach (PLS-PM) to examine the hypotheses of the study. The study results indicate that stakeholder pressure influences green dynamic capability, green dynamic capability influences green innovation, and green innovation influences firm performance. Furthermore, results also suggest that green dynamic capability mediates the influence of stakeholder pressure on green innovation and green innovation mediates the impact of green dynamic capability on firm performance. The findings of the study suggest critical implications for both theory and practice.

KEYWORDS
emerging markets, firm performance, green dynamic capability, green innovation, SMEs, stakeholder pressure

1 | INTRODUCTION

Stakeholders scrutinize firms over environmental issues (Berrone et al., 2013; Sodhi & Tang, 2018) to comply with environmental regulations and embed sustainable development in their corporate culture (Chuang & Huang, 2018) to build sustainable knowledge for communities while leveraging upon the social process of knowledge mobilization (Bennet & Bennet, 2008). As a result, an increasing number of firms have started focusing on green innovation to develop sustainable processes (Berrone et al., 2013) in an ecologically sustainable manner (El-Kassar & Singh, 2019; Jabbour et al., 2016; Latan et al., 2018) to stay competitive in the markets. Green innovation helps reduce the risk of stakeholders withdrawing resources or their usage becoming conditional (Wolf, 2014), increase transparency on social and environmental issues concerning stakeholders (New, 2010), enhance the value of products/services and offset the costs of environmental investments (Chang, 2011), and improve financial and environmental performance (Chan, 2005). Firms with green innovativeness are highly successful and have better overall performance than their competitors, as they add intangible value and assets (Sadikoglu & Zehir, 2010) and are adept at leveraging their green dynamic capabilities to respond quickly and appropriately, satisfying their various stakeholders.

Green innovation consists of process and product innovation through improvements in manufacturing processes and product design. Green innovation's objectives are to reduce pollution, save

energy, minimize waste, and decrease a firm's negative impact on the environment (Dangelico & Pujari, 2010; Woo et al., 2014). The discourse on the relationship between green innovation and firm performance has grown (Tang et al., 2018; Trumpp & Guenther, 2017), but there is unclarity on the relationships between them (Tang et al., 2018; Trumpp & Guenther, 2017) which requires further empirical examinations. Green innovation enhances environmental performance (Singh, Del Giudice, Chierici, & Graziano, 2020), offsets environmental costs by developing new markets and increasing market share (Chen et al., 2006), and increases resource productivity (de Burgos-Jiménez et al., 2013). Green innovation brings a "first-mover advantage" to firms in terms of new market opportunities, improved corporate image, and competitive advantage (Dangelico et al., 2017), along with increased customer loyalty and firm reputation (de Burgos-Jiménez et al., 2013). On the other hand, as compared to nongreen firms, green innovation firms witness decreased financial performance (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013; Driessen et al., 2013) as green innovation increases costs (Liu et al., 2011). The literature mentioned above suggests unclarity and gap in the existing literature on the consequence of green innovation in the organization. Furthermore, the literature is deficient on whether the motivation for firms to adopt and implement green innovation processes and offer green products to the markets is internally driven or the relevant stakeholders pressurize them.

We contend that green innovation reduces the firms' costs and enhances their competitiveness in dynamic markets (Dangelico et al., 2017). Firms that believe in green innovation prefer to use recycled materials for product development as these are inexpensive and environment friendly (Chiou et al., 2011; El-Kassar & Singh, 2019). At the same time, we posit that due to the increased environmental awareness of stakeholders, firms are under constant pressure to enhance their corporate image and improve market competitiveness through green product innovation (GPDI) (Weng et al., 2015). The level of empathy and attachment to the agenda of sustainability on the part of the firm's leadership and employees influence positively the acceptance of responsibility to act more sustainably (Font et al., 2016). While the best practices and exemplary green innovation cases generally portray large-sized companies' reality, smaller firms should better understand their unique green innovation characteristics (Klewitz & Hansen, 2014). The extant literature suggests scant attention to how small and medium-sized enterprises (SMEs) manage sustainable innovation (Scuotto, Alexeis, et al., 2020). Needless to mention that SMEs should possess relevant entrepreneurial skills, engagement with external networks, and governmental supports in their growth (Scuotto, Shlomo, et al., 2020). However, the literature is scarce to guide on how to go ahead. Thus, based on the gap and unclarity in the extant literature, we proposed a theoretical model that depicts how SMEs under stakeholder pressure leverage their dynamic capabilities to engage in green innovations for enhanced firm performance. To explicate the nexus among stakeholder pressure, green dynamic capabilities, green innovation, and firm performance, we have used the stakeholder resource-based view (SRBV; Sodhi, 2015) to shed light on the direct and indirect effects of stakeholder pressure, green dynamic capabilities, and green innovation on SMEs' performance.

Our study has three key contributions. Firstly, the state-of-the-art literature as the extant literature on green innovation tends to bifurcate stakeholder theory and resource-based view (RBV) instead of integrating them. Our study suggests using SRBV (Sodhi, 2015) as an integrated theoretical lens while investigating the causes and consequences of green innovation in the organization. Secondly, the study's findings advance the knowledge on the linkages between stakeholder pressure and green innovation and how dynamic capabilities mediate the influence of stakeholder pressure on green innovation in the organization. Thirdly, this study's findings reduce unclarity in the extant literature, attest to the benefits of green innovation, and suggest that processes and product innovations significantly enhance a firm's market and financial performance. Lastly, our study's findings contribute to advance the critical aim of the *Business Society and the Environment (BSE)* journal in the arena of environmental management to sustainable development in business. At the same time, this study serves the interest of a broad interdisciplinary audience, including academics, practitioners, business managers, and consultants.

The remainder of this paper is structured as follows. Section 2 presents the theoretical background and five research hypotheses. In Section 3, we present the adopted research design followed by the results presented in Section 4. Finally, our discussion and conclusions are presented in Section 5.

2 | THEORY AND HYPOTHESES DEVELOPMENT

A stakeholder is an individual or set of individuals who can affect or be affected by firms' operations (Freeman et al., 2010) in their entire value creation processes. Stakeholder theory aims to address two key questions: What is the firm's purpose? What responsibility does management have toward their stakeholders? Firms should answer these questions to the satisfaction of their stakeholders (Freeman, 2010). Therefore, we argue that SMEs, who possess both open and implied contracts with their various stakeholders, should be accountable to honor all those contracts (Aragón et al., 2016). The RBV proposes that firms' sustainable competitive advantage depends upon their internal resources (Barney, 2001). That suggests that SMEs should possess internal resources with VRIN (i.e. valuable, rare, inimitable and non-substitutable) characteristics to stay relevant in the markets. These strategic assets help firms gain a sustainable competitive advantage and boost their market and financial performances (e.g. Barney, 2001). Several researchers have used stakeholder theory and RBV separately as theoretical lenses, rather than integrating them, to examine corporate sustainability-related issues. We have attempted to integrate stakeholder theory and RBV to find answers to sustainability-related issues in the context of antecedents and consequences of green innovation.

Green innovation has been at the heart of the corporate sustainability debate, dominating academic and end-user agendas (Dangelico

et al., 2017). While developing a better understanding of corporate sustainability-related issues, such as green innovation, the state-of-the-art literature has generally provided bifurcated theoretical perspectives instead of unifying and combining them (Lozano et al., 2015). Notably, the lack of integration between two prominent management theories—stakeholder theory and RBV of firms' performance—should be considered (Sodhi, 2015; Sodhi & Tang, 2018). This lack of integration of theories has been a significant limitation on the state-of-the-art literature on corporate sustainability (Connelly et al., 2011). To integrate these two theoretical lenses, Sodhi (2015) proposed an integrative theoretical perspective named 'stakeholder resource-based view', which signifies a combined view between stakeholder theory (Freeman, 2010) and RBV (Barney, 2001). In this context, a unique sustainability-based competitive advantage—which is the aim of RBV—should be potentialized by giving relevance to firms' stakeholders.

The relevance of SRBV as a theory for understanding sustainability-related firm initiatives has been pointed out; however, research on this topic has been scarce so far (Sodhi, 2015). Consequently, we anchored this work in SRBV theory to understand further the effects of green dynamic capabilities on green innovation and firms' performance. SBRV considers that firms can further improve their sustainability performance by maximizing their competitive advantage and truly understanding and engaging with their key stakeholders (Sodhi, 2015). Based on stakeholder theory (Aragón et al., 2016; Freeman, 2010), stakeholders' pressure can be understood by the actions promoted by regulatory stakeholders (such as governmental regulators, trade associations, and competitors), community (such as environmental organizations and society), and other vital organizations' stakeholders (mainly customers, suppliers, shareholders, and employees) (Steurer et al., 2005).

Stakeholder pressure refers to the power and ability of stakeholders to influence a firm's decisions (Fassin & Van Rossem, 2009; Helmig et al., 2016; Kassinis & Vafeas, 2006). Furthermore, stakeholder pressure has been the key driver of recent corporate efforts toward corporate social responsibility and sustainability (Helmig et al., 2016). The literature, as mentioned above, together suggests developing a sustainable workplace by acting upon information sharing and cognitive involvement (Caputo, Buhnova, & Walletzký, 2018; Caputo & Evangelista, 2019; Hahn et al., 2014) of the workforces. For example, stakeholder pressure has been considered key for companies adopting the latest green management concepts and practices, such as green supply chain management (Sarkis et al., 2010), green marketing (Connelly et al., 2011), green human resource management (Arulrajah & Opatha, 2016), and so on. Guoyou et al. (2013) have suggested a positive relationship between stakeholder pressure and green innovation; however, the relationship between stakeholder pressure and green dynamic capabilities is under-researched and less understood (Amui et al., 2017; Chen & Chang, 2012). The literature, as mentioned earlier, indicates that engaging in green and sustainable actions is a reactive (vs. proactive) action from firms and that they are "obliged" by stakeholders to do so and suggests that firms are under some form of stakeholder pressure. Therefore, the relevance of the SRBV theoretical lens to understand sustainability-related organizational initiatives through scientific inquiries on this subject have been rare so far (Sodhi, 2015). Overall, we argue that sustainability issues challenge executives with tensions amid multifaceted economic, environmental, and social issues (Hockerts, 2015; van Dam & van Trijp, 2011) and ask for sustainable strategies for engagement with the stakeholders (Font et al., 2016; Saviano et al., 2018) and implementation of environmental ethics to keep the organization relevant to needs of the business, society, and the planet (Singh et al., 2019).

2.1 | Stakeholder pressure and green dynamic capabilities

Stakeholder pressure denotes the amount of accountability that firms have to endure vis-à-vis their actions and decisions related to designing the product(s), sourcing raw materials, usage of production systems, or distribution network while carrying out its activities (Parmigiani et al., 2011). Long-term business sustainability depends on how microlevel actions undertaken by owners-managers (Del Giudice et al., 2017) help firms identify, manage, and respond to stakeholders' claims (e.g., Freeman, 2010; Helmig et al., 2016). Therefore, we argue that firms should leverage their dynamic capabilities to manage stakeholders' orientation, identification, and engagement (Ferrell et al., 2010; Verona & Zollo, 2011) in a manner that makes them satisfied as partners in the value creation processes. Stakeholder pressure (from the clients, the government, the workers, etc.) positively influences a firm's absorptive capacity (Aboelmaged & Hashem, 2019; Singh, Del Giudice, Nicotra, & Fiano, 2020) and also pushes enterprises to be proactive to develop and renew their resource(s) and capabilities in order to adopt environmental practices (Murillo-Luna et al., 2011; Sarkis et al., 2010) and to strengthen customer–enterprise relationship well (Caputo, Carrubbo, & Sarno, 2018).

Firms should develop green dynamic capabilities to become transparent on environmental and social issues vis-à-vis the stakeholders (New, 2010) to reduce the risk of stakeholders withdrawing those resources or their usage becoming conditional (Wolf, 2014). This scenario calls for organizations to reconfigure their resources and organizational green dynamic capabilities to deepen their stakeholder relationships. The governmental regulatory agencies continuously scrutinize organizations' environmental practices, which is a message for organizations to develop human resource capabilities through training and development activities to support the diffusion of firms' environmental practices (Sarkis et al., 2010). We posit that the focal organizations should develop stakeholder integration capabilities to understand and manage their expectations (Harrison et al., 2010), as improved stakeholder integration capabilities enhance sustainable performance (Zhu & Sarkis, 2007).

We argue that firms should reconfigure their resources and capabilities to develop green dynamic capabilities to effectively sense and seize stakeholder pressure and address different perspectives and interests, if any, to maintain or improve their competitive posture in the dynamic market. Firms' competitive advantage stems from how

well they manage their stakeholders to be sustainable. They are associated with path dependence and causal ambiguity (Harrison et al., 2010) and positively influence the organization's innovation capability (Singh, Del Giudice, Nicotra, & Fiano, 2020). Organizations face paramount pressure from their key stakeholders to improve their environmental performance and stay competitive. As such, organizations need to integrate, build, and reconfigure their capabilities to make them comfortable navigating through various stakeholders' complex and sometimes conflicting demands. Therefore, organizations need to focus on stakeholder engagement by leveraging their dynamic organizational capabilities in a way that fosters cooperation and environmental learning (Sarkis et al., 2010), especially when firms experience conflicting pressures from a variety of stakeholders (Watson et al., 2018). Therefore, we hypothesize that:

> **H1.** Stakeholder pressure positively influences green dynamic capabilities.

2.2 | Green dynamic capabilities and green innovation

An enterprise's dynamic capabilities constitute its capacity to create purposefully, extend, or modify its resource base as per the needs of dynamic markets (Barreto, 2010; Helfat & Winter, 2011) to bring about green innovation in products and processes to stay competitive. Firms' dynamic capabilities are multifaceted, including "sensing," "seizing," and "transforming" to design and implement a business model (Teece, 2017). As dynamic capabilities develop out of firms' idiosyncratic managerial characteristics and routines and culture, they are hard for rivals to replicate (Teece, 2014). We posit that firms with sensemaking capacity have a faster response time to competitors' initiatives, improved understanding of customer needs, green creativity, and innovation in new product development (Li & Lu, 2014).

On the other hand, green innovation refers to improved products or processes using environmentally friendly technologies in the production processes that negatively impact the environment (Wong et al., 2012). As green innovation may face a high level of uncertainty, green dynamic capabilities positively affect green product development performance, satisfying stakeholders' environmental needs (Chen & Chang, 2012). Green innovation focuses on new ways to develop environmentally friendly products and processes (Albort-Morant et al., 2016). It is facilitated by adopting various organizational practices, such as selecting greener raw materials, using fewer materials during the design of products, and designing products using ecodesign principles (Chan et al., 2016). In such a dynamic business environment, green dynamic capabilities become relevant as they continuously renew and develop the organizational capabilities necessary for green innovation (Chen & Chang, 2012).

We argue that the green product and process innovation in organizations depend upon their strong green dynamic capabilities relative to their competitors—sensing, seizing, and transforming—that propel them to orchestrate their resources astutely to deliver value to the customers (Teece, 2017). Green dynamic capabilities help firms exploit their existing knowledge and resources to renew and develop green organizational capabilities vis-à-vis the dynamic business environment (Lin & Chen, 2017) as these learning mechanisms become instrumental in shaping organizational routines directly (den Hertog et al., 2010). Firms' green dynamic capabilities improve corporate green innovation efforts (Dangelico et al., 2017), especially with well-developed knowledge (Shahzad et al., 2020). Additionally, the firms' dynamic capabilities help them leverage their existing knowledge and resources to develop and strengthen their green organizational capabilities to remain competitive in the dynamic market (Chen & Chang, 2012). Furthermore, green dynamic capabilities enhance firms' green innovation efforts by boosting green management practices, green strategic objectives, and green research and development (R&D) (Amui et al., 2017). Consequently, we hypothesize that:

> **H2.** Green dynamic capabilities positively influence green innovation.

2.3 | Green innovation and firm performance

Green innovation symbolizes GPDI and green process innovation (GPOI). GPDI aims to reduce the negative impact on the environment compared to competing products in the markets. Green innovation relates to the use of environmentally friendly technologies in production processes to produce goods and services that have a minimal negative impact on the environment (Arfi et al., 2018; Singh, Del Giudice, Chierici, & Graziano, 2020; Wong et al., 2012). It helps reduce costs and enhance firms' competitiveness in dynamic markets (Dangelico et al., 2017). Firms that believe in green innovation always prefer to use recycled materials for product development, as the recycled materials are both inexpensive and environment friendly. Meanwhile, with significant improvement of stakeholders' environmental awareness, firms can enhance their corporate image and improve market competitiveness through GPDI (Weng et al., 2015) through green intellectual capital (Mansoor et al., 2021). We contend that green innovation depends on green dynamic capabilities and enhances the chances of firms' entry into specific markets, where stakeholders are environmentally conscious, through differentiating products in a market (Dangelico et al., 2017).

However, we note that past research on the linkages of green innovation with firm performance offers mixed findings. As compared to nongreen firms, green innovation firms do not witness increased financial performance (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013; Driessen et al., 2013), as green innovation incurs an increased cost to the firms (Liu et al., 2011). On the other hand, we posit that green product and process innovation positively correlates to competitive advantage (Chen et al., 2006) and positively and significantly predicts firm performance (Arfi et al., 2018; El-Kassar & Singh, 2019; Tang et al., 2018). Furthermore, firms' product and process-related environmental actions positively influence performance (Dangelico & Pontrandolfo, 2015). When product development and environmental

sustainability issues are integrated, we also note that they predict new markets, increased sales, return on investment, and competitive advantage (Dangelico & Pujari, 2010). Green innovation can boost firm financial and market performance (Chiou et al., 2011; Singh, Del Giudice, Chierici, & Graziano, 2020). Green innovation affects firm financial performance, as investments in green innovation can lead to better customer retention, growth in sales, better productivity, improved yield over investment, and enhanced financial performance of the firms (Lin et al., 2013). Green innovation can also improve firms' market performance because green innovation can help firms enter new markets, introduce new products, and launch new and successful green products (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013). Therefore, we hypothesize that:

H3. Green innovation positively influences firm performance.

2.4 | The indirect influence of stakeholder pressure on green innovation

Stakeholder pressure is the driving force for firms to carry out green initiatives (Berrone et al., 2013) and to use green organizational resources to engage in continuous integration, reconfiguration, and acquisition and release of dynamic resources (Teece et al., 2016). This forces firms to create and introduce environmentally friendly products (Shu et al., 2016). Stakeholder pressure influences firms to adopt innovative green practices in the goods and services they produce (Murillo-Luna et al., 2011; Sarkis et al., 2010). The green-oriented firms make changes to their core disciplines, namely, marketing, management, and operations (Dangelico et al., 2017; De Marchi & Grandinetti, 2013) and develop environmentally friendly (e.g., biodegradable and recyclable) products from the very beginning rather than adopting end-of-pipe solutions for existing products (Leonidou et al., 2013).

We argue that firms should leverage their green dynamic capabilities to learn and develop higher order routines to incorporate stakeholders' environmental concerns in their goods/services, use of technologies, processes, etc., and stay competitive in the changing business environment. Stakeholder pressure impacts organizations' environmental strategy (Betts et al., 2015), which will push organizations to engage in continuous integration and reconfiguration of their resources to gain competitive advantage (Teece, 2017) through the adoption of green innovation practices. However, the underlying mechanisms through which stakeholder pressure indirectly influences organizations to adopt green innovation practices are yet to be examined thoroughly. While drawing upon SRBV (Sodhi, 2015), we speculate that stakeholder pressure causes firms to renew and reconfigure their dynamic capabilities for practicing green innovation in their processes and products. Therefore, we hypothesize that:

H4. Stakeholders' pressure positively influences green innovation through green dynamic capabilities.

2.5 | The indirect influence of green dynamic capabilities on firm performance

Green dynamic capabilities help firms be increasingly entrepreneurial to adapt to their business ecosystems and shape them through innovation (Teece, 2017) and enhance firms' performance. However, firms' competitive advantage lies in merely possessing dynamic capabilities and using their organizational and strategic routines to reconfigure resources to stay relevant and competitive as markets emerge, collide, split, evolve, and die (Teece et al., 2016). The case of reconfiguration of resources in a dynamic environment is much stronger wherein firms become involved in prompt corrections to organizational misalignments and quick responses to new business opportunities (Girod & Whittington, 2017). Such organizational actions happen, especially when stakeholders pressure them to adopt green innovation practices in products and services they sell in the markets. Furthermore, firms capable of developing and applying green dynamic capabilities during green innovation in their products and services remain competitive. It helps us understand some aspects of differential firm performance (e.g., Wang et al., 2015) but needs further empirical examination. Therefore, as market conditions influence green dynamic capabilities, we argue that they are unlikely to guarantee firm performance (Zahra et al., 2006), especially in a market where stakeholders pressure firms to adopt green innovation practices in their processes and products/services.

Moreover, the effect of green dynamic capabilities on firm performance depends upon market dynamism (Schilke, 2014); firms need to modify and create their resource bundles (Teece et al., 2016) to satisfy their various stakeholders who ask for protecting the environment through the GPOI and GPDI. Green dynamic capabilities—sensing, seizing, and reconfiguring capabilities—enable firms to renew their competencies by combining and reconfiguring their intangible and tangible resources (Teece, 2017). They are necessary for adapting to changing business environments and shaping the ecosystems they occupy (Teece et al., 2016). Their impact on green innovation in processes and goods/services (Dangelico et al., 2017) results in the enhanced market and financial performance. Drawing upon the SRBV (Sodhi, 2015), we expect green dynamic capability to influence green innovation and, in turn, influence firm performance. Therefore, we hypothesize that:

H5. Green dynamic capability positively influences firm performance through green innovation.

Figure 1 portrays the research framework of this study.

3 | METHODS

3.1 | Participants and procedures

We used a survey questionnaire on stakeholder pressure, green dynamic capability, green innovation, and firm performance to collect

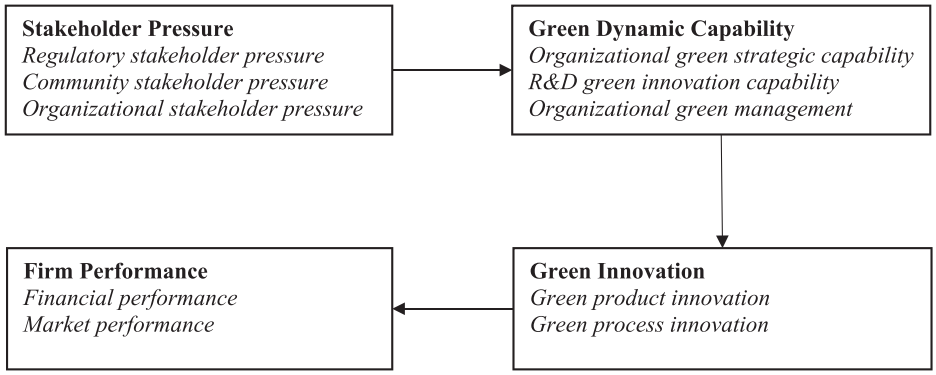

FIGURE 1 Theoretical framework and relationships among variables

TABLE 1 Sample details

The CEO ($n = 248$)	Percentage	The production manager ($n = 248$)	Percentage	The SMEs ($n = 248$)	Percentage
Age (in years)	39.3	Age (in years)	38.7	Year established: 2000–2005 2006–2010 2011–2016	37 (14.9%) 134 (54.1%) 77 (31%)
Gender Male Female	188 (75.8%) 60 (24.2%)	Gender Male Female	184 (74.2%) 64 (25.8%)	Employee counts 10–50 51–100 101–200 201– ≤ 250	46 (18.55%) 74 (29.84%) 87 (35.08%) 41 (16.53%)
Educational qualification Bachelor degree Master degree PhD/DBA	123 (49.6%) 109 (44%) 16 (6.5%)	Educational qualification Bachelor degree Master degree PhD/DBA	158 (63.7%) 76 (30.6%) 14 (5.6%)		

the perception of the chief executive officer (CEO) and top managers of the manufacturing sector SMEs in Abu Dhabi, UAE. We used the manufacturing sector SMEs' definition per the UAE Cabinet Resolution No. 22 of 2016 (the **Resolution**) wherein small enterprises employ between 10 and 100 people and have an annual ≤AED 50 million; whereas the medium enterprise employs between 101 and 250 people and has an annual ≤AED 250 million (Al Mulla, 2017). We note that we used the Yellow Pages (https://www.yellowpages.ae/) search engine to identify 607 manufacturing sector SMEs in Abu Dhabi as per the criteria mentioned above in the UAE Cabinet Resolution No. 22 (2016) definition of SMEs. We approached 542 of them for data collection from this list, but only 352 agreed to participate in our study (64.9% initial response rate). The CEO and the production manager of 352 SMEs were given a packet containing a survey questionnaire and a letter explaining the purpose of the study and ensuring the confidentiality of their responses. The production manager responded to the survey questionnaire on green innovation, as she/he knew the repertoire of GPOI and GPDI in her/his firm better than anybody else.

In contrast, the CEO responded to the survey questionnaires on stakeholder pressure, green dynamic capability, and firm performance. After three visits, each at an interval of 15 days, we received completed questionnaires from the CEO and the production manager dyads from 272 SMEs (77.3% response from those who were mailed the survey questionnaire). Of these, only 248 sets of the matched questionnaires were found valid and included in our analysis. We mention here that the original questionnaires were in English. We used a translation–back-translation procedure, from English to Arabic and back to English, as per Brislin (1986), to ensure clarity of content of the measuring instruments.

Table 1 depicts sample and organization details. The participating SMEs in our study were established from 2000 to 2016. Thirty-seven (14.9%) SMEs were set up in the year 2000–2005, while 134 (54.1%) and 77(31%) SMEs were established between the years 2006–2010 and 2011–2016, respectively. Furthermore, 18.55% of the SMEs had employees in the range of 10–50, and 16.53% of SMEs had employee counts in the range of 201–250, whereas the remaining 64.92% of the participating SMEs had employee counts ranging between 51 and 200 at the time of the data collection. Furthermore, the average age of the responding CEOs (75.8% males and 24.2% females) was 39.3 years, while that for the production managers (74.2% males and 25.8% females) were 38.7 years. Regarding the CEOs' educational qualifications (see Table 1), 49.6%, 44.0%, and 6.5% had bachelor's, master's, and PhD/DBA level degrees, respectively. Similarly, 63.7%, 30.6%, and 5.6% held bachelor's, master, and PhD/DBA level degrees for production managers, respectively.

We tested for sampling characteristics, including nonresponse bias and common-method bias as suggested by Latan (2018) in the general reporting standards of partial least squares (PLS). We tested nonresponse bias to ensure that respondents who did not participate

in the survey had the same characteristics as the samples obtained. We used the independent sample *t*-test by comparing the respondents who responded early with the late respondents representative of the population. The results of the *t*-test did not detect any significant differences between early and late responders. Table 2 shows the significant values > .05 for both sample groups in the variables tested, demonstrating that nonresponse bias is not a validity threat to our results. This means that our sample can be generalized to the population because it has the same sampling weight (Becker & Ismail, 2016). We also considered testing the common-method bias using the average full collinearity variance inflation factor (VIF) (Kock, 2017). Our analysis results obtained the AFVIF value 1.238 < 3.3, which means common-method bias is not a threat to our results.

3.2 | Measures

We selected measuring instruments for our purpose in this study from the past studies, and the response scale for all items ranged from 1 (*strongly disagree*) to 7 (*strongly agree*) on a Likert scale.

Stakeholder pressure consisted of nine items (see Table 3)—belonging to the three dimensions, namely, regulatory stakeholder pressure (RSP), community stakeholder pressure (CSP), and organizational stakeholder pressure (OSP)—adapted from Henriques and Sadorsky (1999). The sample item included … while working on process/product development, my organization faces pressure from "government," "environmental organization," "employees," etc., "guarding knowledge against others," "protecting ideas from being used by others at the workplace," etc. The Cronbach coefficients α were .738, .877, and .700 for RSP, CSP, and OSP, respectively.

Green dynamic capability had 11 items (see Table 3) belonging to three dimensions—organizational green strategic capability (OGSC), R&D green innovation capability (RDGIC), and organizational green management capability (OGMC)—adapted from Hung et al. (2010). The sample items included: my organization has … "green competitive flexibility," "ability to know the direction and timing for green R&D," "coordinates with the community to fulfill mutual needs," etc. The Cronbach coefficient α was .746, .778, and .720 for OGSC, RDGIC, and OGMC.

Green innovation had seven items (see Table 4)—four items for GPDI and three items for GPOI—adapted from Chen et al. (2006) and Utterback and Abernathy (1975). The sample items included: my organization … "uses materials that produce the least amount of pollution," "uses manufacturing processes that reduce the emission of hazardous substances or waste," etc. The Cronbach coefficient α was found to be .780 and .866 for GPDI and GPOI, respectively.

The firm performance had nine items (see Table 4)—five items for financial performance (FINPERF) and four items for market performance (MKTPERF)—adapted from Tippins and Sohi (2003) and Wang et al. (2012). The sample items consisted of "My organization has performed better relative to competitors during the last three years on 'customer retention,' 'return on investment,' 'market share,' etc." The Cronbach coefficient α was .874 and .761 for FINPERF and MKTPERF, respectively.

TABLE 2 Testing for nonresponse bias

Construct	Levene's test	*t*-test for the equality of means
Stakeholder pressure (SP)	0.375	0.754
Green dynamic capability (GDC)	0.329	0.949
Green innovation (GI)	0.130	0.320
Firm performance (FP)	0.090	0.137

4 | RESULTS

We used a soft modeling approach for data analysis. Consistent with Aguinis et al. (2018), we used the PLS path modeling approach (PLS-PM) based on assumptions, namely, testing the collinearity among predictor variables and sufficient sample size. Furthermore, the choice for using PLS-PM statistical analysis as the constructs under study was investigated using the formative measures. Using the gamma-exponential method, the minimum sample size for this study (Kock & Hadaya, 2018) was obtained as 189 cases, and that meets the requirements of this study as we have 248 cases.

4.1 | Measurement model assessment

The measurement model was examined through convergent validity, discriminant validity, and construct reliability. The convergent validity was tested using the factor loading and average variance extracted (AVE). It is to note that the factor loading for each indicator of the construct needs to be >0.6, while the AVE should be >0.5 (Bandalos, 2018; Raykov & Marcoulides, 2011). Furthermore, we examined construct reliability by using two measures, Cronbach alpha and rho_A, whose value should be greater than .70 (Henseler et al., 2017; Latan & Noonan, 2017). Tables 3 and 4 illustrate the results obtained for the measurement model of this study.

On the other hand, we used the heterotrait–monotrait (HTMT) ratio to check for discriminant validity. Franke and Sarstedt (2019) argue that HTMT is an estimator of disattenuated (perfectly reliable) correlations between constructs rather than the Fornell–Larcker criterion. Discriminant validity refers to the testing of indicators for two different constructs, which measures the different concepts. Therefore, the correlation between the two constructs measured is expected to have little or no correlation to show the difference. According to Franke and Sarstedt (2019), the desired HTMT value should be to the most <0.90 or 0.85 for each study variable. The discriminant validity results in this study meet the required correlation value between the two construct measurements (please see Table 5).

TABLE 3 Construct indicators and measurement model of stakeholder pressure and green dynamic capability

Constructs	Dimensions/items	Code	FL	AVE	α	rho_A
Stakeholder pressure (SP)	Regulatory stakeholder pressure	RSP1	0.831	0.656	.738	.740
(Source: Henriques & Sadorsky, 1999)	Government regulator	RSP2	0.832	0.755	.877	.887
	Trade association	RSP3	0.767	0.528	.700	.711
	Competitor	CSP1	0.847			
	Community stakeholder pressure	CSP2	0.890			
	Environmental organization	OSP1	0.766			
	Community/society	OSP2	0.604			
	Organizational stakeholder pressure	OSP3	0.754			
	Customer	OSP4	0.769			
	Supplier					
	Shareholder					
	Employee					
Green dynamic capability (GDC)	Organizational green strategic capability	OGSC1	0.671	0.568	.746	.756
(Source: Hung et al., 2010)	... competitive flexibility in the industry	OGSC2	0.746	0.609	.778	.779
	... ability to be aware of business opportunity or threat possibility	OGSC3	0.804	0.543	.720	.725
		OGSC4	0.787			
	... leaders who possess entrepreneurial characteristics	DGIC1	0.727			
	... cohesive employees' knowledge through visioning	DGIC2	0.813			
	R&D green innovation capability	DGIC3	0.798			
	... evaluating strength and weakness	GMC1	0.750			
	... direction and timing for green R&D	GMC2	0.765			
	... develop new green products or technology	GMC3	0.755			
	Organizational green management capability	GMC4	0.672			
	... to understand the needs of the customers					
	... to communicate and coordinate effectively among the departments					
	... to balance work and family life of the employees					
	... to coordinate with the community to fulfill mutual needs					

Abbreviation: FL, factor loading.

TABLE 4 Construct indicators and measurement model of green innovation and firm performance

Constructs	Dimensions/items	Code	FL	AVE	α	rho_A
Green innovation (GI)	Green product innovation	GPOI1	0.805	0.695	.780	.781
(Sources: Chen et al., 2006; Utterback & Abernathy, 1975)	Selection of raw materials of the product	GPOI2	0.840	0.717	.868	.871
	It uses the fewest amount of materials	GPOI3	0.856			
	Deliberate upon whether the product is easy to recycle, reuse, and decompose	GPDI1	0.881			
		GPDI2	0.854			
	Green process innovation	GPDI3	0.801			
	Emission reduction of hazardous substances					
	Reduces the consumption of water, electricity, coal, or oil					
	Reduces the use of raw materials					
Firm performance (FP)	Financial performance	FINPERF1	0.814	0.666	.874	.875
(Sources: Tippins & Sohi, 2003; Wang et al., 2012)	Customer retention	FINPERF2	0.818	0.587	.761	.792
	Sales growth	FINPERF3	0.787			
	Profitability	FINPERF4	0.835			
	Return on investment	FINPERF5	0.826			
	Overall financial performance	MKTPERF1	0.807			
	Market performance	MKTPERF2	0.807			
	Entering new markets quickly than the competitors	MKTPERF3	0.842			
		MKTPERF4	0.580			
	Introducing new products/services faster than the competitors					
	The success rate of new products/services as compared to the competitors					
	Market share exceeded as compared to the competitors					

Abbreviation: FL, factor loading.

4.2 | Assessment of structural model

We checked for effect size, coefficient of determination, VIF, and predictive relevance to assessing the structural model. Needless to mention that a desirable coefficient of determination should range from 0.25 to 0.50 (Hair et al., 2017). Table 6 presents the findings of the structural model assessment. The values of R^2 and adjusted R^2 were excellent, and they ranged from 0.177 to 0.390. Furthermore, we found the effect size for each of the predictors to range from 0.215 to 0.640. The endogenous variables' predictive relevance values were in the acceptable zone, where this value is >0 for all variables in this study. We obtained the VIF values for each predictor, <3.3, which suggests neither a high correlation nor the collinearity between independent variables in this study.

4.3 | Hypothesis testing

We used the bootstrapping approach to examine the hypotheses in this study at 95% bias-corrected and accelerated bootstrap interval (the *BCa interval*). Table 7 illustrates that all the hypothesized relationships among the variables were supported. Specifically, the relationship between SP → GDC (β = .421) and GDC → GI (β = .543) were significant at $p = .001$ (<.05) and $p = .000$ (<.05) of 95% *BCa interval*. This means that H1 and H2 were supported. Furthermore, the influence of GI → FP had a beta value of .625, which was found significant at $p = .001$ (<.05) of 95% *BCa interval*. Thus, H3 was supported.

4.4 | Indirect effect

We tested the indirect effect to determine the GDC and GI variables' role as mediating the relationship between the constructs. We followed the method Cepeda et al. (2017) suggested, which is considered the most up-to-date approach in the PLS-PM literature. We performed the indirect effect test with specific settings as before and found the following results as shown in Table 8.

We found that the relationships between SP → GDC → GI and GDC → GI → FP with significant beta values of .228 and .143, respectively (see Table 8). Thus, H4 and H5 were supported in this study. Overall, the evaluation of the measurement and structural models are depicted in Figure 2.

4.5 | Assessment of endogeneity

We examined endogeneity biases to ensure the robustness of the results. As Hult et al. (2018) argues, many PLS-PM users have ignored this issue because of the PLS's predictive nature that makes endogeneity irrelevant. However, endogeneity has been a significant concern and a severe threat to results; researchers should report the results of this bias from the PLS-PM results (Latan, 2018). We performed the Heckman test using the Stata software, and the obtained results suggest that endogeneity bias is not present in our study (Hult et al., 2018). The endogeneity test results are shown in Table 9.

TABLE 5 Correlations and discriminant validity

Construct	Mean	SD	1	2	3	4
Firm performance (FP)	5.186	1.007	**1**	0.597	0.683	0.683
Green dynamic capability (GDC)	5.533	1.006	0.536*	**1**	0.602	0.484
Green innovation (GI)	5.381	1.108	0.625*	0.543*	**1**	0.680
Stakeholder pressure (SP)	5.152	1.072	0.595*	0.421*	0.601*	**1**

Notes: Above the diagonal elements are the HTMT value. Below the diagonal elements are the correlations between the constructs.
*$p < .05$ (two-tailed).

TABLE 6 Structural model

Constructs	R^2	Adj. R^2	f^2	Q^2	VIF	AFVIF
Stakeholder pressure (SP)	–	–	0.215	–	1.00	–
Green dynamic capability (GDC)	.177	.174	0.418	0.075	1.00	–
Green innovation (GI)	.295	.292	0.640	0.169	1.00	–
Firm performance (FP)	.390	.388	–	0.200	–	1.014

TABLE 7 Relationships between variables (direct effect)

Structural path	Coef (β)	Std. deviation	*p*-Values	95% BCa CI	Conclusion
SP → GDC	.421	.055	.000**	(.505, .001)**	H1*
GDC → GI	.543	.048	.000**	(.620, .000)**	H2 supported
GI → FP	.625	.039	.000**	(.681, .001)**	H3 supported

*$p < .005$.
**$p < .001$.

TABLE 8 Relationships between variables (indirect effect)

Structural path	Coef (β)	SD	*p*-Values	95% BCa CI	Conclusion
SP → GDC → GI	.228	.045	.000**	(.300, .002)**	H4 supported
GDC → GI → FP	.143	.032	.000**	(.195, .002)**	H5 supported

**$p < .001$.

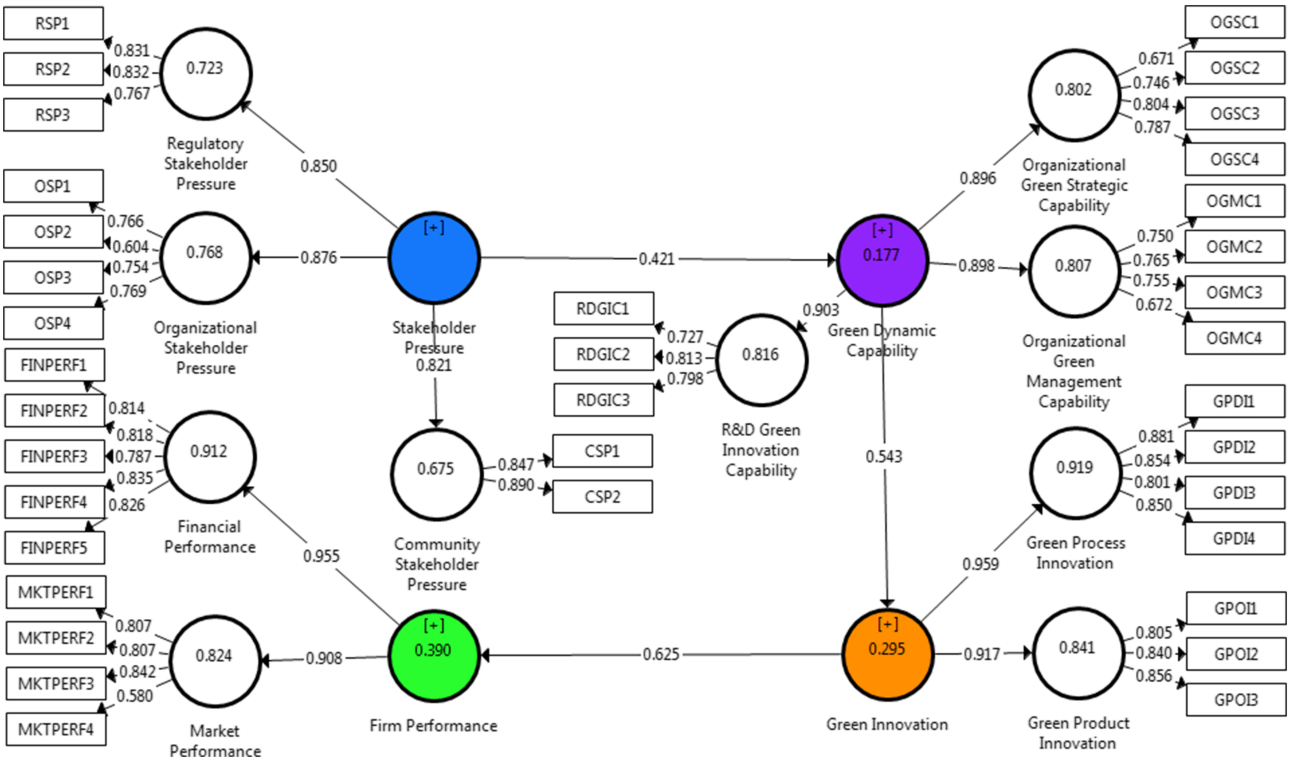

FIGURE 2 Evaluation of the measurement and structural models [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 9 Endogeneity test

Structural path	Coef (β)	SD	*p*-Values	*z*	Conclusion
SP → GDC	.420	0.057	.000**	7.29**	Not different
GDC → GI	.543	0.053	.000**	10.19**	Not different
GI → FP	.624	0.049	.000**	12.60**	Not different

**$p < .001$.

5 | DISCUSSION AND CONCLUSION

The extant literature suggests that best practices and copybook green innovation cases primarily depict large-sized firms' reality. SMEs need to possess their unique green innovation characteristics, which should be better understood (Klewitz & Hansen, 2014). The findings obtained in this study add to pioneering literature by shedding light on the causes and consequences of green innovation in SMEs in emerging markets. The key findings of the study stakeholder pressure influence green dynamic capabilities, which influences green innovation in the firm. We also observed that green innovation influences firm performance.

On the other hand, we in this study found stakeholder pressure to influence green innovation through green dynamic capabilities indirectly. At the same time, we found green innovation to mediate the relationship between green dynamic capabilities and firm performance. These findings mentioned above of the study have implications for theory and practice.

5.1 | Implications for theory

Firstly, the study's findings contribute to integrating stakeholder theory (Freeman, 2010) and RBV (Barney, 2001) theoretical lenses in the form of SRBV (Sodhi, 2015) to explicate sustainability-related issues of the SMEs in the context of causes and consequences of green innovation. Stakeholder theory attempts to find answers to the purpose of the firms and their responsibilities toward their stakeholders

(Freeman, 2010), while RBV asks the firm to possess strategic resources that are valuable, rare, inimitable, and nonsubstitutable (Barney, 2001), which has eloquently presented through the SRBV theoretical lens (Sodhi, 2015). In the context of sustainability and sustainability-related firm performance, the findings of this study suggest that stakeholder pressure indirectly through green dynamic capabilities influences green innovation in SMEs. Thus, our study's findings suggest that firms can together integrate RBV's aims for exclusive sustainability-based competitive advantage through giving relevance to stakeholders of the firms. Furthermore, the findings of the study advance understating of the SKRV theoretical lens that SMEs can enhance their sustainability performance by making the best use of their competitive advantage and along with understanding and engagement with their relevant stakeholders (Sodhi, 2015; Sodhi & Tang, 2018).

Secondly, the findings of the study advance literature in the field of sustainable consumption and green innovation. Our study extends the extant literature that suggests that stakeholders have become vocal and mindful of the consumption processes and pressurize firms to create environmentally friendly goods and services (Shu et al., 2016). In other words, our study suggests firms effectively manage and respond to stakeholders' demands and claims to keep intact their long-term business sustainability (Helmig et al., 2016), and that depends upon cooperative relationships with their stakeholders (Freeman, 2010). The study's findings suggest that firms do not have any choice left when their stakeholders pressurize them to go for green innovation that they can do it meticulously while renewing and reconfiguring their green dynamic capabilities (Chen & Chang, 2012; Zahra et al., 2006). Therefore, our study's findings advance the arguments in the literature on how stakeholders pressurize firms to carry out green initiatives (e.g., Berrone et al., 2013; Teece et al., 2016) to stay relevant and competitive in the markets.

Lastly, the study's findings reduce unclarity in the extant literature on green innovation vis-à-vis firm performance. To recall, we mentioned in the beginning that some of the studies found positive (Dangelico et al., 2017; de Burgos-Jiménez et al., 2013; Singh, Del Giudice, Chierici, & Graziano, 2020), while others found negative (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013; Driessen et al., 2013) relationships between green innovation and firm performance. The findings of our study advance the literature in the field wherein green innovation enhances a firm's market and financial performance. Furthermore, our study also suggests that green innovation mediates the positive influence of green dynamic capabilities on firm performance. Therefore, our study suggests that firm's green innovation depends upon their green dynamic capabilities (i.e., sensing, seizing, and transforming) necessary to exploit existing knowledge and resources in the dynamic business environment (Lin & Chen, 2017) to deliver value to the customers (Teece, 2017) and stay relevant in the markets.

To sum it up, our study helps advance knowledge in the field to integrate stakeholder theory and RBV to explicate sustainability-related issues of the firms, contributing to removing unclarity on the linkages between green innovation and firm performance. Our study also advances understanding of how green dynamic capabilities unpack green innovation architecture for firms to stay relevant in the markets.

5.2 | Implications for practice

The findings of this study have vital implications for practice. First, the results provide critical insights into how the regulatory community and organizational stakeholders pressure companies to practice green innovation processes and goods/services. Therefore, our study suggests that managers and leaders integrate stakeholders' expectations in strategy development processes in a manner best suited to make them satisfied and partner in firms' value creation processes. It also calls upon managers and leaders to formulate and implement stakeholder integration capabilities to better understand and manage their expectations, enhancing dynamic market performance.

Second, managers and leaders need to spend a significant amount of organizational time and resources developing their green dynamic capabilities as they significantly facilitate green innovation in products and processes to keep their key stakeholders satisfied. In other words, green innovation depends largely upon firms' intentions to improve upon their green strategic, R&D, and people management capabilities. As firms develop and implement green dynamic capabilities in their organizational routines, systems, and processes, green innovation becomes a reality and helps firms to remain competitive.

Third, every organization exists for a purpose: to improve upon their past market and financial performance continuously. Our study results suggest that managers and leaders can successfully achieve enhanced market and financial performance through green innovation. The latter is the key competitive weapon to fight competition through sustainable green products and services in dynamic markets. In the present era of environmental activism, only those who commit to the GPOI and GPDI survive and grow.

5.3 | Limitations and future research directions

While our study has numerous implications for theory and practice, as mentioned above, it is not without limitations. First, we suggest that future researchers use our framework and undertake a comparative study of SMEs and large firms to determine differences in terms of the direct and indirect effects among stakeholder pressures, green dynamic capabilities, green innovation, and firms' performance. Second, quantitative studies have their inherent limitations. We suggest that future research use quantitative and qualitative research design to compensate for each's weaknesses to arrive at sound implications for both theory and practice. Lastly, we conducted our study in the manufacturing sector of SMEs in the UAE rather than across other Gulf Coordination Council (GCC) countries, which indicates the generalization of the results of this research across the GCC region. Hence, future research should empirically examine our research framework by drawing sample organizations from across the GCC countries to

develop sustainable green innovation practices to keep stakeholders satisfied and stay competitive in the markets.

However, despite the limitations mentioned above of the study, the results of this research have several vital conclusions for theory, researchers, and organizations on green innovation in SMEs in the context of emerging markets.

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REFERENCES

Aboelmaged, M., & Hashem, G. (2019). Absorptive capacity and green innovation adoption in SMEs: The mediating effects of sustainable organisational capabilities. *Journal of Cleaner Production*, *220*, 853–863. https://doi.org/10.1016/j.jclepro.2019.02.150

Aguilera-Caracuel, J., & Ortiz-de-Mandojana, N. (2013). Green innovation and financial performance: An institutional approach. *Organization and Environment*, *26*(4), 365–385. https://doi.org/10.1177/1086026613507931

Aguinis, H., Ramani, R. S., & Alabduliader, N. (2018). What you see is what you get? Enhancing methodological transparency in management research. *Academy of Management Annals*, *12*(1), 1–28.

Al Mulla, H. (2017). Doing business in the United Arab Emirates. *Baker & McKenzie Habib Al Mulla*. https://www.bakermckenzie.com/-/media/files/insight/publications/2017/05/doingbusinessuae/bk_uae_dbi_2017.pdf?la=en. Retrieved on April 14, 2019

Albort-Morant, G., Leal-Millán, A., & Cepeda-Carrión, G. (2016). The antecedents of green innovation performance: A model of learning and capabilities. *Journal of Business Research*, *69*(11), 4912–4917. https://doi.org/10.1016/j.jbusres.2016.04.052

Amui, L. B. L., Jabbour, C. C. J., de Sousa Jabbour, A. B. L., & Kannan, D. (2017). Sustainability as a dynamic organizational capability: A systematic review and a future agenda toward a sustainable transition. *Journal of Cleaner Production*, *142*, 308–322. https://doi.org/10.1016/j.jclepro.2016.07.103

Aragón, C., Narvaiza, L., & Altuna, M. (2016). Why and how does social responsibility differ among SMEs? A social capital systemic approach. *Journal of Business Ethics*, *138*(2), 365–384. https://doi.org/10.1007/s10551-015-2632-2

Arfi, W. B., Hikkerova, L., & Sahut, J. M. (2018). External knowledge sources, green innovation and performance. *Technological Forecasting and Social Change*, *129*, 210–220. https://doi.org/10.1016/j.techfore.2017.09.017

Arulrajah, A. A., & Opatha, H. H. (2016). Analytical and theoretical perspectives on green human resource management: A simplified underpinning. *International Business Research*, *9*, 152–164.

Bandalos, D. L. (2018). *Measurement theory and applications for the social sciences*. Guilford Press.

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, *27*(6), 643–650. https://doi.org/10.1177/014920630102700602

Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management*, *36*(1), 256–280. https://doi.org/10.1177/0149206309350776

Becker, J.-M., & Ismail, I. R. (2016). Accounting for sampling weights in PLS path modeling: Simulations and empirical examples. *European Management Journal*, *34*(6), 606–617. https://doi.org/10.1016/j.emj.2016.06.009

Bennet, A., & Bennet, D. (2008). The fallacy of knowledge reuse: Building sustainable knowledge. *Journal of Knowledge Management*, *12*(5), 21–33. https://doi.org/10.1108/13673270810902911

Berrone, P., Fsfuri, A., Gelabert, L., & Gomez-Mejia, L. R. (2013). Necessity as the mother of "green" innovation: Institutional pressures and environmental innovation. *Strategic Management Journal*, *34*, 891–909. https://doi.org/10.1002/smj.2041

Betts, T. K., Wiengarten, F., & Tadisina, S. K. (2015). Exploring the impact of stakeholder pressure on environmental management strategies at the plant level: What does industry have to do with it? *Journal of Cleaner Production*, *92*, 282–294. https://doi.org/10.1016/j.jclepro.2015.01.002

Brislin, R. (1986). The wording and translation of research instruments. In W. Lonner & J. Berry (Eds.), *Field methods in cross-cultural research* (Vol. 8). Cross-cultural research and methodology series. (pp. 137–164). Sage.

Caputo, F., Buhnova, B., & Walletzký, L. (2018). Investigating the role of smartness for sustainability: Insights from the smart grid domain. *Sustainability Science*, *13*(5), 1299–1309. https://doi.org/10.1007/s11625-018-0555-4

Caputo, F., Carrubbo, L., & Sarno, D. (2018). The influence of cognitive dimensions on the consumer-SME relationship: A sustainability-oriented view. *Sustainability*, *10*(9), 3238. https://doi.org/10.3390/su10093238

Caputo, F., & Evangelista, F. (2019). Information sharing and cognitive involvement for sustainable workplaces. In Information Resources Management Association. (Ed.), *Corporate social responsibility: Concepts, methodologies, tools, and applications* (pp. 1403–1420). IGI Global.

Cepeda, G., Nitzl, C., & Roldán, J. L. (2017). Mediation analyses in partial least squares structural equation modeling: Guidelines and empirical examples. In H. Latan & R. Noonan (Eds.), *Partial least squares path modeling: Basic concepts, methodological issues and applications* (pp. 173–195). Springer International.

Chan, H. K., Yee, R. W., Dai, J., & Lim, M. K. (2016). The moderating effect of environmental dynamism on green product innovation and performance. *International Journal of Production Economics*, *181*, 384–391.

Chan, R. Y. K. (2005). Does the natural-resource-based view of the firm apply in an emerging economy? A survey of foreign invested enterprises in China. *Journal of Management Studies*, *42*(3), 625–672.

Chang, C. H. (2011). The influence of corporate environmental ethics on competitive advantage: The mediation role of green innovation. *Journal of Business Ethics*, *104*(3), 361–370. https://doi.org/10.1007/s10551-011-0914-x

Chen, Y.-S., & Chang, C.-H. (2012). The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of Business Ethics*, *116*(1), 107–119.

Chen, Y.-S., Lai, S.-B., & Wen, C.-T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics*, *67*(4), 331–339. https://doi.org/10.1007/s10551-006-9025-5

Chiou, T. Y., Chan, H. K., Lettice, F., & Chung, S. H. (2011). The influence of greening the suppliers and green innovation on environmental performance and competitive advantage in Taiwan. *Transportation Research Part E: Logistics and Transportation Review*, *47*(6), 822–836. https://doi.org/10.1016/j.tre.2011.05.016

Chuang, S.-P., & Huang, S.-J. (2018). The effect of environmental corporate social responsibility on environmental performance and business competitiveness: The mediation of green information technology capital. *Journal of Business Ethics*, *150*(4), 991–1009. https://doi.org/10.1007/s10551-016-3167-x

Connelly, B. L., Ketchen, D. J., & Slater, S. F. (2011). Toward a "theoretical toolbox" for sustainability research in marketing. *Journal of the Academy of Marketing Science*, *39*, 86–100. https://doi.org/10.1007/s11747-010-0199-0

Dangelico, R. M., & Pontrandolfo, P. (2015). Being 'green and competitive': The impact of environmental actions and collaborations on firm performance. *Business Strategy and the Environment*, *24*(6), 413–430. https://doi.org/10.1002/bse.1828

Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics*, *95*(3), 471–486. https://doi.org/10.1007/s10551-010-0434-0

Dangelico, R. M., Pujari, D., & Pontrandolfo, P. (2017). Green product innovation in manufacturing firms: A sustainability-oriented dynamic capability perspective. *Business Strategy and the Environment*, *26*(4), 490–506. https://doi.org/10.1002/bse.1932

de Burgos-Jiménez, J., Vázquez-Brust, D., Plaza-Úbeda, J. A., & Dijkshoorn, J. (2013). Environmental protection and financial performance: An empirical analysis in Wales. *International Journal of Operations & Production Management*, *33*(8), 981–1018. https://doi.org/10.1108/IJOPM-11-2010-0374

de Marchi, V., & Grandinetti, R. (2013). Knowledge strategies for environmental innovations: The case of Italian manufacturing firms. *Journal of Knowledge Management*, *17*(4), 569–582. https://doi.org/10.1108/JKM-03-2013-0121

Del Giudice, M., Khan, Z., de Silva, M., Scuotto, V., Caputo, F., & Carayannis, E. (2017). The microlevel actions undertaken by owner-managers in improving the sustainability practices of cultural and creative small and medium enterprises: A United Kingdom–Italy comparison. *Journal of Organizational Behavior*, *38*(9), 1396–1414. https://doi.org/10.1002/job.2237

den Hertog, P., Van der Aa, W., & de Jong, M. W. (2010). Capabilities for managing service innovation: Towards a conceptual framework. *Journal of Service Management*, *21*(4), 490–514. https://doi.org/10.1108/09564231011066123

Driessen, P. H., Hillebrand, B., Kok, R. A., & Verhallen, T. M. (2013). Green new product development: The pivotal role of product greenness. *IEEE Transactions on Engineering Management*, *60*(2), 315–326. https://doi.org/10.1109/TEM.2013.2246792

El-Kassar, A. N., & Singh, S. K. (2019). Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change*, *144*, 483–498. https://doi.org/10.1016/j.techfore.2017.12.016

Fassin, Y., & Van Rossem, A. (2009). Corporate governance in the debate on CSR and ethics: Sensemaking of social issues in management by authorities and CEOs. *Corporate Governance: An International Review*, *17*(5), 573–593. https://doi.org/10.1111/j.1467-8683.2009.00738.x

Ferrell, O. C., Gonzalez-Padron, T. L., Hult, G. T. M., & Maignan, I. (2010). From market orientation to stakeholder orientation. *Journal of Public Policy and Marketing*, *29*(1), 93–96. https://doi.org/10.1509/jppm.29.1.93

Font, X., Garay, L., & Jones, S. (2016). A social cognitive theory of sustainability empathy. *Annals of Tourism Research*, *58*, 65–80. https://doi.org/10.1016/j.annals.2016.02.004

Franke, G., & Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: A comparison of four procedures. *Internet Research*, *29*(3), 430–447. https://doi.org/10.1108/IntR-12-2017-0515

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge University Press.

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B., & de Colle, S. (2010). *Stakeholder theory: The state of the art*. Cambridge University Press.

Girod, S. J. G., & Whittington, R. (2017). Reconfiguration, restructuring and firm performance: Dynamic capabilities and environmental dynamism. *Strategic Management Journal*, *38*(5), 1121–1133. https://doi.org/10.1002/smj.2543

Guoyou, Q., Saixing, Z., Chiming, T., Haitao, Y., & Hailiang, Z. (2013). Stakeholders' influences on corporate green innovation strategy: A case study of manufacturing firms in China. *Corporate Social Responsibility and Environmental Management*, *20*(1), 1–14. https://doi.org/10.1002/csr.283

Hahn, T., Preuss, L., Pinkse, J., & Figge, F. (2014). Cognitive frames in corporate sustainability: Managerial sensemaking with paradoxical and business case frames. *Academy of Management Review*, *39*(4), 463–487. https://doi.org/10.5465/amr.2012.0341

Hair, 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.2017.10008574

Harrison, J. S., Bosse, D. A., & Phillips, R. A. (2010). Managing for stakeholders, stakeholder utility functions, and competitive advantage. *Strategic Management Journal*, *31*(1), 58–74. https://doi.org/10.1002/smj.801

Helfat, C. E., & Winter, S. G. (2011). Untangling dynamic and operational capabilities: Strategy for the (n) ever changing world. *Strategic Management Journal*, *32*(11), 1243–1250. https://doi.org/10.1002/smj.955

Helmig, B., Spraul, K., & Ingenhoff, D. (2016). Under positive pressure: How stakeholder pressure affects corporate social responsibility implementation. *Business & Society*, *55*(2), 151–187. https://doi.org/10.1177/0007650313477841

Henriques, I., & Sadorsky, P. (1999). The relationship between environmental commitment and managerial perceptions of stakeholder importance. *Academy of Management Journal*, *42*(1), 87–99.

Henseler, J., Hubona, G., & Ray, P. A. (2017). Partial least squares path modeling: Updated guidelines. In H. Latan & R. Noonan (Eds.), *Partial least squares path modeling: Basic concepts, methodological issues and applications* (pp. 19–39). Springer International.

Hockerts, K. (2015). A cognitive perspective on the business case for corporate sustainability. *Business Strategy and the Environment*, *24*(2), 102–122. https://doi.org/10.1002/bse.1813

Hult, G. T. M., Hair, J. F., Proksch, D., Sarstedt, M., Pinkwart, A., & Ringle, C. M. (2018). Addressing endogeneity in international marketing applications of partial least squares structural equation modeling. *Journal of International Marketing*, *26*(3), 1–21. https://doi.org/10.1509/jim.17.0151

Hung, R. Y. Y., Yang, B., Lien, B. Y.-H., McLean, G. N., & Kuo, Y.-M. (2010). Dynamic capability: Impact of process alignment and organizational learning culture on performance. *Journal of World Business*, *45*(3), 285–294. https://doi.org/10.1016/j.jwb.2009.09.003

Jabbour, C. J. C., de Sousa Jabbour, A. B. L., Govindan, K., de Freitas, T. P., Soubihia, D. F., Kannan, D., & Latan, H. (2016). Barriers to the adoption of green operational practices at Brazilian companies: Effects on green and operational performance. *International Journal of Production Research*, *54*(10), 3042–3058. https://doi.org/10.1080/00207543.2016.1154997

Kassinis, G., & Vafeas, N. (2006). Stakeholder pressures and environmental performance. *Academy of Management Journal*, *49*(1), 145–159. https://doi.org/10.5465/amj.2006.20785799

Klewitz, J., & Hansen, E. G. (2014). Sustainability-oriented innovation of SMEs: A systematic review. *Journal of Cleaner Production*, *65*, 57–75. https://doi.org/10.1016/j.jclepro.2013.07.017

Kock, N. (2017). Common methods bias: A full collinearity assessment method for PLS-SEM. In H. Latan & R. Noonan (Eds.), *Partial least squares path modeling: Basic concepts, methodological issues and applications*. Springer International Publishing.

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal*, *28*(1), 227–261. https://doi.org/10.1111/isj.12131

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.), *Applying partial least squares in tourism and hospitality research* (pp. 53–83). Emerald.

Latan, H., Jabbour, C. C. J., de Sousa Jabbour, A. B. L., Renwick, D. W. S., Fosso Wamba, S., & Shahbaz, M. (2018). '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., & Noonan, R. (Eds.) (2017). *Partial least squares path modeling: Basic concepts, methodological issues and applications*. Springer International.

Leonidou, C. N., Katsikeas, C. S., & Morgan, N. A. (2013). "Greening" the marketing mix: Do firms do it and does it pay off? *Journal of the Academy of Marketing Science*, *41*(2), 151–170. https://doi.org/10.1007/s11747-012-0317-2

Li, D.-Y., & Lu, J. (2014). Dynamic capabilities, environmental dynamism, and competitive advantage: Evidence from China. *Journal of Business Research*, *67*(1), 2793–2799. https://doi.org/10.1016/j.jbusres.2012.08.007

Lin, R.-J., Tan, K.-H., & Geng, Y. (2013). Market demand, green product innovation, and firm performance: Evidence from Vietnam motorcycle industry. *Journal of Cleaner Production*, *40*, 101–107.

Lin, Y. H., & Chen, Y. S. (2017). Determinants of green competitive advantage: The roles of green knowledge sharing, green dynamic capabilities, and green service innovation. *Quality & Quantity*, *51*(4), 1663–1685. https://doi.org/10.1007/s11135-016-0358-6

Liu, X., Dai, H., & Cheng, P. (2011). Drivers of integrated environmental innovation and impact on company competitiveness: Evidence from 18 Chinese firms. *International Journal of Technology and Globalisation*, *5*, 255–280. https://doi.org/10.1504/IJTG.2011.039767

Lozano, R., Carpenter, A., & Huisingh, D. (2015). A review of 'theories of the firm' and their contributions to corporate sustainability. *Journal of Cleaner Production*, *106*, 430–442. https://doi.org/10.1016/j.jclepro.2014.05.007

Mansoor, A., Jahan, S., & Riaz, M. (2021). Does green intellectual capital spur corporate environmental performance through green workforce? *Journal of Intellectual Capital*. https://doi.org/10.1108/JIC-06-2020-0181 ahead-of-print

Murillo-Luna, J. L., Garcés-Ayerbe, C., & Rivera-Torres, P. (2011). Barriers to the adoption of proactive environmental strategies. *Journal of Cleaner Production*, *19*, 1417–1425. https://doi.org/10.1016/j.jclepro.2011.05.005

New, S. (2010). The transparent supply chain. *Harvard Business Review*, *88*, 76–82.

Parmigiani, A., Klassen, R. D., & Russo, M. V. (2011). Efficiency meets accountability: Performance implications of supply chain configuration, control, and capabilities. *Journal of Operations Management*, *29*(3), 212–223. https://doi.org/10.1016/j.jom.2011.01.001

Raykov, T., & Marcoulides, G. A. (2011). *Introduction to psychometric theory*. Routledge.

Sadikoglu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International Journal of Production Economics*, *127*, 13–26. https://doi.org/10.1016/j.ijpe.2010.02.013

Sarkis, J., Gonzalez-Torre, P., & Adenso-Diaz, B. (2010). Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. *Journal of Operations Management*, *28*(2), 163–176. https://doi.org/10.1016/j.jom.2009.10.001

Saviano, M., Caputo, F., Mueller, J., & Belyaeva, Z. (2018). Competing through consonance: A stakeholder engagement view of corporate relational environment. *Sinergie Italian Journal of Management*, *36*(1), 61–80.

Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*, *35*(2), 179–203. https://doi.org/10.1002/smj.2099

Scuotto, V., Alexeis, G. P., Valentina, C., & Elisa, G. (2020). Do stakeholder capabilities promote sustainable business innovation in small and medium-sized enterprises? Evidence from Italy. *Journal of Business Research*, *119*, 131–141.

Scuotto, V., Shlomo, T., Antonio, M. P., & Victor, C. (2020). International social SMEs in emerging countries: Do governments support their international growth? *Journal of World Business*, *55*(5), 100995.

Shahzad, M., Qu, Y., Zafar, A. U., Rehman, S. U., & Islam, T. (2020). Exploring the influence of knowledge management process on corporate sustainable performance through green innovation. *Journal of Knowledge Management*, *24*(9), 2079–2106. https://doi.org/10.1108/JKM-11-2019-0624

Shu, C., Zhou, K. Z., Xiao, Y., & Gao, S. (2016). How green management influences product innovation in China: The role of institutional benefits. *Journal of Business Ethics*, *133*(3), 471–485. https://doi.org/10.1007/s10551-014-2401-7

Singh, S. K., Chen, J., Del Giudice, M., & El-Kassar, A. N. (2019). Environmental ethics, environmental performance, and competitive advantage: Role of environmental training. *Technological Forecasting and Social Change*, *146*, 203–211. https://doi.org/10.1016/j.techfore.2019.05.032

Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change*, *150*, 119762. https://doi.org/10.1016/j.techfore.2019.119762

Singh, S. K., Del Giudice, M., Nicotra, M., & Fiano, F. (2020). How firm performs under stakeholder pressure: Unpacking the role of absorptive capacity and innovation capability. *IEEE Transactions on Engineering Management (Online)*, 1–12. https://doi.org/10.1109/TEM.2020.3038867

Sodhi, M. (2015). Conceptualizing social responsibility in operations via stakeholder resource-based view. *Production and Operations Management*, *24*(9), 1375–1389.

Sodhi, M. S., & Tang, C. S. (2018). Corporate social sustainability in supply chains: A thematic analysis of the literature. *International Journal of Production Research*, *56*, 882–901. https://doi.org/10.1080/00207543.2017.1388934

Steurer, R., Langer, M. E., Konrad, A., & Martinuzzi, A. (2005). Corporations, stakeholders and sustainable development: A theoretical exploration of business–society relations. *Journal of Business Ethics*, *61*(3), 263–281. https://doi.org/10.1007/s10551-005-7054-0

Tang, M., Walsh, G., Lerner, D., Fitza, M. A., & Li, Q. (2018). Green innovation, managerial concern and firm performance: An empirical study. *Business Strategy and the Environment*, *27*, 39–51. https://doi.org/10.1002/bse.1981

Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *California Management Review*, *58*(4), 13–35. https://doi.org/10.1525/cmr.2016.58.4.13

Teece, D. J. (2014). The foundation of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firm. *Academy of*

Management Perspectives, *28*(4), 328–352. https://doi.org/10.5465/amp.2013.0116

Teece, D. J. (2017). Business model and dynamic capabilities. *Long Range Planning*, *51*, 40–49.

Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: Is organizational learning a missing link? *Strategic Management Journal*, *24*(8), 745–761. https://doi.org/10.1002/smj.337

Trumpp, C., & Guenther, T. (2017). Too little or too much? Exploring U-shaped relationships between corporate environmental performance and corporate financial performance. *Business Strategy and the Environment*, *26*(1), 49–68. https://doi.org/10.1002/bse.1900

Utterback, J. M., & Abernathy, W. J. (1975). A dynamic model of process and product innovation. *Omega*, *3*, 639–656. https://doi.org/10.1016/0305-0483(75)90068-7

van Dam, Y. K., & van Trijp, H. C. (2011). Cognitive and motivational structure of sustainability. *Journal of Economic Psychology*, *32*(5), 726–741. https://doi.org/10.1016/j.joep.2011.06.002

Verona, G., & Zollo, M. (2011). Understanding the human side of dynamic capabilities: A holistic model. In M. Easterby-Smith & M. A. Lyles (Eds.), *Handbook of organizational learning and management* (2nd ed.). Wiley.

Wang, C. L., Senaratne, C., & Rafiq, M. (2015). Success traps, dynamic capabilities and firm performance. *British Journal of Management*, *26*(1), 26–44. https://doi.org/10.1111/1467-8551.12066

Wang, N., Liang, H., Zhong, W., Xue, Y., & Xiao, J. (2012). Resource structuring or capability building? An empirical study of the business value of information technology. *Journal of Management Information Systems*, *29*(2), 325–367. https://doi.org/10.2753/MIS0742-1222290211

Watson, R., Wilson, H. N., Smart, P., & Macdonald, E. K. (2018). Harnessing difference: A capability-based framework for stakeholder engagement in environmental innovation. *Journal of Product Innovation Management*, *35*(2), 254–279. https://doi.org/10.1111/jpim.12394

Weng, H. H. R., Chen, J. S., & Chen, P. C. (2015). Effects of green innovation on environmental and corporate performance: A stakeholder perspective. *Sustainability*, *7*, 4997–5026. https://doi.org/10.3390/su7054997

Wolf, J. (2014). The relationship between sustainable supply chain management, stakeholder pressure and corporate sustainability performance. *Journal of Business Ethics*, *119*(3), 317–328. https://doi.org/10.1007/s10551-012-1603-0

Wong, C. W. Y., Lai, K., Shang, K. C., Lu, C. S., & Leung, T. K. P. (2012). Green operations and the moderating role of environmental management capability of suppliers on manufacturing firm performance. *International Journal of Production Economics*, *140*, 283–294. https://doi.org/10.1016/j.ijpe.2011.08.031

Woo, C., Chung, Y., Chun, D., Han, S., & Lee, D. (2014). Impact of green innovation on labor productivity and its determinants: An analysis of the Korean manufacturing industry. *Business Strategy and the Environment*, *23*, 567–576. https://doi.org/10.1002/bse.1807

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies*, *43*(4), 917–955. https://doi.org/10.1111/j.1467-6486.2006.00616.x

Zhu, Q., & Sarkis, J. (2007). The moderating effects of institutional pressures on emergent green supply chain practices and performance. *International Journal of Production Research*, *45*, 4333–4355. https://doi.org/10.1080/00207540701440345

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