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Drivers of Sustainability, Sustainable Business Practices and their Impact on Firm Performance: An Exploratory Study of Indian Manufacturing Small and Medium Enterprises

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Drivers of Sustainability, Sustainable Business Practices and their Impact on Firm Performance: An Exploratory Study of Indian Manufacturing Small and Medium Enterprises

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Abstract

Sustainability and sustainable business practices have become very relevant in today's context in the backdrop of growing environmental pollution and social inequity. As far as industrial activities are concerned, large companies would seem more responsible than small and medium enterprises (SME) for harming the environment; however, SMEs representing well over 90% of worldwide businesses cannot shirk their responsibility either. Although the individual impact of SMEs on the environment may be minimal, collectively they cause a lot more impact on the environment than large companies. In this paper, an exploratory study of Indian manufacturing SMEs has been conducted in terms of the causal relationships among the drivers of sustainability, sustainable environmental and social practices, and firms' financial/non-financial performance. The study develops a scale relevant in the context of Indian SMEs, which can be used in future research, not only for Indian SMEs, but also for SMEs belonging to other developed and developing countries. One of the most important contributions of the study, which distinguishes it from the extant literature, is that the study considers all the three dimensions – economic, environmental and social – of sustainability, and takes an integrative view in exploring the causal relationships among the drivers of sustainability, sustainable business practices and firm performance. Exploratory/confirmatory factor analysis and structural equation modelling have been employed for data analysis. Some of the major findings of the study are as follows. There is a strong positive impact of the leadership and ethical orientation of owners/managers and employees on sustainable waste management and human resource management (HRM) practices, environmental benefits realized by firms due to adoption of sustainable practices and firms' financial/non-financial performance. No relationship has been found between sustainable waste management practices

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and environmental benefits or firm performance. However, a strong positive association has been found between sustainable HRM practices and eco-friendly waste management. Although no direct relationship has been found between sustainable HRM practices and firm performance, sustainable HRM practices have an indirect positive impact on firm performance through the mediating role of environmental benefits. Further, the effects of moderating variables on the causal relationships have been explored. The study highlights the managerial implications of the results for Indian manufacturing SMEs, government/regulatory authorities and industry associations/chambers of commerce. The study concludes with possible directions for future research.

Keywords: Sustainability; Manufacturing SME; India; Survey; Factor analysis; Structural equation modelling

Drivers of Sustainability, Sustainable Business Practices and their Impact on Firm Performance: An Exploratory Study of Indian Manufacturing Small and Medium Enterprises

Introduction

Sustainability and implementation of sustainable practices in business are growing in importance day by day. As already known, sustainability has three dimensions – economic, environmental and social. While the economic dimension has always been important to business for survival, the environmental and social dimensions are also getting equal, if not more, importance nowadays for assessing sustainable performance. Environmental sustainability is getting prominence in light of increased air, water and soil pollution caused by greenhouse gas (GHG) emissions, discharge of untreated effluents and disposal of hazardous materials. One of the major sources of environmental pollution is industrial activities that should now focus more on pollution prevention than on pollution control as pollution control is perceived as an end-of-pipe solution resulting in inefficiency, rework, loss of time, effort and resources, and loss of goodwill to customers (Porter and van der Linde, 1995; Sangwan, 2011). Pollution prevention may be achieved by source reduction, reduction of hazardous materials in product design, use of more bio-degradable and recyclable components in so-called Design-for-Environment (DfE), lifecycle analysis (LCA) of products in terms of their energy consumption and generation of waste until the end-of-life or end-of-use, investment in energy-efficient technology and production processes, and training and development of employees. Besides environmental sustainability, social sustainability has also assumed importance in terms of protection of human rights, fulfilling the expectations of various stakeholders and development of local communities. Social sustainability may be thought of having two sub-dimensions – internal and external. The internal sub-dimension is related to providing a safe and healthy working condition to employees, maintaining employee welfare, dignity and indiscrimination at the workplace, and training and development of employees to help them achieve personal and professional goals. The external sub-dimension, on the other hand, relates to entities and objects external to business, such as fulfilling the expectations of the government, non-government organizations (NGOs), various interest groups, society, community

and general public at large by providing direct and indirect employment/earning opportunities, education, training, infrastructure, safe drinking water, sanitation and medical facilities to local communities.

So far, in the literature, the focus has been more on large companies than on small and medium enterprises (SMEs) in terms of implementation of sustainable business practices (Torugsa et al., 2012; Singh et al., 2015; Leonidou et al., 2017; Courrent et al., 2018; Boakye et al., 2020; Dey et al., 2020; Eweje, 2020; Sendlhofer, 2020). Compared to SMEs, large companies are more often in the spotlight on account of their environmental and social practices. Besides government regulations, there are pressures from stakeholders to improve their environmental and social performance. Large companies have financial, technical and qualified human resources, which make it easy for them to acquire different quality, environmental management system (EMS) and occupational health and safety certifications, invest in green technologies, collaborate with or enforce strict environmental and social norms on suppliers, and train employees for awareness and skill development (Singh et al., 2015; Ashton et al., 2017). By adopting sustainable business practices and pollution prevention opportunities, many large companies have been able to realize economic benefits, increase competitiveness, and improve brand image and reputation (Hussey and Eagan, 2007). SMEs, on the other hand, have received less attention than large companies because of their size and scale of operations. Many SMEs are unaware of the environmental impacts of their operations and the financial benefits of environment-related investments, and consider such investments unworthy and exhibit lower adoption rates for environmental practices (Fleiter et al., 2012; Johnson and Schaltegger, 2016; Boakye et al., 2020). Indeed, taken individually, an SME contributes less environmental pollution and has less social implications than a large company (Simpson et al., 2004; Lawrence et al., 2006; Lewis and Cassells, 2010; Williams and Schaefer, 2013; Johnson and Schaltegger, 2016; Leonidou et al., 2017). However, holistically, SMEs, taken together, contribute significant amounts to the gross domestic product (GDP) and exports, and provide direct and indirect employments to the majority of the population of a country compared to large companies. For example, Hussey and Eagan (2007) mention that worldwide SMEs represent 70-98% of businesses, with percentages on the higher side (> 95%) for most of the countries. According to Witjes et al. (2017), SMEs encompass at least 95% of private sector companies and employ more than two-thirds of the workforce. In the European Union (EU), there are 22 million SMEs, representing 99 of every 100 businesses and employing 89 million people,

i.e. 2 in every 3 employees (Viesi et al., 2017). In the US, SMEs account for approximately 66% of all employment and 56% of payroll (Ashton et al., 2017). Simpson et al. (2004) and Williams and Schaefer (2013) note that SMEs are a vital part of the UK economy, representing 99.8% of businesses and providing 43% of private sector employment. According to Dey et al. (2020), the total number of SMEs in the UK is 5.7 million and they employ close to 15.8 million people, contributing 20% of the GDP. They are likely to contribute £250 billion by 2025. In Spain, SMEs account for 99.9% of businesses, generate 78% of employment and contribute 68% of the gross value added (Fernandez and Camacho, 2016). In Australia, 97% of all businesses are SMEs (Caldera et al., 2018) that provide employment to 49% of the private sector workforce (Gadenne et al., 2009). In New Zealand, SMEs constitute 97-99% of all businesses (Lawrence et al., 2006; Lewis and Cassells, 2010; Lewis et al., 2015). Chinese SMEs have contributed 48.9% of tax revenue and created 80% of new jobs (Chen et al., 2017). In Singapore, SMEs constitute 99% of local enterprises, contributing close to 50% of the GDP (Tan et al., 2015). SMEs in Japan contribute 70% of total employment and 20% of the GDP (Eweje, 2020).

Collectively, the environmental and social implications of SMEs are much more significant than large companies for a country (Leonidou et al., 2017; Eweje, 2020). Johnson and Schaltegger (2016), Johnson (2017), Ashton et al. (2017), Witjes et al. (2017) and Caldera et al. (2018) estimate that SMEs are responsible for 70% of the global pollution and more than 70% of the industrial wastewater discharge (Chen et al., 2017). Yet another estimate indicates that SMEs are responsible for 80% of industry's adverse environmental impacts and more than 60% of commercial waste (Aghelie, 2017). In the UK, SMEs contribute 60% of GHG emissions (Simpson et al., 2004). Therefore, there is an urgent need to focus on SMEs, besides large companies, for improvement of their environmental and social performance. Compared to large companies, SMEs face hurdles in accessing financial, technical and qualified human resources such that implementing an EMS or a quality management system, investing in environment-friendly technologies and processes, and engaging in community development are not an easy task for them (Lee and Klassen, 2008; Gadenne et al., 2009; Torugsa et al., 2012; Becherer and Helms, 2014; Tan et al., 2015; Fernandez and Camacho, 2016; Johnson and Schaltegger, 2016; Jones and de Zubielqui, 2017; Leonidou et al., 2017; Courrent et al., 2018; Bakos et al., 2020; Dey et al., 2020). Moreover, the employees of an SME are so hard-pressed for time that there is little time they get for training and skill development (Gadenne et al., 2009; Lewis and Cassells, 2010; Johnson and Schaltegger, 2016;

Eweje, 2020). Implementation of environmental practices usually incurs short-term costs that outweigh benefits; however, in the long term, benefits are expected to outweigh costs. While large companies can bear short-term costs, SMEs do not have the financial muscle to incur additional expenses without commensurate benefits. Therefore, it is proposed that for SMEs, the transition process should be incremental (Boakye et al., 2020). In this context, the government has a major role to play. For example, the government may announce economic incentives such as soft loans, tax exemptions and subsidies, and organize training programmes to encourage SMEs to adopt sustainable practices (Lee and Klassen, 2008). Industry associations may also raise awareness, and provide advisory, consultative and informational services to SMEs. A lot also depends on the vision, values and beliefs of owners/managers since many of the SMEs are family-managed businesses. Besides compliance with government regulations, pressure from stakeholders and perceived benefits of economic and competitive advantage, values, beliefs and the ethical nature of owners/managers also drive SMEs towards adoption of environmental and social sustainability practices. To encourage SMEs to adopt sustainable business practices, strong cases based on in-depth qualitative interviews need to be built up demonstrating both short-term and long-term advantages (Lee and Klassen, 2008; Williams and Schaefer, 2013; Wu et al., 2015; Chen et al., 2017; Johnson, 2017; Witjes et al., 2017; Caldera et al., 2018). Enforcement and compliance with regulations will work to some extent in the short term; however, for sustainable practices to succeed in the long term, financial assistance, collaborative arrangements and willingness on part of SMEs to voluntarily adopt these practices are necessary. The fact that SMEs are really short of resources and this impedes their adoption of sustainable practices, cannot be ignored. In many countries, there are SME clusters where SMEs are co-located and share common resources that give them economies of scale. A similar model may be useful for SMEs in connection with their adoption of sustainable practices by sharing technologies, processes, practices, knowledge and experience with others that will drive down the implementation cost (Chen et al., 2017).

In the literature on sustainability in SMEs, so far there has been more focus on environmental sustainability than on social sustainability (Lawrence et al., 2006). One reason could be that environmental sustainability is more visible and objective in nature while social sustainability is more subjective in nature and it is more difficult to assess social sustainability practices and performance. The other reason for environmental sustainability receiving more attention than social sustainability is that in the current context of global warming and climate change, there is

more focus on the environmental issues than on the social issues. However, social sustainability is perceived to be more relevant for SMEs than for large companies since many SMEs are remotely located away from the big cities where their activities and operations are interconnected with and influenced by the local socio-cultural and economic context (Lawrence et al., 2006). SMEs not only generate direct and indirect employment, but also impact the quality of life in the community. Since remote areas are less economically and socially developed than big cities, SMEs have more opportunities than large companies to engage in socially responsible activities such as developing infrastructure, building schools and healthcare facilities, providing safe drinking water and sanitation facilities, training local people for alternative livelihoods, empowering women, and so on (Williams and Schaefer, 2013). Therefore, it is imperative that for SMEs, social sustainability is equally important as environmental sustainability and both these dimensions are needed to be taken into consideration, besides economic sustainability, while deliberating on sustainability in SMEs.

The rest of the paper is organized as follows. The next two sections present the objectives and contributions of this study. Then a review of the relevant literature and the theoretical lenses used in the literature to explain firm behaviour/attitude/performance are presented. Next, high level constructs and items gleaned from the literature and considered for this study are explained, followed by development of propositions. Then the research methodology is presented, followed by results, discussions of results and managerial implications. Finally, concluding remarks and directions for future research are presented.

Objectives

According to the World Bank data², worldwide GHG emissions in 2012 were about 53.5 billion MT CO₂-equivalent to which India's contribution was about 3 billion MT CO₂-equivalent or about 6% of total GHG emissions. Considering a CAGR (Compounded Annual Growth Rate) of 6%, India's current emissions would be around 4 billion MT CO₂-equivalent, placing the country just after China, US and EU in terms of total GHG emissions. In light of India's commitment to various treaties such as the Paris Climate Treaty (2016) and Kigali (Rwanda) Agreement (2016):

² www.worldbank.org

Amendment to the Montreal Protocol (1987), and voluntary commitment to the Kyoto Protocol (1997), there is an urgent need to look into ways of reducing GHG emissions. One of the major sources of GHG emissions is industrial pollution, and as already noted that SMEs collectively cause more air pollution than all large companies taken together, attention must be given to SMEs, besides large companies, to sensitize and encourage them to reduce their carbon footprint.

This research intends to conduct an exploratory study of Indian manufacturing SMEs with respect to the drivers of sustainability, sustainable business practices and their impact on firm performance. Although the service sector contributes more than the manufacturing sector to the Indian economy, manufacturing firms have more significant and diverse implications for the environment and have more opportunities to be socially responsible than service businesses (Becherer and Helms, 2014). The extant literature also notes that manufacturing-based SMEs are considered as the most polluting sector, significantly contributing to environmental pollution and emissions (Singh et al., 2021). Uhlener et al. (2012) note that firms in the manufacturing sector are likely to be closely monitored and hence better be aware of environmental issues. They are likely to benefit from the adoption of high environmental standards and have more opportunities to act in an environmentally-responsive manner than service-based SMEs. A survey of Indian industries by Singh et al. (2015) shows that manufacturing firms are more likely to adopt environmental management practices compared to the service sector. Leonidou et al. (2017) also observe that the adoption of a green business strategy is more evident in firms operating in harmful industries, such as manufacturing, than in firms operating in less harmful industries, such as services.

Indian SMEs come under the purview of the Ministry of Micro, Small and Medium Enterprises (MSME) of the Government of India (GoI). According to the definition of the Ministry³, enterprises whose investments in plant and machinery or equipment do not exceed INR10 million and the annual turnover does not exceed INR 50 million, are categorized as micro enterprises. For small enterprises, the corresponding figures are INR 100 million and INR 500 million, and for medium enterprises, the corresponding figures are INR 500 million and INR 2.50 billion⁴. However, this new definition of MSME came into effect since July, 2020. Prior to July, 2020, when data collection for this study was being conducted, the definition of MSME was as follows:

³ Ministry of Micro, Small and Medium Enterprises, Government of India, Website: <https://msme.gov.in>

⁴ USD 1 ~ INR 74.34 as on June 22, 2021

enterprises whose investments in plant and machinery or equipment do not exceed INR 2.50 million, are more than INR 2.50 million but do not exceed INR 50 million, and are more than INR 50 million but do not exceed INR 100 million, are categorized as micro, small and medium enterprises, respectively, i.e. the old definition did not take the annual turnover into consideration. The definition of Indian SMEs differs from the definition of SMEs accepted by the European Commission (EC) and US economy. According to the EC, MSMEs are categorized based on the number of employees and annual sales/balance sheet total. A micro enterprise has a headcount of fewer than 10 and annual sales/balance sheet total of €2 million or less, a small enterprise has a headcount of fewer than 50 and annual sales/balance sheet total of €10 million or less, and a medium enterprise has a headcount of fewer than 250 and annual sales of €50 million or less/balance sheet total of €43 million or less⁵. In the US, firms with fewer than 500 employees are considered SMEs (Ashton et al., 2017). Therefore, the definition of SMEs varies across countries. Nonetheless, for every country, SMEs constitute a major percentage of all firms, contribute significantly to the national economy and employ a large number of the working population. In India, there are about 63 million SMEs, contributing about 30% to the country's GDP and employing about 111 million people. SMEs in the manufacturing sector contribute about 6%, 33% and 45% to the GDP, total manufacturing output and exports, respectively⁶.

Research on sustainability in Indian SMEs is rather limited. Mittal et al. (2012) and Nulkar (2014) identify regulatory, economic and competitive factors, pressure from society, public, customers and competitors, and owners'/managers' awareness, knowledge and ethical orientation as the major drivers of and barriers to the implementation of sustainable practices in SMEs. Singh et al. (2015), in a survey of Indian industries, observe that image, compliance, prevention of environmental incidents and competitiveness are the significant drivers of implementation of environmental management systems while innovation and cost saving are not. Thanki et al. (2016) develop an integrated framework for lean-green implementation practices in SMEs using the analytical hierarchy process (AHP) approach, and identify ISO 14001 as the most significant green practice and reduction in emissions as the most significant criterion for greenness. Gandhi et al. (2018) use the TOPSIS method to rank the drivers of integrated lean-green manufacturing in

⁵<https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/>

⁶Annual Reports, Ministry of Micro, Small and Medium Enterprises, Government of India

SMEs. All of the above-mentioned papers consider only the environmental dimension of sustainability while Nair and Sodhi (2012) consider both the environmental and social dimensions of sustainability and qualitatively discuss the drivers, practices and performance measures based on five case studies. Recently, Singh et al. (2021) have developed an SME sustainability disclosure index for stock exchange-listed manufacturing SMEs in India. The authors note that there is a gap in sustainability reporting practices among the listed SMEs, particularly in the environmental and social dimensions, where the disclosures are limited to qualitative descriptions without any quantification of information. The authors recommend improving sustainability reporting practices of manufacturing SMEs through strong policies and regulations. However, none of the papers, mentioned above, explores the causal relationships among drivers, sustainable business practices and firm performance in the context of Indian SMEs. The proposed research intends to fill this gap. Moreover, it is also intended to explore the moderating roles of firm size, age, management, quality and environmental management certifications, technical capability/competency, awareness/knowledge of owners/managers, employee background, and networking/alliance with industry associations/peers in the causal relationships among drivers, sustainable business practices and firm performance. In particular, the following research questions will be addressed:

1. What is the current status of adoption of sustainable practices in Indian manufacturing SMEs? What are the drivers, internal and external, of adoption of sustainable practices? What metrics are relevant for measuring firms' performance on sustainability?
2. How do the drivers of sustainability influence the adoption of sustainable practices? What are the moderating factors and how do they moderate the causal relationships among the drivers, sustainable practices and firm performance? Finally, how do sustainable practices mediate the causal relationships between the drivers and firm performance? Does environmental and social performance lead to economic performance and long-term competitive advantage?
3. What are the major challenges and opportunities faced by Indian manufacturing SMEs in connection with the implementation of sustainable practices? What should the government and industry associations do to help SMEs overcome these challenges? What is the road ahead for SMEs?

Research hypotheses will be formed based on the above questions.

Contributions

The contributions of the present study are as follows:

1. As already mentioned, majority of the extant literature on sustainability in SMEs consider only the economic and environmental dimensions of sustainability. Only a handful of literature (See, for example, Torugsa et al., 2012, 2013; Courrent et al., 2018 and Dey et al., 2020) consider all the three dimensions – economic, environmental and social – of sustainability. In this paper also, we have taken into consideration all the three dimensions of sustainability, and for social sustainability, we have considered both workplace/employee-related social sustainability and community development-related social sustainability.
2. The review of the relevant literature reveals that majority of the literature focus on the causal relationships either between the internal/external drivers/motivators of sustainability and sustainable business practices or between sustainable business practices and firms' financial and competitive performance. The current paper contributes in terms of taking an integrative view in exploring the causal relationships among the internal/external drivers of sustainability, sustainable business practices, environmental and social benefits accrued due to sustainable business practices, and firms' financial and non-financial performance.
3. Although scales have been developed for similar studies in the context of other developed and developing countries, the same have not been tested in Indian SMEs. Therefore, an exploratory study has been undertaken to develop a scale that would be relevant in the context of Indian manufacturing SMEs. The same scale may be used for future research not only on Indian SMEs, but also on SMEs belonging to other developed and developing countries.
4. No study has been conducted so far to explore the causal relationships among the drivers of sustainability, sustainable business practices and firm performance in the context of Indian manufacturing SMEs. The current study is the first one in this direction which is expected to pave the way for similar research on Indian SMEs.

Literature Review

This section presents a literature review of articles focusing on the interlinkages among the drivers of sustainability, sustainable environmental and social practices and firm performance (financial/non-financial) in the context of SMEs.

Based on a study of SMEs in the US wine industry, Cordano et al. (2010) examine the influence of managers' attitudes, norms and perceptions of stakeholder pressures on their intention to implement environmental management programmes. The authors find that managers are responsive to attitudes, norms and perceptions of stakeholder pressures, and voluntary adoption of environmental management programmes increases firms' success in the implementation of energy conservation and recycling practices.

In a study of Dutch SMEs, Uhlener et al. (2012) comment that while UK SMEs are more driven by compliance with regulations and perceived financial benefits of implementation of environmental practices, Dutch SMEs are more internally driven and have a strong ethical orientation towards sustainability. UK SMEs consider environmental management as a cost while Dutch SMEs are strongly marketing-driven in their approach to sustainability and consider the investment in environmental management as an activity offering a competitive advantage. Based on the literature on ecological modernization and the theory of planned behavior, the authors show that the endogenous factors, namely tangibility of sector, firm size, innovation orientation, family influence and perceived financial benefits from energy conservation, either strongly or conditionally positively influence the level of SMEs' engagement in environmental management practices.

Roxas and Coetzer (2012), based on the institutional theory, examine the relationships among the three dimensions of the institutional environment, namely regulatory, cognitive and normative, owners'/managers' attitudes towards the natural environment, and the environmental sustainability orientation of small firms. Based on a survey of 166 small manufacturing firms in the Philippines, the authors find that the three dimensions of the institutional environment are strongly linked to positive managerial attitudes to environmental sustainability, which in turn positively influence the firm's overall environmental sustainability orientation, with owners'/managers' attitudes towards the natural environment playing the mediating role. The authors contend that owners'/managers' values, beliefs and attitudes strongly influence the environmental strategy and behaviour of small firms, and the regulatory dimension has the least impact on the managerial attitudes towards environmental sustainability among the three dimensions of the institutional environment, especially in the context of a developing country where small firms are usually deeply embedded in their local communities.

Torugsa et al. (2012, 2013) extend the research of Aragon-Correa et al. (2008) to include social sustainability, besides environmental sustainability, and study the relationships among specified capabilities (shared vision, stakeholder management and strategic proactivity), proactive corporate social responsibility (CSR) and financial performance in SMEs in the machinery and equipment sector of the Australian manufacturing industry. While Torugsa et al. (2012) focus on second-level constructs related to capabilities, proactive CSR and financial performance, Torugsa et al. (2013) consider first-level constructs along with the effect of interactions among the economic, environmental and social dimensions of proactive CSR. Similar to Aragon-Correa et al. (2008), the authors find that the specified capabilities are positively associated with proactive CSR, and proactive CSR, in turn, is positively associated with financial performance. The authors also observe that proactive CSR fully mediates the relationship between capabilities and financial performance (Torugsa, 2012). Moreover, the effect of interactions among the three dimensions of sustainability is also found to fully mediate the positive association between capabilities and performance (Torugsa, 2013). The findings of these studies challenge the pre-conceived notion that after complying with the mandatory regulatory norms, which is essentially reactive in nature, SMEs are left with little or no resources to adopt proactive or voluntary CSR practices, such as sustainable economic, environmental and social practices. In fact, compared to large companies, SMEs are more flexible and better positioned to adopt voluntary CSR practices owing to their simple structures, shortened lines of communications and informal cultures.

Contrary to the earlier research findings that family firms have more engagement in pro-environmental practices than their non-family counterparts (Berrone et al., 2010; Sharma and Sharma, 2011), Dekker and Hasso (2016), in the context of privately-held Australian SMEs, observe that family firms have a lower environmental performance focus than nonfamily firms; however, family firms with strong social embeddedness in their local community have a greater environmental performance focus than their nonfamily counterparts.

In a study based on focus group interviews in the Madrid region, Fernandez and Camacho (2016) find that the improvement in working conditions is a significant accelerator for the implementation of an ethical infrastructure in SMEs. Interviewees highlight that employee involvement and participation in decision-making, teamwork and recognition of employee contributions not only improve the working conditions, but also boost employee morale and motivation.

Ashton et al. (2017) study the motivations for adopting green business practices based on a survey of 59 US SMEs in the tool and die manufacturing industry. The authors find that majority of the firms are driven by internal factors such as cost and competitiveness, rather than by external pressures exerted by the government and customers. The authors also find that while age of the firm has no relation with the adoption of green practices, size (number of employees) and sales do have a positive relationship, i.e. larger firms with higher numbers of employees and sales volumes are more likely to adopt green practices than smaller firms. The authors further note that incentives and support from the government and learning from industry associations will help SMEs to ‘go green’.

Based on data received from 153 manufacturing SMEs in Cyprus, Leonidou et al. (2017) find that internal factors, such as organizational resources and capabilities, positively influence firms’ green business strategy, which in turn is positively associated with positional competitive advantage that is conducive to generating better financial and market performance. The authors also find that the relationship between internal factors and green business strategy is strongly moderated by high regulatory intensity, high market dynamism, high public concern and high competitive intensity.

Courrent et al. (2018) study the relationships between entrepreneurial orientation and financial and non-financial performance, mediated by sustainable practices, namely environmental practices, social practices in the workplace and social practices in the community, for 406 French SMEs. The authors find that entrepreneurial orientation has a positive association with sustainable practices, and social practices in the workplace partially mediate the relationship between entrepreneurial orientation and firm performance. However, environmental practices and social practices in the community have been found to hold no significant relationship with firm performance.

Boakye et al. (2020) study the relationships between environmental practices and financial performance for UK-based listed SMEs. The authors find that environmental practices such as energy efficiency, pollution prevention and control, waste management, materials and resource efficiency and stakeholder management have a significant association with financial performance. Moreover, for practices such as energy efficiency, greenhouse gases and materials and resource efficiency, financial performance has a non-linear, inverted U-shaped relationship with environmental practices, meaning thereby that financial performance has a positive relationship

with lower levels of environmental engagement and a negative relationship with higher levels of environmental engagement.

Sendlhofer (2020) observes that there is a dearth of studies on employee involvement in sustainable practices in SMEs. The author finds, based on the case study of an SME, that besides owners/managers, employees with strong motivation and ethical and moral responsibility join forces and drive sustainable practices in the firm. The author opines that unlike in large companies, SMEs have an informal structure of control and culture, and the ethical behaviour of employees more or less reflects the moral responsibility of the firms towards sustainable practices, irrespective of the ethical orientation of owners/managers, which might act as an enabler or a disabler.

Dey et al. (2020) study the relationships between the circular economy (CE) fields of action, namely take, make, distribute, use and recover, and firms' economic, environmental and social performance based on a survey of 130 UK SMEs. The authors find that all the CE fields of action are positively correlated with economic performance while only two CE fields of action, namely make and use, are positively correlated with environmental and social performance. Through a mixed mode of research (survey, focus groups and case studies), the authors highlight the issues and challenges, strategies, resources and competences required for implementing CE in SMEs.

Based on a case study of a Japanese SME, and using the managerial discretion theory (Finkelstein and Peteraf, 2007), Eweje (2020) finds that the owner's decision-making process, motivation, philosophy and determination to adopt sustainability practices play a major role in garnering employee support for the company's sustainability initiatives, and contribute to positive staff turnover. The author also finds that if the sustainability initiatives and practices are embedded into SMEs' business activities from the outset, their negative environmental and social impacts can be greatly reduced.

Bakos et al. (2020) conduct a literature review on SMEs' environmental sustainability. Based on 122 studies from 58 journals published between 2013 and 2019, the authors investigate the trends in drivers and barriers in sustainability adoption by SMEs. A systematic literature review on sustainability in SMEs and its impact on firm performance has also been presented by Prashar and Sunder (2020) and Bartolacci et al. (2020), based on 117 and 62 relevant studies, respectively.

Theoretical lenses

The literature review reveals that mainly four theoretical frameworks – resource-based view/natural resource-based view, stakeholder theory, institutional theory and theory of planned behaviour – have been used by researchers to explain the relationships among the drivers of sustainability, sustainable practices and firm performance. Following is a brief description of these theoretical lenses and their applications in the study's context.

According to the resource-based view (RBV) (Barney, 1991)/natural resource-based view (NRBV) (Hart, 1995) of the firm, sustainability may be considered as a valuable, rare, inimitable and non-substitutable resource that may be a source of competitive advantage. Adoption of sustainable business practices may not only boost firms' financial and non-financial performance, but also provide first-mover advantages, access to new technology and new markets, and an opportunity to develop innovation capabilities, which will be difficult for the competitors to easily imitate (Porter and van der Linde, 1995; Shrivastava, 1995). Torugsa et al. (2012, 2013) study the interrelationships among capabilities, proactive CSR and financial performance for SMEs in the machinery and equipment sector, and, drawing on the RBV, note that the three dimensions of capability – shared vision, stakeholder management and strategic proactivity – are not only valuable, but also their foundations are socially complex, causally ambiguous and deeply embedded in a firm. These capabilities are also firm-specific and costly to imitate, and are likely to influence firms' financial performance through the mediating role of firms' proactive CSR strategy. Ashton et al. (2017), based on the RBV, argue that cost reduction, efficient resource utilization, financial benefits and competitiveness are the most important internal drivers for SMEs adopting sustainable environmental practices. Leonidou et al. (2017), following the RBV/NRBV, examine the role of organizational resources and capabilities in achieving a competitive advantage and superior performance through the mediating role of business strategy in manufacturing SMEs. Based on the RBV, Courrent et al. (2018) study the mediating role of sustainable environmental and social practices in the relationship between entrepreneurial orientation of SMEs and their financial and non-financial performance. The authors believe that the RBV is an ideal theoretical framework to analyze the structural relationships by recognizing the importance of tangible and intangible assets as key factors in improving firm performance. The authors also mention that besides tangible assets, intangible assets, such as human capital, innovation, reputation and brand

image, are difficult to imitate or substitute by competitors, thus providing a competitive advantage. Bartolacci et al. (2020) note that according to the RBV, even SMEs have the potential to pursue sustainable business strategies if appropriate resources and capabilities are available and the natural environment is viewed as a competitive opportunity. The authors also note that the implementation of these strategies help SMEs achieve a competitive advantage and result in superior business, market and financial performance. Boakye et al. (2020) mention that the NRBV is an extension of the RBV where the natural environment is taken into consideration. According to the NRBV, firms' resources and capabilities with respect to the natural environment, namely pollution prevention, product stewardship and sustainable development, may provide them with a sustained competitive advantage and improved financial performance. Based on this theory and the stakeholder theory (Freeman, 1984), which states that a firm needs to consider the interests of all the individuals and groups affecting, or affected by, the firm's activities irrespective of their having a direct economic interest in the firm or not, the authors explore the relationship between sustainable environmental practices and financial performance for UK-based SMEs. Gadenne et al. (2009), based on the stakeholder theory, study the interlinkages among external influences, environmental awareness and attitudes, and environmental practices for Australian SMEs.

The institutional theory (Scott, 1995) dictates that firms must conform to the rules and norms prevailing in the external environment in order to survive and earn legitimacy from stakeholders. According to this theory, firms have to adapt to the social structure within which they operate, and, rather than optimizing decisions in isolation, they should take a cue from stakeholders, including their peers, to imitate and imbibe the social behaviour, norms and practices expected of them. Based on this theory, Roxas and Coetzer (2012) examine the interrelationships among the regulatory, cognitive and normative dimensions of the institutional environment, owners'/managers' attitudes towards the natural environment, and the environmental sustainability orientation of SMEs. Singh et al. (2015) use the institutional theory to analyze the relationship between different dimensions of motivations – relational, innovational, operational and competitiveness – and SMEs' adoption of environmental management practices. Dekker and Hasso (2016) also note that the institutional theory is often used in explaining the environmental performance of SMEs since it can be influenced by non-financial objects such as institutional legitimacy and social acceptance. Ashton et al. (2017), based on the same theory, posit that pressures and expectations exerted by the government, society, community, customers,

competitors, NGOs and other social organizations act as external drivers for taking environmental initiatives by SMEs.

Based on the theory of planned behaviour (Ajzen, 1991), Cordano et al. (2010) examine how SME managers' positive attitudes influence their environmental decision-making process. Based on the factors – perceived behavioural control, subjective norms and attitudes about the behaviour – derived from the same theory, Sharma and Sharma (2011) hypothesize that family firms, owing to their values, beliefs and positive attitudes towards the natural environment, follow a more proactive environmental strategy than their non-family counterparts. Some of the motivations, cited by the authors, for family firms to be more proactive than non-family firms with regard to environmental initiatives are long-term involvement of family members, firm reputation associated with the family name, higher motivation to generate socio-emotional wealth for future generations, embeddedness in local communities and lower levels of relationship conflicts. Uhlaner et al. (2012) comment that the theory of planned behaviour helps us understand the conditions under which SMEs adopt environment-friendly practices, and show that the endogenous factors – tangibility of sector, firm size, innovation orientation, family influence and perceived financial benefits from energy conservation – positively influence the level of SMEs' engagement in environmental management practices.

Constructs and items under consideration

Extant research on sustainability in SMEs, based on both detailed case studies and empirical surveys, has focused on identifying the drivers of sustainability, sustainable business practices and their impact on firm performance. Drivers of sustainability can be both external or reactive and internal or proactive (Lewis and Cassells, 2010; Sharma and Sharma, 2011; Ashton et al., 2017; Bakos et al., 2020; Prashar and Sunder, 2020). External drivers include government regulations, incentives for adopting sustainable practices, pressure from stakeholders including NGOs, communities, societies and the general public, pressure from customers (coercive pressure), adoption of sustainable practices by competitors (mimetic pressure), and standard industry norms (normative pressure) (Simpson et al., 2004; Gadenne et al., 2009; Roxas and Coetzer, 2012; Singh et al., 2015; Fernandez and Camacho, 2016; Ashton et al., 2017; Bakos et al., 2020; Prashar and Sunder, 2020). Internal drivers could be the shared vision, values, beliefs, ethical orientation and a positive attitude of owners/managers towards the natural environment (Nair and Sodhi, 2012;

Roxas and Coetzer, 2012; Singh et al., 2015; Dekker and Hasso, 2016; Fernandez and Camacho, 2016), pressure from employees, and perceived short-term (such as energy efficiency, waste reduction, cost-effectiveness and higher market share, sales and profits) and long-term benefits (such as improved customer and employee satisfaction, new product development, new market opportunities, brand image, reputation and competitiveness) (Simpson et al., 2004; Gadenne et al., 2009; Cordano et al., 2010; Uhlaner et al., 2012; Williams and Schaefer, 2013; Singh et al., 2015; Ashton et al., 2017; Johnson, 2017; Leonidou et al., 2017; Witjes et al., 2017; Chasse and Courrent, 2018).

Sustainable business practices may be divided into two dimensions – environmental and social. The environmental dimension may include collaboration with suppliers for green purchasing, environment-friendly product and process design (DFE/LCA), energy-efficient manufacturing, reuse, recycling and environmentally safe treatment of waste, energy-saving transportation and eco-friendly office practices (Hussey and Eagan, 2007; Lee and Klassen, 2008; Roxas and Coetzer, 2012; Torugsa et al., 2012, 2013; Wu et al., 2015; Caldera et al., 2018; Courrent et al., 2018; Boakye et al., 2020; Dey et al., 2020). The social dimension, on the other hand, may include human resource management (HRM) practices, such as employee welfare, health and safety, training and development, empowerment, teamwork, participation and involvement in decision-making, promoting idea generation and acknowledging contributions (Nair and Sodhi, 2012; Torugsa et al., 2012, 2013; Wu et al., 2015; Fernandez and Camacho, 2016; Johnson and Schaltegger, 2016; Witjes et al., 2017; Courrent et al., 2018; Gandhi et al., 2018), and initiatives for community development, such as creating opportunities for direct/indirect employment, training local people for alternative livelihoods, investment in community infrastructure and charitable activities in cash or kind (Nair and Sodhi, 2012; Torugsa et al., 2012, 2013; Tan et al., 2015; Caldera et al., 2018; Courrent et al., 2018).

Firm performance may also have several dimensions such as short-term or economic (reduced cost, sales, profitability, market share, etc.), long-term or strategic (brand image, reputation, competitiveness, customer loyalty, new products, new markets, etc.) (Simpson et al., 2004; Nair and Sodhi, 2012; Leonidou et al., 2017; Courrent et al., 2018), environmental (energy consumption, emissions, effluents, wastes, reuse, recycling, etc.) (Wu et al., 2015) and social (employee satisfaction and loyalty, employee quality, morale, motivation and commitment, new

talent attraction and retention, etc.) (Simpson et al., 2004; Nair and Sodhi, 2012; Chasse and Courrent, 2018; Courrent et al., 2018). The items mentioned under the dimension of social performance are related to intra-organizational HRM practices. It is expected that SMEs' initiatives towards extra-organizational community development would result in strategic advantages such as enhanced brand image, reputation and competitiveness (Chasse and Courrent, 2018; Courrent et al., 2018).

The extant literature explores the relationships among the drivers of sustainability, sustainable business practices and firm performance (financial and non-financial). We introduce another dimension between sustainable business practices and firm performance, i.e. benefits accrued due to adoption of sustainable business practices because we note SMEs may realize environmental and social benefits due to adoption of sustainable business practices, but the same may or may not result in improved financial and non-financial firm performance. Therefore, broadly we study the following structural relationships: Drivers of sustainability → Sustainable business practices → Environmental and social benefits → Firm performance. The following shows a high level depiction of the constructs under study. Figures within brackets beside the high level constructs represent the corresponding question numbers in the questionnaire administered for the study and given in the Appendix for reference:

- (i) Drivers of sustainability
 - (i) External drivers of sustainability (Q.7)
 - (ii) Internal drivers of sustainability (Q.8)
- (ii) Sustainable business practices
 - (i) Sustainable environmental practices with respect to procurement and product and process design (Q.9)
 - (ii) Sustainable environmental practices with respect to packaging, transportation, waste management and office practices (Q.10)
 - (iii) Sustainable social practices with respect to human resources and local community development (Q.11)
- (iii) Environmental and employee-related social benefits (Q.12)
- (iv) Firm performance (financial and non-financial) (Q.13)

The items (observed variables) for the study, which have been gleaned from the extant literature as noted above, are listed under the corresponding high level constructs in the questionnaire (See the Appendix).

Development of propositions

This section refers to the relevant literature on the relationships among the drivers of sustainability (internal/external), sustainable business practices (environmental and social), environmental and social benefits, and firm performance (financial and non-financial), and develops propositions for the study. The propositions will be refined into the actual hypotheses to be tested based on the exploratory/confirmatory factor analysis of the survey data.

(i) Internal drivers of sustainability and sustainable business practices

Hussey and Eagan (2007) find support for the hypothesis that leadership has a positive influence on socially responsible HRM practices by SMEs.

Gadenne et al. (2009) note that despite SME owners/managers having strong ‘green’ attitudes, the level of implementation of environment-friendly practices has been low. The authors, in their study, do not find support for the proposition that SME owners’/managers’ environmental attitudes are positively associated with firms’ environmental practices.

However, many other researchers argue in favour of positive relationships between the internal drivers and SMEs’ adoption of sustainable business practices. For example, Cordano et al. (2010) hypothesize that positive attitudes of SME managers towards the environment and perceptions of increased pressures from internal stakeholders to improve environmental performance facilitate the implementation of environmental management programmes and practices. The authors find a positive relationship between managers’/employees’ values, beliefs and norms, and the implementation of environmental management practices.

Roxas and Coetzer (2012) comment that owners’/managers’ norms, beliefs, values, attitudes and mental models influence their strategic choices and hence the behaviour of firms. The authors find

that the cognitive and normative dimensions of the institutional environment strongly influence the positive relationship between owners'/managers' attitudes towards the natural environment and the environmental sustainability orientation of SMEs.

Uhlener et al. (2012) find strong support for the hypothesis that perceived financial benefits out of energy and resource conservation are positively associated with SMEs' adoption of environmental management practices.

Torugsa et al. (2012, 2013) examine the relationships between SMEs' shared vision and their proactive CSR strategies. The authors comment that the shared vision capability is a firm's ability to embody the collective objectives and aspirations of its members. Such a capability supports organizational learning and employee creativity. Since CSR activities emphasize employee involvement, and hence are people-intensive, a shared vision enables a firm to generate an internal pressure and enthusiasm to adopt sustainable practices. Although SMEs are more resource-constrained than larger firms, their shorter lines of communication and a more informal management structure and culture facilitate a greater involvement of employees in sustainable activities. The authors (2013) hypothesize positive relationships between the shared vision capability and the three dimensions of proactive CSR strategies, and find that while the relationship between shared vision and the environmental dimension is supported, there is no support for the relationships between shared vision and the economic and social dimensions of proactive CSR strategies.

Dekker and Hasso (2016) note that in family firms, owners'/managers' values, beliefs and attitudes towards the natural environment strongly influence their strategic choices and hence the behaviour of the firm. According to the authors, family firms are more likely to be engaged in environmental management practices than non-family firms, especially when they are deeply embedded in their local communities.

Chasse and Courrent (2018), in their study, find that the personal sustainability behaviour of SME owners/managers is positively associated with firms' environmental and social practices.

Eweje (2020) notes that SME owners'/managers' leadership abilities are associated with the implementation of various environmental and social sustainability practices. The author also notes that employees of an SME that pursues sustainability strategies will demonstrate loyalty and

dedication to their employer, which not only reduces staff turnover, but also leads to improved financial performance.

(ii) External drivers of sustainability and sustainable business practices

Cordano et al. (2010) show that pressures from external stakeholders on SME managers to improve environmental performance positively influence the adoption of environmental management practices.

Roxas and Coetzer (2012) study the impact of the regulatory dimension of the institutional environment on the relationship between owners'/managers' attitudes towards the natural environment and the environmental sustainability orientation of small firms.

Torugsa et al. (2012, 2013) note that an effective stakeholder management, i.e. establishing trust-based collaborative relationships with a wide variety of stakeholders, can enhance SMEs' ability to reduce negative environmental and social impacts. The authors (2013) find support for the positive relationships between stakeholder management and all the three dimensions – economic, environmental and social – of proactive CSR strategies.

Leonidou et al. (2017) show that pressures from regulators, competitors, customers and stakeholders positively moderate the relationship between SMEs' adoption of green business strategies and competitive advantage.

However, in developing countries, such as in India, environmental and social regulations for SMEs are not formally developed, and hence a relationship between regulations and firms' implementation of sustainable practices may not be expected. Roxas and Coetzer (2012) observe that the regulatory dimension of the institutional environment has the lowest impact on the attitudes towards the natural environment of owners/managers in the sample firms. Ashton et al. (2017) note that the survey firms mention regulations and pressures from external drivers, such as the government and customers, as weaker motivators than internal drivers for implementation of environmental practices. Bakos et al. (2020) also note that transitional economies do not have government regulations similar to developed economies.

The literature on the linkages between the drivers of sustainability and sustainable business practices directs us to posit the following propositions:

Proposition 1 (P1): Drivers of sustainability (internal/external) are positively related to sustainable environmental practices.

Proposition 2 (P2): Drivers of sustainability (internal/external) are positively related to sustainable social practices.

(iii) Drivers of sustainability, environmental and social benefits, and firm performance

Hussey and Eagan (2007) do not find support for the hypothesis that leadership has a direct and positive influence on environmental performance of SMEs.

Gadenne et al. (2009) also report mixed findings in connection with the relationship between SME owners'/managers' environmental attitudes and firms' environmental performance. While some authors find a positive relationship between environmental attitudes and environmental performance, other authors either find no relationship or report a gap between owners'/managers' attitudes and their environmental behaviour.

Hu et al. (2015) note that top management leadership, strategy, commitment and support are critical factors for implementing Lean Management in SMEs and improving firm performance.

Leonidou et al. (2017) note the moderating role of pressures from external stakeholders in the relationship between green business strategies and competitiveness, characterized by financial and non-financial (market) performance.

Chasse and Courrent (2018) argue that owners'/managers' positive behaviour towards environmental and social issues can have economic advantages for SMEs.

Bartolacci et al. also (2020) note that most of the extant literature confirm a positive relationship between SME owners'/managers' personal values and CSR practices with respect to the environment, employees and local communities, and firms' financial performance and competitiveness (sales, market share, customer satisfaction and profitability). According to the authors, CSR initiatives not only generate intangible benefits such as employee morale, motivation and loyalty, but also result in better financial performance due to increased efficiency and improved company image.

Prashar and Sunder (2020) note that the vision, values, leadership and social responsibility of owners/managers of SMEs impact firms' financial performance.

Based on the literature, the following propositions have been developed:

Proposition 3 (P3): Drivers of sustainability (internal/external) are positively related to environmental benefits realized by SMEs due to adoption of sustainable environmental practices.

Proposition 4 (P4): Drivers of sustainability (internal/external) are positively related to social benefits realized by SMEs due to adoption of sustainable social practices.

Proposition 5 (P5): Drivers of sustainability (internal/external) are positively related to SME firm performance (financial and non-financial).

(iv) Sustainable environmental and social practices

Torugsa et al. (2013) note that employee participation and involvement in decision-making helps SMEs minimize their ecological footprints. Employee-related social sustainability practices, such as employee engagement and providing them with training and development opportunities, positively influence firms' adoption of environmental management practices, by building awareness of and commitment to environmental values and by improving the technical and managerial skills for adopting such environmental practices, the authors also note.

Hu et al. (2015) note that employee training, motivation, involvement, participation and empowerment are key success factors for Lean implementation in SMEs.

Therefore, the following proposition is posited:

Proposition 6 (P6): Sustainable social practices are positively related to sustainable environmental practices.

(v) Sustainable business practices, environmental and social benefits, and firm performance

Thanki et al. (2016) note that the extant literature suggests positive relationships among green manufacturing practices in SMEs, their improved environmental performance through waste

minimization and improved performance in terms of long-term profit, market share, image and competitive advantage. In a bibliometric study, Prashar and Sunder (2020) mention that scholars have studied how the environmental and social dimensions of sustainability impact SME firm performance.

Based on a study of UK SMEs, Simpson et al. (2004) explore whether environmentally good practices translate into a competitive advantage. While some of the respondents support the causal relationship between good environmental practices and competitiveness, majority are of the opinion that either there is no link or there may be some effect in the long term but not in the short term.

Hussey and Eagan (2007) test the hypothesis that socially responsible HRM practices have a positive influence on environmental performance of SMEs. However, the authors do not find support for the hypothesis.

Aragon-Correa et al. (2008) find a significantly positive relationship between SMEs' adoption of proactive green business practices and financial performance.

Torugsa et al. (2013) note that SMEs that adopt environmentally sustainable practices may develop skill and knowledge resources by attracting and retaining highly qualified employees, who are motivated by environmental sustainability issues. The authors propose that the three dimensions of sustainability are positively associated with financial performance. However, the authors find that while the economic dimension of sustainability is positively associated with financial performance, there is no significant association between the environmental and social dimensions of sustainability and financial performance.

Lewis et al. (2015) note that the extant literature studies the links between enhanced environmental performance and firms' bottom line. Wu et al. (2015) suggest that firms' lean, green and social practices have positive effects on firms' triple bottom line performance. The authors also mention that the extant literature has reported a positive relationship between firms' sustainable business practices and financial performance mediated by enhanced environmental and social performance. The authors, in their study, have found a significant positive relationship between sustainable social practices and environmental performance.

Dekker and Hasso (2016) observe that the environmental management focus of family firms is manifested in their environmental performance when firms are embedded in local communities.

Fernandez and Camacho (2016) note from the comments made by one of the participants of their study that teamwork, participation and involvement in decision-making, and recognition of contributions do not only generate job satisfaction, but also boost the morale and motivation of employees.

Leonidou et al. (2017) note that majority of the extant literature observe a positive relationship between SMEs' green initiatives and their financial and non-financial (market) performance. The authors, in their study, find that SMEs' green business strategies are positively related to competitive advantage, which in turn results in better financial and market performance.

Courrent et al. (2018) comment that SMEs' environmental practices are likely to be positively associated with their financial and non-financial performance. The authors, and also Chasse and Courrent (2018), note that while social practices in the workplace are likely to boost employee morale, motivation and commitment, and attract and retain talent, social practices in the community would improve relationships with stakeholders, and boost company image and reputation, thereby providing a competitive advantage and indirectly improving financial performance. However, the authors mention that although most of the empirical studies have reported positive relationships between SMEs' sustainable practices and firm performance, the extant literature is not univocal in support of these relationships, some arguing for no, or even negative, relationships. Revell and Blackburn (2007), based on a study of SMEs in the UK's construction and restaurant sectors, note that many firms are skeptical about embracing environment-friendly practices, such as energy efficiency and waste minimization, because although these practices may result in cost savings, the short-term economic benefits may not outweigh the investments required to be made in these practices. Gadenne et al. (2009), based on a review of the extant literature, note that many small business owners doubted that investments in environmental improvements would bring benefits to their businesses. Nulkar (2014) also notes that many sustainability practices do not result in short-term business benefits rendering them unattractive for SMEs.

In a systematic literature review, Bartolacci et al. (2020) observe that the number of articles studying the effect of sustainable business practices on financial performance of SMEs is growing over the years, highlighting the importance of and attention to this emerging field of research. The authors, in their review, note that environmental management practices by SMEs have a positive impact on firm performance, positively moderated by HRM practices. The authors also note the positive relationship between socially responsible management practices towards employees, and, to a lesser extent, society/community, and firms' financial/competitive performance.

Boakye et al. (2020) study the relationships between environmental sustainability practices, such as energy efficiency, materials/resources efficiency, compliance with environmental regulations, pollution control, waste management practices and stakeholder engagement, and financial performance for UK-based SMEs. The authors find that except for environmental regulations, all other practices are positively associated with financial performance.

Dey et al. (2020) note that environmental management practices by SMEs may help enhance environmental and social performance and in turn firms' economic and operational performance. The authors note that very few researchers reveal direct relationships between socially sustainable practices and environmental/economic performance. However, the authors also note that environment-friendly SMEs are likely to have satisfied employees with higher economic performance.

Eweje (2020) notes that employee loyalty and dedication, and reduced staff turnover, in an environment-friendly SME leads to improved financial performance.

Based on the literature, the following propositions have been developed:

Proposition 7 (P7): Sustainable environmental practices are positively related to environmental benefits realized by SMEs.

Proposition 8 (P8): Sustainable environmental practices are positively related to social benefits realized by SMEs.

Proposition 9 (P9): Sustainable environmental practices are positively related to SME firm performance (financial and non-financial).

Proposition 10 (P10): Sustainable social practices are positively related to social benefits realized by SMEs.

Proposition 11 (P11): Sustainable social practices are positively related to environmental benefits realized by SMEs.

Proposition 12 (P12): Sustainable social practices are positively related to SME firm performance (financial and non-financial).

Finally, it is proposed that environmental and social benefits realized by SMEs due to adoption of sustainable business practices are positively related to SME firm performance (financial and non-financial).

Proposition 13 (P13): Environmental benefits realized by SMEs due to adoption of sustainable business practices are positively related to SME firm performance (financial and non-financial).

Proposition 14 (P14): Social benefits realized by SMEs due to adoption of sustainable business practices are positively related to SME firm performance (financial and non-financial).

Figure 1 pictorially represents the propositions.

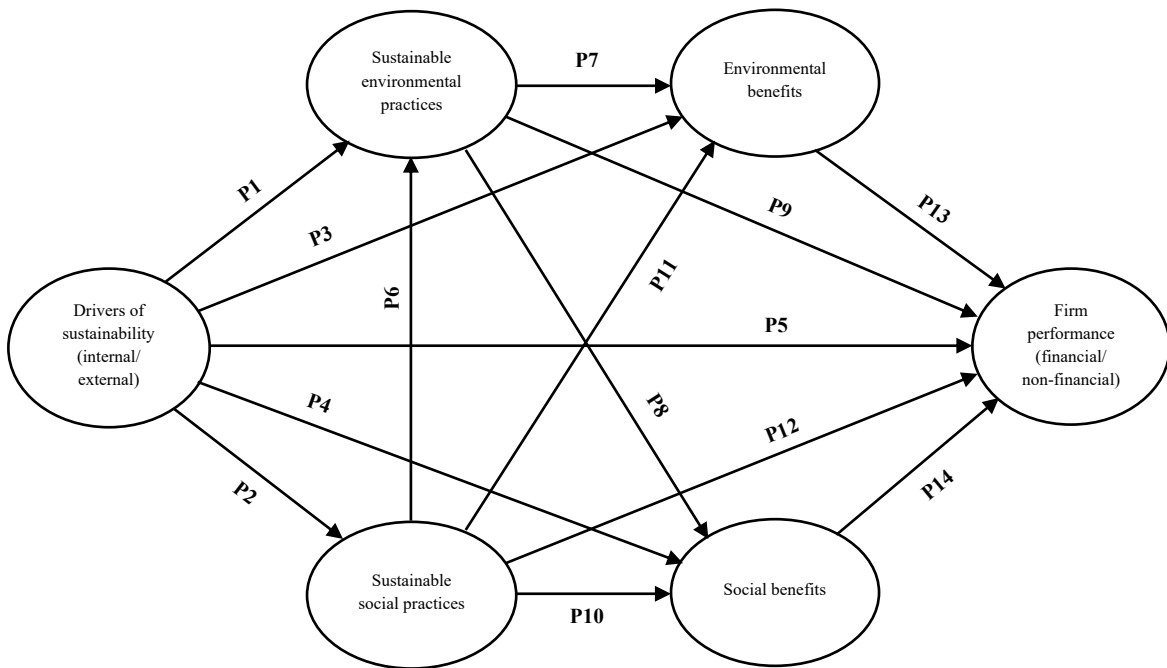


Fig. 1: High level constructs and propositions

Research methodology

The research is based on a survey of Indian manufacturing SMEs located in the states of West Bengal, Bihar, Delhi, Haryana, Rajasthan and Maharashtra due to the prevalence of SMEs and their clusters in these states. The target sectors have been food and beverages, textile, engineering, leather and chemicals that are way ahead of other sectors in terms of gross economic output, export and employment generation. A questionnaire for the survey, including both structured and semi-structured questions, has been designed based on the extant literature, as mentioned before, and inputs received from academicians, experts and practitioners. The questionnaire contains items to be rated by respondents on a 5-point Likert scale where '1' means 'strongly disagree' and '5' means 'strongly agree'. Subsequently, the questionnaire has been administered to a select group of respondents on a pilot basis to receive their views on the wording and understanding of the items. Based on the feedback received in the pilot study, the questionnaire has been finalized by rephrasing, rewording, adding and deleting some of the items before it is ready for mass-administration (The questionnaire is given in the Appendix for reference). Next, prospective respondents have been identified from SME databases and approached in-person and over email/phone seeking their cooperation in taking part in the survey. A total of 236 prospective respondents have been approached out of whom 139 respondents have agreed to take part in the survey, indicating a response rate of about 59%. Then the questionnaire along with a covering letter explaining the background and objectives of the survey has been administered in-person to these 139 respondents, who have been provided with clarifications, if needed, and facilitated in filling in the questionnaire. Out of the 139 filled-in questionnaires, 136 have been found complete in all respects and used in data analysis while 3 have been rejected because of missing data. A sample size of 136 is considered to be adequate for multi-variate data analysis (Hair et al., 2007).

Following is a brief profile of the respondents. Out of 136 respondents, 78 (57.35%) are small enterprises and 58 (42.65%) are medium-sized enterprises. Respondent firms widely vary in terms of firm age and number of employees. The firm age varies from 6 months to 600 months with an average, standard deviation and median of 225.51 months, 157.37 months and 198 months, respectively. Firms employ from 2 to 800 employees with an average of 74.49 employees, and standard deviation and median of 133.10 and 27 employees, respectively. Annual sales revenues

also vary widely across firms. Many firms being privately held have not disclosed their annual sales figures. Among the 80 firms that have revealed their annual sales revenues, the figure varies from INR 0.50 million to INR 13.60 billion, with an average of INR 391.10 million, and standard deviation and median of INR 1.53 billion and INR 75 million, respectively. Out of 136 firms, 79 (58.09%) are family-managed and 57 (41.91%) are professionally-managed. Food and beverages, textile, engineering, leather and chemicals sectors are represented by 28 (20.59%), 27 (19.85%), 31 (22.79%), 24 (17.65%) and 26 (19.12%) respondents, respectively. Forty five firms (33.09%) are ISO 9000-certified while the rest 91 (66.91%) are not. In terms of ISO 14000 certification and implementation of an EMS, respondent firms lag far behind their larger counterparts and SMEs in developed countries. Only 7 (5.15%) firms are ISO 14000-certified while 14 (10.29%) have implemented an EMS. Among the 136 respondents, 112 (82.35%) have identified themselves as owners/managers and the rest 24 (17.65%) are vice presidents, directors, and executives in different functional areas such as accounts, purchase, sales, IT and public relations. The distributions of respondent firm age, number of employees and annual sales have been given in the Appendix.

Data collected have been collated in MS Excel and analyzed using multi-variate techniques such as exploratory/confirmatory factor analysis and structural equation modelling. Although scales have been developed in the extant literature, they have not been tested in the Indian context so far. Moreover, scales used in the extant studies have not been uniform in terms of definitions of items and constructs and assignments of items to different constructs. Therefore, it has become imperative to define a scale for the present study and use exploratory factor analysis to identify the constructs (latent variables) and items that load on these constructs relevant in the Indian context. Further, the scale developed in this study can be used in future research on Indian SMEs as well as on SMEs belonging to other developed and developing countries. As already discussed, scale items have been developed based on the extant literature and inputs received from academicians, experts and practitioners, and finalized after receiving feedback from a pilot study. Content/face validity, unidimensionality and reliability have been assessed through exploratory factor analysis. Confirmatory factor analysis has been used to assess convergent and discriminant validity, construct reliability and the overall fit of the measurement model. Structural equation modelling has been employed to test the proposed hypotheses. As far as the application packages are

concerned, SPSS has been used for exploratory factor analysis and AMOS has been used for confirmatory factor analysis and structural equation modelling.

Results

In this section, we present the results of exploratory/confirmatory factor analysis and structural equation modelling. We have followed Hair et al. (2007) for factor analysis and structural equation modelling.

Exploratory factor analysis

For exploratory factor analysis, we have assumed normality, linearity, homoscedasticity and homogeneity of the sample. The sample size exceeds the minimum sample size of 50. Also, the ratio of the sample size to the number of variables exceeds the minimum suggested ratio of 5:1. Significant correlations exist among many of the variables and partial correlations among most of the variables are insignificant. Also, Bartlett's test of sphericity shows statistical significance indicating sufficient correlations among the variables. Measures of sampling adequacy (MSA) are at least 0.50 for both the overall test and each individual variable. Common method bias is checked by Harman's single-factor test, which reveals no single factor in the unrotated factor solution that accounts for more than 50% of the variance, indicating the non-existence of common method bias (Leonidou et al., 2017; Courrent et al., 2018).

For factor analysis, principal components analysis with varimax rotation is employed. The number of factors is decided based on the following: eigenvalues of factors should be more than 1 and variance explained by the factors should be at least 70% of the total variance. Factor loadings of 0.60 or more are considered for variables to load on a factor and also communalities of variables should be at least 0.50.

Content/face validity is maintained in terms of taking the questionnaire items from the extant literature, soliciting expert opinions on the questionnaire and pre-testing the questionnaire before the actual survey. Majority of the items loading on a single factor and the non-existence of significant cross-loadings ensure unidimensionality. Reliability is assessed by the following criteria: item-to-item correlation is more than 0.30, item-to-total (summated scale) correlation is more than 0.50, and Cronbach's alpha is at least 0.70.

(i) External drivers of sustainability

Q.7 of the questionnaire lists the items related to the external drivers of sustainability. Factor analysis of the items reveals 4 distinct factors. Items 7(b), 7(f), 7(g) and 7(n) have been dropped because either MSA or communality is less than 0.50. Table 1 shows the factors, items, item statistics, factor loadings and Cronbach's alpha for each factor. Factor names reflect the items that load on them. Since *Factor 4: Pressure of Compliance* has a Cronbach's alpha less than 0.70, it will be dropped from subsequent analyses.

Table 1: Item statistics and factor loadings for the external drivers of sustainability (Q.7 of the questionnaire)

Item	Item Mean	Item Std. Dev.	Factor 1:	Factor 2:	Factor 3:	Factor 4:
			Customer Pressure and Industry Facilitation	Government Facilitation	Customer facilitation	Pressure of Compliance
7(i): Supplier environmental audit by customers	3.26	1.07	0.832			
7(j): Customer requirement of disclosure of material composition data for product(s)	3.43	1.21	0.806			
7(h): Customers' consideration of environmental/social criteria for supplier selection	3.45	1.04	0.684			
7(p): Awareness and training programmes conducted by industry associations/chambers of commerce	3.59	1.03	0.655			
7(d): Technical support/facilitation provided by govt.	3.84	1.24		0.901		
7(e): Awareness/training programmes organized by govt.	3.84	1.27		0.893		
7(c): Financial incentives provided by govt. (soft loan/tax exemption/subsidy)	4.11	1.08		0.648		

7(l): Collaboration/joint R&D with customers	3.18	1.10		0.804		
7(k): Financial incentive/preference given by customers	2.78	0.99		0.752		
7(m): Supplier training organized by customers	2.99	1.14		0.730		
7(a): Govt. regulations/legislations	4.07	1.01			0.877	
7(o): Pressure of compliance with industry norms	3.73	0.95			0.741	
Cronbach's alpha based on standardized items			0.780	0.810	0.705	0.655

Note: Only factor loadings of 0.60 or more are shown in the table.

Items are arranged in the descending order of their factor loadings.

(ii) Internal drivers of sustainability

Q.8 of the questionnaire lists the items related to the internal drivers of sustainability. Factor analysis of the items reveals 3 distinct factors. Items 8(e), 8(h)-8(m), 8(p), 8(r) and 8(u) have been dropped because of insignificant factor loadings or significant cross-loadings. Table 2 shows the factors, items, item statistics, factor loadings and Cronbach's alpha for each factor. Factor names reflect the items that load on them.

Table 2: Item statistics and factor loadings for the internal drivers of sustainability (Q.8 of the questionnaire)

Item	Item Mean	Item Std. Dev.	Factor 1:	Factor 2:	Factor 3:
			Leadership, Motivation, Commitment and Ethical Orientation of Owners/Managers and Employees	Perceived Economic and Strategic Advantages	Perceived Marketing and HR Competitive Advantages
8(b): Leadership abilities of owners/managers	4.40	0.89	0.886		

8(c): Ethical orientation of owners/managers	4.35	0.92	0.842		
8(a): Owners'/managers' vision, values and beliefs	4.35	0.93	0.832		
8(d): Owners'/managers' commitment to environmental/social responsibility	4.25	0.72	0.822		
8(f): Ethical orientation of company employees	4.10	0.76	0.693		
8(g): Motivation and commitment of employees	4.28	0.76	0.683		
8(o): Improved brand image/reputation of company	4.45	0.73		0.888	
8(n): Increase in sales, revenue and profitability	4.30	0.71		0.885	
8(q): Improved customer satisfaction/loyalty	4.26	0.68		0.751	
8(t): Development of new products	4.29	0.75		0.795	
8(s): Better talent attraction and retention	4.07	0.82		0.789	
8(v): Access to new customers/new markets	4.21	0.82		0.710	
Cronbach's Alpha based on Standardized Items			0.917	0.853	0.787

Note: Only factor loadings of 0.60 or more are shown in the table.

Items are arranged in the descending order of their factor loadings.

(iii) Procurement and product and process design

Q.9 of the questionnaire lists the items related to procurement and product and process design. Factor analysis of the items reveals 5 distinct factors. Items 9(a), 9(d), 9(i), 9(k), 9(o), 9(p) and 9(s) have been dropped because of low MSA (< 0.50), insignificant factor loadings or significant cross-loadings. Table 3 shows the factors, items, item statistics, factor loadings and Cronbach's alpha for each factor. Factor names reflect the items that load on them. Since Cronbach's alpha is less than 0.70 for *Factor 3: Supplier Collaboration, Incentive and Training Programme* and

Factor 5: Process Efficiency and Environmental Policy, these factors will be dropped in subsequent analyses.

Table 3: Item statistics and factor loadings for procurement and product and process design (Q.9 of the questionnaire)

Item	Item Mean	Item Std. Dev.	Factor 1: Sustainable Product Design	Factor 2: Sustainable Procurement	Factor 3: Supplier Collaboration, Incentive and Training Programme	Factor 4: Sustainable Energy and Resource Consumption	Factor 5: Process Efficiency and Environmental Policy
9(m): Using Design-for-Environment (DFE) tools for product design	3.60	1.03	0.827				
9(n): Life Cycle Analysis (LCA) for environmental impacts during and post products' useful life	4.12	0.75	0.784				
9(j): Eliminating hazardous materials in product design	4.30	0.58	0.743				
9(l): Modular product design for easy assembly/disassembly/maintainability	4.13	0.83	0.727				
9(b): Urging suppliers to adopt EMS/ISO 9000/ISO 14000	3.45	1.04		0.839			
9(c): Selecting suppliers based on sustainability criteria	3.93	0.87		0.809			
9(e): Asking suppliers to declare environmental impacts of supplied materials	3.77	0.97		0.679			
9(g): Collaboration with suppliers for product design	3.77	0.80			0.834		
9(h): Awareness and training programmes for suppliers	3.89	0.89			0.786		
9(f): Financial incentive/preference given to suppliers	3.43	0.70			0.657		

meeting/exceeding sustainability criteria							
9(q): Using alternative/non-conventional energy sources	3.58	1.00			0.896		
9(r): Reducing resource consumption in manufacturing	3.95	0.65			0.842		
9(u): Having a formal environmental management policy	3.87	0.77				0.798	
9(t): Reducing waste and spill-over in processes	3.99	0.73				0.744	
Cronbach's Alpha based on Standardized Items			0.793	0.718	0.691	0.846	0.512

Note: Only factor loadings of 0.60 or more are shown in the table.

Items are arranged in the descending order of their factor loadings.

(iv) Packaging, transportation, waste management and office practices

Q.10 of the questionnaire lists the items related to packaging, transportation, waste management and office practices. Factor analysis of the items reveals 5 distinct factors. Items 10(a), 10(e), 10(l), 10(m), 10(s), 10(t) and 10(v) have been dropped because of low communality (< 0.50), insignificant factor loadings or significant cross-loadings. Table 4 shows the factors, items, item statistics, factor loadings and Cronbach's alpha for each factor. Factor names reflect the items that load on them. Since Cronbach's alpha is less than 0.70 for *Factor 3: Economic Packaging and Transportation*, *Factor 4: Water and Energy Efficiency in Office* and *Factor 5: Environment-friendly Transportation*, these factors will be dropped in subsequent analyses.

Table 4: Item statistics and factor loadings for packaging, transportation, waste management and office practices (Q.10 of the questionnaire)

Item	Item Mean	Item Std. Dev.	Factor 1: Eco-friendly Waste Management	Factor 2: Sustainable Office Environment	Factor 3: Economic Packaging and Transportation	Factor 4: Water and Energy Efficiency in Office	Factor 5: Environment-friendly Transportation
10(j): Treatment of effluents before discharging	4.14	0.75	0.921				
10(h): Segregation of hazardous and non-	4.07	0.86	0.817				

hazardous waste before disposal							
10(i): Environmentally safe disposal of solid waste	4.13	0.76	0.746				
10(k): Separation of recyclable and non-recyclable materials from waste	3.95	0.81	0.726				
10(q): Ensuring a safe and healthy working environment	4.15	0.92		0.800			
10(u): Eco-friendly design and layout of office space	4.18	0.64		0.799			
10(r): Periodic checking of internal air and water quality	4.17	0.83		0.777			
10(p): Using alternative/non-conventional energy sources	3.57	1.13		0.683			
10(b): Reducing the quantity of packaging materials	3.66	0.86			0.839		
10(d): Ensuring economies of scale in transportation	3.67	0.85			0.684		
10(c): Taking back and recycling packaging materials	3.51	0.91			0.679		
10(n): Recycling of used toilet water post treatment	3.43	1.11			0.903		
10(o): Installation of water-/energy-efficient equipment	3.50	0.98			0.618		
10(g): Optimizing distribution networks/vehicle routes	3.65	0.96				0.846	
10(f): Using alternate fuels (e.g. CNG) for transportation	3.40	1.09				0.701	
Cronbach's Alpha based on Standardized Items			0.897	0.832	0.686	0.653	0.647

Note: Only factor loadings of 0.60 or more are shown in the table.

Items are arranged in the descending order of their factor loadings.

(v) Human resources practices and local community development

Q.11 of the questionnaire lists the items related to human resources practices and local community development. Factor analysis of the items reveals 4 distinct factors. Item 11(l) has been dropped

due to low communality (< 0.50). Table 5 shows the factors, items, item statistics, factor loadings and Cronbach's alpha for each factor. Factor names reflect the items that load on them.

Table 5: Item statistics and factor loadings for human resources practices and local community development (Q.11 of the questionnaire)

Item	Item Mean	Item Std. Dev.	Factor 1: Working Condition and Employee Involvement	Factor 2: Services rendered to Local Community	Factor 3: Employee Development and Community Employment Generation	Factor 4: Local Community Development
11(e): Meeting training/development needs of employees	4.17	0.95	0.837			
11(d): Ensuring fair compensation/pay to employees	4.07	0.91	0.830			
11(a): Ensuring a safe and healthy working condition	4.13	0.90	0.810			
11(f): Encouraging employees for participation/teamwork	4.26	0.76	0.795			
11(g): Encouraging employees for creativity/ innovation	4.15	0.69	0.778			
11(b): Ensuring rights, dignity and equal opportunities	4.32	0.73	0.656			

11(o): Arranging for health check-up/medical facilities	3.60	1.01	0.872		
11(p): Improving sanitation facilities in local community	3.32	1.09	0.831		
11(r): Rendering voluntary services to local community	3.38	1.05	0.825		
11(q): Engaging in charitable activities in cash or kind	3.40	0.96	0.824		
11(n): Building schools for education of local children	3.30	1.12	0.732		
11(h): Empowering employees for decision-making	4.04	0.67		0.755	
11(j): Direct/indirect employment generation/earning opportunities for local community	3.62	0.97		0.738	
11(c): Ensuring welfare of employees and their families	4.20	0.73		0.709	
11(i): Motivating employees by job rotation	3.63	1.01		0.662	
11(m): Building infrastructure/roads for local community	3.47	1.05		0.776	
11(k): Training local people for alternative livelihoods	3.32	1.13		0.759	
Cronbach's Alpha based on Standardized Items		0.926	0.907	0.841	0.760

Note: Only factor loadings of 0.60 or more are shown in the table.

Items are arranged in the descending order of their factor loadings.

(vi) Environmental and employee-related social benefits

Q.12 of the questionnaire lists the items related to environmental and employee-related social benefits. Factor analysis of the items reveals 2 distinct factors. Item 12(e) has been dropped due to low MSA (< 0.50). Table 6 shows the factors, items, item statistics, factor loadings and Cronbach’s alpha for each factor. Factor names reflect the items that load on them.

Table 6: Item statistics and factor loadings for environmental and employee-related social benefits (Q.12 of the questionnaire)

Item	Item Mean	Item Std. Dev.	Factor 1: Environmental Benefits	Factor 2: Employee-related Social Benefits
12(a): Improved energy efficiency of operations	4.02	0.82	0.923	
12(b): Reduced material and water consumption	4.13	0.66	0.840	
12(c): Reduced emissions, effluents and wastes	4.14	0.73	0.838	
12(d): Reduced disposal and increased recycling	3.85	0.90	0.809	
12(h): Higher employee productivity and quality	4.38	0.58		0.897
12(g): Improved morale/motivation/commitment	4.18	0.59		0.853
12(f): Improved satisfaction/loyalty of employees	4.07	0.55		0.737
12(i): Better talent acquisition and retention	4.24	0.75		0.711
Cronbach’s Alpha based on Standardized Items			0.904	0.841

Note: Only factor loadings of 0.60 or more are shown in the table.

Items are arranged in the descending order of their factor loadings.

(vii) Economic and strategic benefits

Q.13 of the questionnaire lists the items related to economic and strategic benefits. Factor analysis of the items reveals 3 distinct factors. Items 13(g) and 13(h) have been dropped because of insignificant factor loadings or significant cross-loadings. Table 7 shows the factors, items, item statistics, factor loadings and Cronbach's alpha for each factor. Factor names reflect the items that load on them.

Table 7: Item statistics and factor loadings for economic and strategic benefits (Q.13 of the questionnaire)

Item	Item Mean	Item Std. Dev.	Factor 1: Marketing and Economic Performance	Factor 2: Improved Quality and Operational Efficiency	Factor 3: Long-term Strategic Advantages
13(n): Access to new customers/ new markets	4.34	0.77	0.839		
13(d): Innovation in product and process design	4.29	0.86	0.830		
13(e): Increased sales volume and sales revenue	4.38	0.77	0.807		
13(m): Development of new products	4.50	0.75	0.738		
13(l): Improved customer satisfaction/loyalty	4.41	0.61	0.630		
13(f): Increased market share of products	4.35	0.88	0.622		
13(b): Improved product and process quality	4.13	0.58		0.886	
13(a): Reduced cost of operations and products	3.88	0.86		0.779	
13(c): Improved efficiency and productivity	4.31	0.55		0.717	
13(i): Increased competitive advantage	4.17	0.57			0.811

13(k): Improved image/reputation /media coverage	3.83	1.03		0.689
13(j): Improved relationship with stakeholders	4.26	0.81		0.661
Cronbach's Alpha based on Standardized Items			0.913	0.859
				0.762

Note: Only factor loadings of 0.60 or more are shown in the table.
Items are arranged in the descending order of their factor loadings.

Confirmatory factor analysis

For confirmatory factor analysis (CFA), factors with Cronbach's alpha less than 0.70 have been dropped. Also, factors having less than three items have not been considered to avoid the problem of under-identification. Therefore, we are left with 18 factors with their associated items for CFA.

Convergent validity has been tested by the following: factor loadings have to be statistically significant and standardized loading estimates should be at least 0.60, average variance extracted (AVE) should be at least 0.50 and construct reliability (CR) should be at least 0.70. Discriminant validity has been established by the fact that between two constructs, AVE for either construct should exceed the squared coefficient of correlation between the two constructs. Also, absolute values of standardized residuals should be less than 2.50.

For convergent validity and an overall model fit, 13 factors and a number of items are needed to be dropped, and the measurement model is respecified. Table 8 shows the constructs and items with descriptive statistics, standardized loading estimates and critical ratios for the items, and AVE and CR for the constructs. Table 9 shows the construct correlation matrix. The 5 constructs (The first factor has been renamed to clearly reflect the items loaded on it while the names of the other factors have remained the same) and 15 items, as shown in Table 8, have been retained for testing the structural model.

It is observed from Table 8 that all the factor loadings are statistically significant and the standardized loading estimates exceed 0.60. Also, AVE and CR for the constructs exceed 0.50 and 0.70, respectively, confirming convergent validity. Discriminant validity has been confirmed by

the criterion stated above. Also, the absolute values of all standardized residuals are less than 2.50. The overall model fit statistics are as follows: Chi-square (χ^2) = 140.056, degrees of freedom (*df*) = 80, relative chi-square (χ^2/df) = 1.75 (< 3 recommended for a good fit), GFI = 0.89, AGFI = 0.84, CFI = 0.95, RMR = 0.034 and RMSEA: 0.075 (< 0.08), which indicate a reasonably good fit (Hair et al., 2007, p. 777).

Table 8: Results of confirmatory factor analysis

Construct	Construct Acronym	Construct Mean	Construct Std. Dev.	Item	Item Mean	Item Std. Dev.	Std. Loading Estimate	Critical Ratio	AVE	CR
Leadership and ethical orientation of owners/managers and employees	LE_ME	4.68	0.76	8(b): Leadership abilities of owners/managers	4.40	0.89	0.902	---	0.69	0.91
				8(c): Ethical orientation of owners/managers	4.35	0.92	0.875	13.383		
				8(f): Ethical orientation of company employees	4.10	0.76	0.696	9.424		
Eco-friendly waste management	EF_WM	3.94	0.61	10(i): Environmentally safe disposal of solid waste	4.13	0.76	0.868	---	0.63	0.89
				10(j): Treatment of effluents before discharging	4.14	0.75	0.751	8.893		
				10(k): Separation of recyclable and non-recyclable materials from waste	3.95	0.81	0.750	8.874		
Working condition and employee involvement	WC_EI	4.42	0.71	11(a): Ensuring a safe and healthy working condition	4.13	0.90	0.820	---	0.76	0.94
				11(f): Encouraging employees for participation/teamwork	4.26	0.76	0.927	12.920		
				11(g): Encouraging employees for creativity/innovation	4.15	0.69	0.866	12.004		

Environmental benefits	EN_BF	3.82	0.57	12(b): Reduced material and water consumption	4.13	0.66	0.912	---	*		
				12(c): Reduced emissions, effluents and wastes	4.14	0.73	0.882	12.552	0.67	0.90	
				12(d): Reduced disposal and increased recycling	3.85	0.90	0.644	8.340			
Marketing and economic performance	MK_EP	3.71	0.61	13(e): Increased sales volume and sales revenue	4.38	0.77	0.811	---	*		
				13(l): Improved customer satisfaction/loyalty	4.41	0.61	0.704	9.114	0.70	0.94	
				13(n): Access to new customers/new markets	4.34	0.77	0.973	12.219			

Note: * indicates the items for which the factor loading estimates have been set to 1 by the application package (AMOS)

Table 9: Construct Correlation Matrix

Construct	LE_ME	EF_WM	WC_EI	EN_BF	MK_EP
LE_ME	1				
EF_WM	0.491 ⁺⁺	1			
WC_EI	0.636 ⁺⁺	0.545 ⁺⁺	1		
EN_BF	0.576 ⁺⁺	0.337 ⁺⁺	0.490 ⁺⁺	1	
MK_EP	0.608 ⁺⁺	0.268 ⁺⁺	0.320 ⁺⁺	0.482 ⁺⁺	1

Note: Superscript (++) represents significance at 0.01 level

Structural equation modelling

Since *Factor 2: Employee-related Social Benefits* of Table 6 has been dropped to obtain a good fit for CFA, propositions *P4*, *P8*, *P10* and *P14* are not relevant for the study. The rest of the propositions have been rephrased to reflect the renamed and retained factors, and the following hypotheses are being proposed:

Hypothesis 1 (H1): Leadership and ethical orientation of owners/managers and employees is positively related to eco-friendly waste management.

Hypothesis 2 (H2): Leadership and ethical orientation of owners/managers and employees is positively related to working condition and employee involvement.

Hypothesis 3 (H3): Leadership and ethical orientation of owners/managers and employees is positively related to environmental benefits.

Hypothesis 4 (H4): Leadership and ethical orientation of owners/managers and employees is positively related to marketing and economic performance.

Hypothesis 5 (H5): Working condition and employee involvement is positively related to eco-friendly waste management.

Hypothesis 6 (H6): Eco-friendly waste management is positively related to environmental benefits.

Hypothesis 7 (H7): Eco-friendly waste management is positively related to marketing and economic performance.

Hypothesis 8 (H8): Working condition and employee involvement is positively related to environmental benefits.

Hypothesis 9 (H9): Working condition and employee involvement is positively related to marketing and economic performance.

Hypothesis 10 (H10): Environmental benefits are positively related to marketing and economic performance.

It may be noted that hypotheses *H1-H10* broadly correspond to propositions *P1-P3*, *P5-P7*, *P9* and *P11-P13*, respectively.

Maximum likelihood estimation (MLE) has been used for structural equation modelling (SEM). Figure 2 shows the path diagram corresponding to the SEM results. The overall model fit statistics for SEM match exactly with the corresponding statistics for CFA, i.e. change in chi-square, $\Delta\chi^2 = 0$ with $\Delta df = 0$, which indicates a good fit. Figure 2 shows that *H1-H5*, *H8* and *H10* are supported while *H6*, *H7* and *H9* are not supported. Table 10 summarizes the results of hypothesis testing.

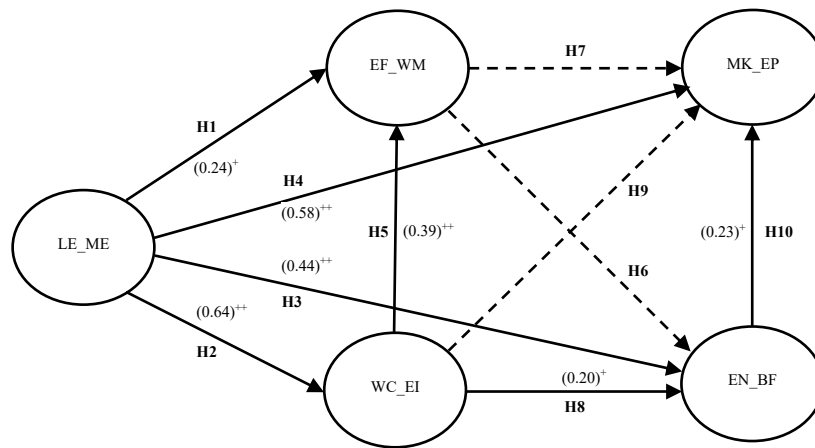


Fig. 2: Path diagram corresponding to the SEM results

Note: Solid and dashed lines represent the hypotheses that are supported and not supported, respectively. Figures within brackets show the standardized path estimates for the hypotheses that are supported. Superscripts (+) and (++) represent significance at 0.05 level and 0.01 level, respectively.

Table 10: Summary results of hypothesis testing

Hypothesis	Description	Result
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<i>H1</i>	<i>Leadership and ethical orientation of owners/managers and employees is positively related to eco-friendly waste management</i>	Supported
<i>H2</i>	<i>Leadership and ethical orientation of owners/managers and employees is positively related to working condition and employee involvement</i>	Supported
<i>H3</i>	<i>Leadership and ethical orientation of owners/managers and employees is positively related to environmental benefits</i>	Supported
<i>H4</i>	<i>Leadership and ethical orientation of owners/managers and employees is positively related to marketing and economic performance</i>	Supported
<i>H5</i>	<i>Working condition and employee involvement is positively related to eco-friendly waste management</i>	Supported
<i>H6</i>	<i>Eco-friendly waste management is positively related to environmental benefits</i>	Not supported
<i>H7</i>	<i>Eco-friendly waste management is positively related to marketing and economic performance</i>	Not supported
<i>H8</i>	<i>Working condition and employee involvement is positively related to environmental benefits</i>	Supported
<i>H9</i>	<i>Working condition and employee involvement is positively related to marketing and economic performance</i>	Not supported
<i>H10</i>	<i>Environmental benefits are positively related to marketing and economic performance</i>	Supported

Moderating variables

Literature suggests that there are various factors that moderate the relationships among the drivers of sustainability, sustainable business practices and firm performance. For example, size (annual sales, number of permanent employees, etc.), age and experience of an enterprise (Cordano et al. 2010; Lewis and Cassells, 2010; Roxas and Coetzer, 2012; Torugsa et al., 2012, 2013; Uhlaner et al., 2012; Becherer and Helms, 2014; Singh et al., 2015; Wu et al., 2015; Dekker and Hasso, 2016;

Ashton et al., 2017; Chasse and Courrent, 2018; Courrent et al., 2018), family- or professionally-managed enterprise (Nair and Sodhi, 2012; Lewis et al., 2015), quality and environmental management certifications, technical ability/competency in terms of manufacturing and information technology, quality of human resources (educational background, training, development, awareness, motivation, etc.), knowledge/awareness of owners/managers of sustainability issues, and networking/forming alliances with industry associations and peers to share knowledge and resources (Lawrence et al., 2006; Gadenne et al., 2009; Lewis et al., 2015; Johnson and Schaltegger, 2016; Chen et al., 2017; Johnson, 2017) are perceived to influence the strength of relationships among the drivers, sustainable practices and firm performance.

The effect on the structural model has been studied for the following moderating variables:

- (i) Size of the firm (small or medium and number of employees)
- (ii) Age of the firm
- (iii) Management of the firm (family- or professionally-managed)
- (iv) ISO 9000 certification
- (v) Awareness of owners/managers
- (vi) Owners'/managers' educational qualification
- (vii) Education level of employees

The effect of the moderating variables, technical ability/competency and networking/alliances with industry associations/peers could not be studied because of inadequate sample sizes for the underlying groups.

To study the effect of the moderating variables, the multi-group analysis in SEM is followed. The same structural model is tested for two groups to check whether the model statistics are significantly different for the two groups to infer that the underlying variable associated with the formation of the groups has a significant moderating effect on the structural relationships.

To ascertain any difference between two groups, it is checked whether the difference between the χ^2 statistics for the two groups is statistically significant when the path estimates for the corresponding structural relationships are constrained to be equal, taking one relationship at a time. Only those structural relationships have been considered for which at least one of the groups has a significant non-zero path estimate.

(i) Size

For firm size, whether the firm is small or medium, and the number of employees, have been considered. Annual sales have not been taken due to an inadequate sample size (As mentioned before, only 80 firms have revealed their annual sales figures).

(a) Small/Medium

Table 11 shows the results for SEM multi-group analysis for small/medium-sized firms.

Table 11: SEM multi-group analysis results for small/medium-sized firms

Direction of Causality		Standardized Path		Significant (S)/ Not Significant (NS)
		Small (78)	Medium (58)	
From	To			
LE_ME	WC_EI	0.61	0.72	NS
LE_ME	EF_WM	0.33	--	NS
LE_ME	EN_BF	0.47	0.44	NS
LE_ME	MK_EP	0.74	--	S
				($\Delta\chi^2 = 6.76, \Delta df = 1, p\text{-value} = 0.009$)
WC_EI	EF_WM	0.32	--	NS
WC_EI	EN_BF	--	--	--
WC_EI	MK_EP	--	--	--
EF_WM	EN_BF	--	--	--
EF_WM	MK_EP	--	--	--
EN_BF	MK_EP	--	0.29	NS

Note: Figures within brackets for groups represent sample sizes

(b) Number of employees

To group the firms based on the number of employees, the median value (27) has been taken. Table 12 shows the results of SEM multi-group analysis for the number of employees.

Table 12: SEM multi-group analysis results for the number of employees

Direction of Causality		Standardized Path Estimate		
From	To	No. of employees <= 27 (68)	No. of employees > 27 (68)	Significant (S)/ Not Significant (NS)
LE_ME	WC_EI	0.58	0.79	NS
LE_ME	EF_WM	0.35	--	NS
LE_ME	EN_BF	0.48	0.69	NS
LE_ME	MK_EP	0.95	--	S ($\Delta\chi^2 = 16.25, \Delta df = 1, p\text{-value} = 0.000$)
WC_EI	EF_WM	0.36	--	NS
WC_EI	EN_BF	--	--	--
WC_EI	MK_EP	--	--	--
EF_WM	EN_BF	--	--	--
EF_WM	MK_EP	--	--	--
EN_BF	MK_EP	--	0.75	S ($\Delta\chi^2 = 17.22, \Delta df = 1, p\text{-value} = 0.000$)

Note: Figures within brackets for groups represent sample sizes

It is observed that simultaneously constraining all the path estimates of the corresponding structural relationships to be equal, as per *H1-H10*, results in a significantly worse fit with $\Delta\chi^2 = 27.905, \Delta df = 10$, and $p\text{-value} = 0.002$, vis-à-vis the unconstrained model, which means the number of employees has a significant moderating effect on the overall structural model.

The extant literature presents a contradictory view of the effect of firm size on the adoption of environment-friendly practices and firms' financial performance. Cordano et al. (2010) use the number of employees as a control variable and observe that the same has a significantly positive relationship with the adoption of environmental management programmes and practices. Uhlaner et al. (2012) also find that the higher the number of employees, the higher the likelihood of SMEs engaging in environmental management practices, although the effect of size is indirect rather than direct. However, none of the authors has tested the structural relationship between environmental management practices and firm performance. Boakye et al. (2020) use firm size as a control variable and observe that it has a positive effect on the relationship between sustainable environmental practices and financial performance. On the other hand, Fleiter et al. (2012) do not

find any significant effect of firm size (number of employees) on the adoption of energy efficiency measures.

In this study, for both the variables, size and number of employees, the multi-group analysis reveals statistically significant differences for the relationship between LE_ME and MK_EP, indicating that smaller firms show a stronger effect of the leadership and ethical orientation of owners/managers and employees on firms' financial and non-financial performance than for larger firms. Although the multi-group analysis does not show statistically significant differences for the relationships between LE_ME and EF_WM, and also between WC_EI and EF_WM, the standardized path estimates for both the variables, size and number of employees, indicate that for smaller firms the relationships between the leadership and ethical orientation of owners/managers and employees and environment-friendly waste management practices, and between employee-related social sustainability practices and environment-friendly waste management practices, are more pronounced than for larger firms. Nair and Sodhi (2012) also note that the smaller the enterprise, the greater would be the relative role of ethical and moral considerations as drivers for CSR. On the other hand, the standardized path estimates for the relationship between LE_ME and WC_EI for both the variables, size and number of employees, indicate that for larger firms, the leadership and ethical orientation of owners/managers is more positively associated with employee-related social sustainability practices than for smaller firms. This result corroborates the finding of Chasse and Courrent (2018), who note that size (number of employees) has a significant moderating effect on the positive relationship between SME owners'/managers' personal sustainability behaviour and firms' workplace practices. Also, for the relationship between EN_BF and MK_EP, both the variables, size and number of employees, indicate that larger firms have a stronger impact of environmental benefits on firm performance than for smaller firms. For the number of employees, the difference between the two groups is also statistically significant. From the results it seems that while for smaller firms, the leadership and ethical orientation of owners/managers and employees and socially responsible HRM practices are manifested in environment-friendly waste management practices, larger firms have a better ability to convert the environmental benefits realized as a result of adoption of environment-friendly practices into firms' financial and non-financial performance. Torugsa et al. (2012, 2013) find a positive role of the number of employees in the relationship between proactive CSR and financial performance, lending support to the RBV theory. Singh et al. (2015) also note from the extant literature that

larger firms have more resources to realize a higher environmental and financial performance than smaller firms.

(ii) Age of the firm

To group the firms based on their age, the median value (198 months) has been taken. Table 13 shows the results of SEM multi-group analysis for the age of the firm.

Table 13: SEM multi-group analysis results for the age of the firm

Direction of Causality		Standardized Path Estimate		
From	To	Firm age <=	Firm age >	Significant (S)/ Not Significant (NS)
		198 months (68)	198 months (68)	
LE_ME	WC_EI	0.53	0.72	NS
LE_ME	EF_WM	--	--	--
LE_ME	EN_BF	0.35	0.48	NS
LE_ME	MK_EP	0.57	0.60	NS
WC_EI	EF_WM	0.42	0.35	NS
WC_EI	EN_BF	--	--	--
WC_EI	MK_EP	--	--	--
EF_WM	EN_BF	--	--	--
EF_WM	MK_EP	--	--	--
EN_BF	MK_EP	--	0.25	NS

Note: Figures within brackets for groups represent sample sizes

Although the difference between the two groups is not statistically significant for none of the relationships, it may be seen that the relationships among the leadership and ethical orientation of owners/managers and employees, employee-related social sustainability practices, environmental benefits and firm performance are stronger for older firms than for younger firms. The results indicate that the older and more mature a firm is, the stronger is the impact of adoption of sustainable practices on firm performance, generally supporting the observation of the extant literature.

Roxas and Coetzer (2012) examine the moderating roles of age and size (number of employees) of a firm in the structural relationships among the institutional environment, owners'/managers' attitudes towards the natural environment and environmental sustainability orientation of small firms. The authors find that while the regulatory dimension of the institutional environment has a stronger effect on owners'/managers' attitudes towards the natural environment for younger and smaller firms, the normative dimension of the institutional environment has a stronger effect on owners'/managers' attitudes towards the natural environment for older and larger firms. The association between owners'/managers' attitudes towards the natural environment and firms' environmental sustainability orientation remains strong irrespective of their age and size. However, the authors have not tested the moderating roles of age and size of a firm on the relationship between environmental management practices and environmental/firm performance.

While Singh et al. (2015) note from the literature that larger firms are more likely to adopt environment-friendly practices than smaller firms, their hypothesis, i.e. younger firms are more likely to adopt environment-friendly practices than older firms is not supported.

Dekker and Hasso (2016) observe that size (annual sales and number of employees) and age of a family firm are positively related to the firm's environmental performance focus, i.e. the larger the size and the older the firm is, the higher is the focus of the firm on environmental performance. However, the authors do not consider actual environmental performance outcomes, nor do they test the moderating role of age and size of a firm on the structural relationship between environmental practices and environmental performance. In the authors' own words, they posit that family firms will have a greater desire than non-family firms for improved environmental performance; however, whether this desire translates into improved environmental performance is a separate issue.

Ashton et al. (2017) note that while age of the firm is unrelated to the adoption of green practices, size (number of employees) and sales are indeed positively related to the adoption of green practices by SMEs. However, the authors do not test any structural relationship, as is done in this study.

Courrent et al. (2018) find that firm size (number of employees) has a slightly negative impact on firm performance while the effect of firm age is insignificant. Chasse and Courrent (2018) also do

not find any significant effect of firm age on the environmental, workplace and community dimensions of corporate sustainability practices.

(iii) Management of the firm

The firms have been grouped based on whether they are family-managed or professionally-managed. Table 14 shows the results of SEM multi-group analysis based on management of the firm.

Table 14: SEM multi-group analysis results based on management of the firm

Direction of Causality		Standardized Path Estimate		Significant (S)/ Not Significant (NS)
From	To	Family- managed (79)	Professionally- managed (57)	
LE_ME	WC_EI	0.70	0.42	NS
LE_ME	EF_WM	0.39	--	NS
LE_ME	EN_BF	0.47	0.28	NS
LE_ME	MK_EP	0.58	0.50	NS
WC_EI	EF_WM	0.27	0.54	NS
WC_EI	EN_BF	--	0.47	S ($\Delta\chi^2 = 2.71, \Delta df = 1, p\text{-value} = 0.100$)
WC_EI	MK_EP	--	--	--
EF_WM	EN_BF	--	-0.33	S ($\Delta\chi^2 = 4.87, \Delta df = 1, p\text{-value} = 0.027$)
EF_WM	MK_EP	--	--	--
EN_BF	MK_EP	--	0.32	NS

Note: Figures within brackets for groups represent sample sizes

Dekker and Hasso (2016) note that the extant literature highlights more positive relationships among SME owners'/managers' values, beliefs and attitudes towards the natural environment, adoption of environmental management practices and environmental performance in family firms than in non-family firms. The authors observe that the relationships are stronger when family firms are embedded in their local communities.

If we compare the standardized path estimates between LE_ME and EF_WM for the two groups, it definitely supports the proposition of Berrone et al. (2010) and Sharma and Sharma (2011) that the leadership, attitude and ethical orientation of owners/managers and employees of a family-managed SME more strongly and positively influence the adoption of proactive environmental strategies than for a non-family, professionally-managed SME. The same conclusion may be drawn for the relationship between LE_ME and WC_EI that the leadership and ethical orientation of owners/managers and employees has a stronger positive effect on employee-related social sustainability practices for a family-managed SME than for a professionally-managed SME. Moreover, the relationships between LE_ME and EN_BF, and between LE_ME and MK_EP, show that for a family-managed SME, leadership and ethical orientation has a more positive influence on environmental benefits and firm performance than for a professionally-managed SME. Uhlaner et al. (2012) also note that SMEs with higher family influence are more likely to engage in environmental management practices and the effect becomes stronger for SMEs with more number of owners. On the other hand, a significant difference between the two groups is observed in terms of the relationship between WC_EI and EN_BF indicating that professionally-managed SMEs are better able to realize environmental benefits as a result of their socially sustainable HRM practices than family-managed SMEs. However, the significant difference between the two groups in terms of the relationship between EF_WM and EN_BF reveals that for professionally-managed SMEs, investments in environment-friendly waste management practices have an adverse impact on environmental benefits.

(iv) ISO 9000 certification

Table 15 shows the results of SEM multi-group analysis based on whether the firms are ISO 9000-certified or not.

Table 15: SEM multi-group analysis results based on ISO 9000 certification

Direction of Causality		Standardized Path Estimate		Significant (S)/ Not Significant (NS)
From	To	Yes (45)	No (91)	
LE_ME	WC_EI	0.60	0.65	NS
LE_ME	EF_WM	0.32	--	NS
LE_ME	EN_BF	--	0.58	S

($\Delta\chi^2 = 3.41$, $\Delta df = 1$, p -value = 0.065)

LE_ME	MK_EP	0.66	0.62	NS
WC_EI	EF_WM	0.38	0.42	NS
WC_EI	EN_BF	0.30	--	NS
WC_EI	MK_EP	--	--	--
EF_WM	EN_BF	-0.19	--	NS
EF_WM	MK_EP	--	--	--
EN_BF	MK_EP	--	--	--

Note: Figures within brackets for groups represent sample sizes

Although, in their study, Dey et al. (2020) mention that ISO 9000 certifications help in achieving environmental sustainability, the same is not revealed in the present study. In fact, a significant positive relationship is observed between the leadership and ethical orientation of owners/managers and employees and environmental benefits for SMEs that are not ISO 9000-certified vis-à-vis SMEs that are ISO 9000-certified. This result corroborates the observation of Gadenne et al. (2009), i.e. SMEs may engage in waste management and recycling activities, and realize environmental benefits; however, they may not formally engage in environmental certification processes. Therefore, the present study does not support the proposition that SMEs' ISO 9000 certifications positively influence their adoption of sustainable environmental and social practices and the consequent influence on firm performance.

(v) Awareness of owners/managers

Respondents have been asked about their awareness of sustainability/regulatory issues on a scale of 'low', 'moderate' and 'high'. The numbers of respondents, who have indicated 'low', 'moderate' and 'high' awareness, are 6, 74 and 56, respectively. For the purpose of SEM multi-group analysis, respondents, who have marked 'low' and 'moderate', have been clubbed and thus two groups have been formed – 'low to moderate' and 'high' awareness. Table 16 shows the results of SEM multi-group analysis for these two groups.

Table 16: SEM multi-group analysis results with respect to the awareness of owners/managers

Direction of Causality	Standardized Path Estimate	Significant (S)/ Not Significant (NS)
------------------------	----------------------------	------------------------------------------

From	To	Low to Moderate (80)	High (56)	
LE_ME	WC_EI	0.66	0.49	NS
LE_ME	EF_WM	0.37	--	NS
LE_ME	EN_BF	0.48	0.41	NS
LE_ME	MK_EP	0.73	0.38	NS
				S
WC_EI	EF_WM	0.27	0.52	($\Delta\chi^2 = 3.57, \Delta df = 1, p\text{-value} = 0.059$)
WC_EI	EN_BF	--	0.39	NS
WC_EI	MK_EP	--	--	--
EF_WM	EN_BF	--	--	--
EF_WM	MK_EP	--	--	--
EN_BF	MK_EP	--	0.40	NS

Note: Figures within brackets for groups represent sample sizes

The difference between the two groups is statistically significant for the relationship between WC_EI and EF_WM, indicating that for SMEs with high awareness of owners/managers, employee-related social sustainability practices have a stronger effect on environment-friendly waste management practices than for SMEs with low-to-moderate awareness of owners/managers. Although the difference between the two groups is not statistically significant for the relationships between WC_EI and EN_BF, and between EN_BF and MK_EP, it may be inferred from the standardized path estimates for the two groups that while the relationships are insignificant for SMEs with low-to-moderate awareness of owners/managers, they are significant for SMEs with high awareness of owners/managers, implying the indirect relationship between employee-related social sustainability practices and firm performance through the mediating role of environmental benefits. Prashar and Sunder (2020) also mention the moderating role of firm's awareness of sustainability in the positive relationship between sustainable practices and financial performance.

For other structural relationships, the benefits of high awareness over low-to-moderate awareness are not observed. Although Gadenne et al. (2009) find support for the proposition that owners'/managers' awareness is positively associated with a higher level of environmental practices such as waste reduction and recycling, the same has not received consistent support in the literature. In a study of Indian SMEs, Nulkar (2014) notes that high awareness may not always lead to adoption of environmental practices because SMEs may lack the required expertise to

explore the opportunities and recognize the business gains from environmental initiatives, and also competitive pressure may deter them from making investments in areas where they do not see any immediate business benefits. Fernandez and Camacho (2016) note from the comments made by one of the interviewees of their study that people say they are aware of sustainability issues, but the awareness is not always reflected in actions. Lack of knowledge and low awareness (Revell and Blackburn, 2007; Gadenne et al., 2009), particularly in developing countries (Bakos et al., 2020), has been cited as a major hindrance to implementing sustainable practices by SMEs.

(vi) Owners’/managers’ educational qualification

Respondents have been asked to indicate the educational qualification of owners/managers. Based on their responses, two groups have been formed – ‘graduate or below’ and ‘post-graduate or above’. Table 17 shows the results of SEM multi-group analysis for the educational qualification of owners/managers.

Table 17: SEM multi-group analysis results for the educational qualification of owners/managers

Direction of Causality		Standardized Path		Significant (S)/ Not Significant (NS)
		Estimate		
From	To	Graduate or below (79)	Post- Graduate or above (57)	
LE_ME	WC_EI	0.66	0.54	NS
LE_ME	EF_WM	0.34	--	NS
LE_ME	EN_BF	0.60	--	NS
LE_ME	MK_EP	0.48	0.80	NS
WC_EI	EF_WM	--	0.64	S
($\Delta\chi^2 = 3.90, \Delta df = 1, p\text{-value} = 0.048$)				
WC_EI	EN_BF	--	0.38	NS
WC_EI	MK_EP	--	--	--
EF_WM	EN_BF	--	--	--
EF_WM	MK_EP	--	--	--
EN_BF	MK_EP	0.27	0.28	NS

Note: Figures within brackets for groups represent sample sizes

The difference between the two groups is statistically significant for the relationship between WC_EI and EF_WM. While the relationship is not statistically significant for the group with educational qualification: graduate or below, for the group with educational qualification: post-graduate or above, there is a strong positive association between socially responsible HRM practices and eco-friendly waste management practices. Although the difference between the two groups is not statistically significant, the relationships between LE_ME and MK_EP, and also between WC_EI and EN_BF, are stronger for the group with higher educational qualifications than for the other group, indicating that the leadership abilities and ethical orientation of, and socially responsible HRM practices by, SME owners/managers with higher educational qualifications are possibly more strongly associated with improved firm performance, and environmental benefits, respectively, than for owners/managers with lower educational qualifications. However, although the difference between the two groups is not statistically significant, LE_ME has stronger relationships with WC_EI, EF_WM and EN_BF for owners/managers with lower educational qualifications than for owners/managers with higher educational qualifications. In fact, for owners/managers with higher educational qualifications, LE_ME has no significant relationships with EF_WM and EN_BF. This result points to the fact that the leadership and ethical orientation of owners/managers with lower educational qualifications may possibly be more strongly associated with sustainable waste management and socially responsible HRM practices and environmental benefits than for owners/managers with higher educational qualifications. This observation is in line with the comment made by Gadenne et al. (2009), i.e. higher education has been shown to be associated with a higher level of environmental concern, but not necessarily with environmental behaviour. In their study, Gadenne et al. (2009) also do not find support for the propositions that firms with highly educated owners/managers are more likely to have positive environmental attitudes and a higher level of environmental awareness.

(vii) Education level of employees

Respondents have been asked about the general education level of employees. Based on the responses, two groups have been formed – ‘school level or below’ and ‘high school or above’. Table 18 shows the results of SEM multi-group analysis for the two groups.

Table 18: SEM multi-group analysis results for the education level of employees

Direction of Causality		Standardized Path Estimate		Significant (S)/ Not Significant (NS)
From	To	School level or below (44)	High school or above (92)	
LE_ME	WC_EI	--	0.76	NS
LE_ME	EF_WM	--	--	-- S
LE_ME	EN_BF	0.34	0.27	($\Delta\chi^2 = 3.16$, $\Delta df = 1$, p -value = 0.076)
LE_ME	MK_EP	0.47	0.54	NS S
WC_EI	EF_WM	--	0.66	($\Delta\chi^2 = 12.85$, $\Delta df = 1$, p -value = 0.000) S
WC_EI	EN_BF	-0.22	0.51	($\Delta\chi^2 = 9.56$, $\Delta df = 1$, p -value = 0.002)
WC_EI	MK_EP	-0.29	--	NS S
EF_WM	EN_BF	-0.33	--	($\Delta\chi^2 = 4.47$, $\Delta df = 1$, p -value = 0.034)
EF_WM	MK_EP	--	--	-- S
EN_BF	MK_EP	--	0.43	($\Delta\chi^2 = 9.75$, $\Delta df = 1$, p -value = 0.002)

Note: Figures within brackets for groups represent sample sizes

It is observed that simultaneously constraining all the path estimates of the corresponding structural relationships to be equal, as per *H1-H10*, results in a significantly worse fit with $\Delta\chi^2 = 33.182$, $\Delta df = 10$ and p -value = 0.000, vis-à-vis the unconstrained model, which means the education level of employees has a significant moderating effect on the overall structural model.

It is observed that the education level of employees has a significant moderating effect on the structural relationships. The higher the education level of employees, the stronger the relationships owners'/managers' leadership abilities and ethical orientation share with socially responsible HRM practices and firm performance, socially responsible HRM practices share with environment-friendly waste management practices and environmental benefits, and environmental benefits share with firm performance realized by SMEs due to adoption of sustainable business practices. As observed in Table 18, the maximum number of significant multi-group differences is realized for the education level of employees among all the moderating variables under

consideration, indicating that the general education level of employees may have a significant influence on SMEs' adoption of sustainable environmental and social practices and their impact on firms' financial/non-financial performance. Bakos et al. (2020) and Dey et al. (2020) also mention the lack of educated workers and qualified professionals as one of the major barriers to implementation of sustainable practices in SMEs.

Discussion of results

The present study finds a strong association between the leadership and ethical orientation of owners/managers and employees, environmental and social practices, environmental benefits and firms' financial and non-financial performance. In the context of Indian manufacturing SMEs, Gandhi et al. (2018) note that strong leadership, as part of top management commitment, outranks all other drivers of sustainability. The authors also note that strong leadership ensures effective skill development and knowledge enhancement among employees, which facilitates the implementation of sustainable business practices and improves firm performance.

The study does not find any significant influence of external drivers on either sustainable business practices or firm performance. Table 1 also reveals low item means for the external drivers of sustainability. In fact, for *Factor 1: Customer Pressure and Industry Facilitation* and *Factor 3: Customer Facilitation*, the corresponding item means are among the lowest. This is consistent with the observation of Revell and Blackburn (2007), who cite the lack of customer and supply chain pressure and awareness of regulations as a major cause for low adoption of environmental practices among SMEs. Nulkar (2014) notes that in developing countries like India, enforcement of regulations is generally inconsistent, making it easy for some firms to evade compliance. Roxas and Coetzer (2012) find that the regulatory dimension of the institutional environment has the least impact on owners'/managers' attitudes towards the natural environment. Lewis et al. (2015), quoting from the extant literature, comment that external pressure is rarely reported by SMEs as having any influence on their environmental practices, and the lack of pressure may be traced to the lack of visibility of small firms in comparison to large firms. Ashton et al. (2017) note that SMEs are motivated to adopt green business practices more by internal factors than by external pressures from the government and customers. Table 2 also shows that all the item means for the internal drivers of sustainability are above 4 and much higher than the item means for the external drivers of sustainability, as shown in Table 1. In a study on Indian manufacturing SMEs, Gandhi

et al. (2018) find that public pressure in the form of pressures from local communities, local administration, NGOs and media is ranked very low in a list of drivers of sustainability, the possible reason being that in emerging countries like India, there is a lack of awareness and understanding about the importance of green products and processes, the authors note. Bakos et al. (2020) also note that regulations in transitional/developing economies are not as stringent as in developed economies. Further, Boakye et al. (2020) find that there is no significant relationship between compliance with regulations and financial performance for UK-based SMEs.

Dey et al. (2020) note that waste management practices may enhance SMEs' environmental, social and economic performance. However, this study does not reveal any relationship between waste management practices and environmental/social benefits and firm performance. Gadenne et al. (2009) note that SMEs may be expected to reduce waste although there might not be an economic return to their businesses. SME owners/managers may voluntarily adopt environment-friendly practices because of their beliefs, attitudes and ethical orientation without giving due consideration to financial implications. In a study of UK SMEs, Dey et al. (2020) do not find any significant relationship between waste management practices and environmental performance. In a study of French SMEs, Courrent et al. (2018) do not find any significant relationship between environmental practices and firms' financial and non-financial performance. In a study of Australian SMEs, Torugsa et al. (2013) also do not find any positive association between the environmental dimension of proactive CSR strategies and financial performance. The reason may be that for Indian manufacturing SMEs, investments made in waste management practices may not commensurately enhance firms' environmental benefits/financial performance. In fact, as noted in the multi-group analysis, for some of the groups (e.g. when firms are professionally-managed rather than family-managed, firms are ISO 9000-certified and the education level of employees is school level or below), waste management practices have adversely impacted firms' environmental benefits.

The study does not find a direct relationship between socially responsible HRM practices and firms' financial and non-financial performance; however, it is observed that the relationship between firms' employee-related social sustainability practices and performance is fully mediated by the environmental benefits realized by firms as a result of their adoption of environmental management practices. This result supports the observation of Wu et al. (2015) that the extant

literature finds a positive relationship between firms' sustainable business practices and financial performance mediated by environmental and social performance. This result is also consistent with the observation of Dey et al. (2020) that very few researchers find direct relationships between socially responsible practices and firm performance (e.g. Courrent et al. (2018) find a significantly positive relationship between SMEs' social practices in the workplace and their financial and non-financial performance). However, it is also noted that environment-friendly SMEs have satisfied employees with higher environmental/economic performance. Torugsa et al. (2013) also do not find support for the hypothesis that social sustainability practices are positively associated with SME financial performance. However, the authors do find support for the hypothesis that the interaction effect of all the three dimensions – economic, environmental and social – of sustainability is positively associated with financial performance. The authors comment that SMEs with a limited availability of resources may not wish to invest heavily in environmental and social sustainability practices if the gap between investments and financial returns is significant, especially in the short term. However, the positive effect of the interaction of the dimensions of sustainability on financial performance shows that SMEs need to identify and adopt the sustainability practices for which they are best equipped.

The study also does not find relationships among the leadership and ethical orientation of owners/managers, firms' community-related social sustainability practices and financial and non-financial performance. Gadenne et al. (2009) do not find support for the proposition that owners'/managers' environmental attitudes are positively associated with community-related environmental support practices. Courrent et al. (2018) also do not find a significant relationship between SMEs' social practices in the community and firms' financial and non-financial performance, probably because investments in local communities do not translate into firms' financial performance and competitiveness, at least in the short term. It is to be seen whether these investments bear fruit in the long term, through a longitudinal study. Bartolacci et al. (2020) also note that while firms' sustainable management practices towards employees may have a positive impact on firm performance, the same may be true for community practices only to a lesser extent.

Managerial implications

In this section, the implications of this research for Indian manufacturing SMEs, government/regulatory authorities and industry associations/chambers of commerce are presented.

Implications for Indian manufacturing SMEs

The survey reveals that only about 33% and 5% of the respondents are ISO 9000 and ISO 14000-certified, respectively, and about 10% of them have implemented an EMS. As evidenced from the extant literature, the level of adoption of ISO 9000 and ISO 14000 certifications and implementation of an EMS in Indian SMEs is extremely low compared to large companies in India (See, for example, Mitra and Datta, 2014) and SMEs in developed countries. Although the current study does not find any association between ISO 9000 certifications and SMEs' adoption of sustainable practices and the consequent impact on firm performance, Dey et al. (2020) note that ISO 9000 certifications may help in achieving environmental sustainability. Since quality control and pollution prevention and control are interlinked (zero defect \equiv zero waste), and quality control tools are equally applicable to pollution prevention and control (Porter and van der Linde, 1995; Corbett and Klassen, 2006), Indian SMEs must proactively embrace ISO 9000 and ISO 14000 certifications. This is particularly relevant in the context of the GoI's 'make in India' initiative with 'zero defect and zero effect', which means better quality products with lower environmental pollution. Some of the respondents have also highlighted the pollution factor and emphasized that the environmental issues should be given due consideration.

The survey data show that currently Indian manufacturing SMEs pay minimal attention to supplier collaboration for sustainable procurement, and environment-friendly energy/resource consumption, manufacturing processes, packaging, transportation and office practices. As Table 3 shows, the means of the items related to *Factor 2: Sustainable Procurement*, *Factor 3: Supplier Collaboration, Incentive and Training Programme*, *Factor 4: Sustainable Energy and Resource Consumption* and *Factor 5: Process Efficiency and Environmental Policy*, are all below 4. Similarly, Table 4 shows that all the item means related to *Factor 3: Economic Packaging and Transportation*, *Factor 4: Water and Energy Efficiency in Office* and *Factor 5: Environment-friendly Transportation*, are below 4. Further, none of the factors appears in the structural model.

In order to ensure environmental sustainability, SMEs need to focus more on supplier collaboration and environment-friendly manufacturing, logistics and office practices.

Indian manufacturing SMEs are also not very active in serving the local community. As shown in Table 5, all items related to *Factor 2: Services rendered to Local Community* and *Factor 4: Local Community Development* have means less than 4. Although investments in the local community may not bring in immediate financial gains, they are expected to enhance the image and reputation of firms, build a strong leadership and competitive position for them, and thereby ensure a better financial performance in the long term. Therefore, expenses incurred in community projects must be viewed by SMEs as investments, not as costs, with a long-term view.

The results of SEM multi-group analysis in Table 18 show that the education level of employees has a strong positive association among the leadership and ethical orientation of owners/managers and employees, firms' adoption of sustainable environmental and social practices, environmental benefits realized by firms and firms' financial/non-financial performance. Therefore, firms should give due importance to employee selection, satisfaction and retention. As already discussed, and also evidenced in the extant literature, better talent acquisition, employee satisfaction, loyalty and retention have a significant effect on firms' adoption of sustainable practices, and their competitive positioning and financial performance.

From the survey data, it has been observed that 97, i.e. 71.32%, of the respondents have rated their networking/alliances with industry associations/peers as 'low-to-moderate'. Since networking and forming alliances with industry associations and peers help generate awareness of regulatory and sustainability issues, and share knowledge and resources, SMEs must join associations and form alliances with their peers in industry.

Implications for government/regulatory authorities

Environmental regulations are poorly developed, especially for SMEs, in developing countries. Lee and Klassen (2008) note that SMEs are rarely subjected to the intense scrutiny that large companies face from governments and environmental activists. The present study also does not find any role of regulations and government interventions in the relationship between sustainable business practices and firm performance. Gadenne et al. (2009) note that owners/managers of SMEs have poor knowledge of environmental legislations and standards, and this may explain the

low level of environmental management practices in SMEs. Table 16 shows that 80, i.e. 58.82%, of the respondents have low-to-moderate awareness of regulatory and sustainability issues. Also, Item 7(e): *Awareness/training programmes organized by govt.* in Table 1, having a mean below 4, reveals that there is a lack in awareness of regulations among SMEs and training programmes organized by the government. Regulations/training programmes organized by the government may raise awareness and provide SMEs with a clear guideline for implementation of environmental practices. This is important since the results of SEM multi-group analysis in Table 16 indicate that SMEs with high awareness of regulatory and sustainability issues are in a better position than their counterparts with low-to-moderate awareness in terms of translating socially responsible HRM practices into eco-friendly waste management practices, environmental benefits and firm performance. Johnson and Schaltegger (2016) note that on the one hand, SMEs face little regulatory pressure, on the other, environmental and social sustainability tools that have been developed keeping mainly large companies in mind, are not relevant for SMEs. The authors suggest that these sustainability tools must be simple, user-friendly, cost-effective, flexible and customizable for SMEs to understand, accept and operationalize. This is particularly relevant in the context of the response received from some of the respondents that government rules and regulations should be made simpler and should not be revised frequently. As far as taxation is concerned, India came under the goods and services tax (GST) from July 1, 2017. While most of the respondents have appreciated the introduction of GST in terms of getting payments in time, reducing volumes of bad debts, etc., some of them have also mentioned problems such as high GST rates, lengthy paperwork, increasing manufacturing costs, cash flow issues, lack of awareness and adoption of GST among suppliers and customers, among others. The issues faced by SMEs due to the introduction of GST may be looked into by the government.

Besides regulations, the government must also think of extending technical and financial support in the form of subsidies, easy credit facilities, soft loans and tax exemptions to SMEs because many SMEs lack adequate financial resources to effectively implement environmental management practices (Gadenne et al., 2009; Fleiter et al., 2012; Nair and Sodhi, 2012; Ashton et al., 2017; Bakos et al., 2020). That item 7(a): *Govt. regulations/legislations* and item 7(c): *Financial incentives provided by govt. (soft loan/tax exemption/subsidy)* have the highest means, 4.07 and 4.11, respectively, as shown in Table 1, supports the role of the government in framing regulations and providing financial assistance to SMEs. Some respondents have indeed mentioned

their expectation of financial support, soft loans and reduced interest rates on bank loans from the government. On the other hand, item 7(d): *Technical support/facilitation provided by govt.* in Table 1, with a mean below 4, indicates that the government needs to do more in terms of extending technical support to SMEs. One of the respondents has highlighted the need for training and introduction of modern technologies to help set up more manufacturing SMEs, reduce dependence on imports and make the GoI's 'make in India' initiative a reality.

In addition, the government might exert an indirect pressure on SMEs by imposing stringent environmental and social regulations on large companies, who would in turn put pressure on their suppliers, many of which happen to be SMEs, to adopt sustainable business practices. Lee and Klassen (2008) mention that buyer pressure may initiate and enable the improvement of SME suppliers' environmental capabilities. Nair and Sodhi (2012) note that currently customer/supply chain pressure on SMEs is indeed low and increasing customer requirements in terms of compliance with environmental and social norms is a positive way of promoting sustainability among SMEs. Johnson and Schaltegger (2016) also note that many large companies have made a precondition for their SME suppliers to adopt an EMS or conduct social audits for doing business.

Implications for industry associations/chambers of commerce

Industry associations and chambers of commerce have a role to play in organizing training programmes for generation of awareness of sustainability among SMEs and helping them form networks/alliances with their peers in industry for sharing of knowledge and resources. A below-4 mean rating for item 7(p): *Awareness and training programmes conducted by industry associations/chambers of commerce*, as shown in Table 1, indicates that currently the effort put in by industry associations and chambers of commerce towards conducting training programmes and generating awareness for SMEs is inadequate.

The literature is abuzz with the importance of training, networks and alliances. For example, in the Indian context, Nulkar (2014) prescribes that industry associations and leading chambers of commerce, such as Confederation of Indian Industry (CII) and Federation of Indian Chambers of Commerce and Industry (FICCI), should step in to increase SME awareness, and provide them with training and assistance in greening, which are otherwise not available to SMEs.

Lawrence et al. (2006) note that networks and alliances encourage organizational learning and influence the adoption of sustainable environmental and social practices by SMEs. Lewis and Cassells (2010) mention that inter-firm relationships and networks can play a key role in informing and influencing SMEs to be more active in terms of implementing environmental practices. Nair and Sodhi (2012) also mention that SMEs should exploit networking opportunities to access new information.

Network membership is positively associated with adopting sustainably-oriented practices and inter-firm collaboration is an enabler of environmentally responsible behaviour in small firms. Collaborative and cooperative relationships help SMEs overcome some of the barriers to implementing environmental management practices and simplify the implementation process (Lewis et al., 2015; Johnson and Schaltegger, 2016). Chen et al. (2017) also note that inter-firm alliances develop new competencies and promote future growth in SMEs.

Active participation in networks and involvement in strategic alliances help SMEs acquire and share knowledge on sustainability (Johnson and Schaltegger, 2016; Johnson, 2017). Also, peer learning via industry associations appears to be effective in helping SMEs adopt environment-friendly practices (Ashton et al., 2017).

As already mentioned, given that 71.32% of the respondents have indicated a low-to-moderate level of networking/alliances with industry associations/peers, there is a lot that industry associations and chambers of commerce can do to organize training programmes for SMEs to raise their awareness of regulatory and sustainability issues and facilitate forming networks/alliances with their peers in industry for sharing of knowledge and resources.

Conclusions and directions for future research

In this paper, an exploratory study of Indian manufacturing SMEs has been conducted in terms of the causal relationships among the drivers of sustainability, sustainable business practices and firm performance. Majority of the extant literature on sustainability in SMEs consider only the economic and environmental dimensions of sustainability while this paper considers all the three dimensions – economic, environmental and social – of sustainability. Also, most of the literatures explore the causal relationships either between the drivers of sustainability and sustainable business practices or between sustainable business practices and firms' financial/non-financial

performance. This paper takes an integrative view, and simultaneously explores the causal relationships among the drivers of sustainability, sustainable environmental and social practices and firms' financial/non-financial performance. Research on sustainability in Indian SMEs has been few and far between. A scale, relevant to the Indian context, has been developed in this paper, which can be used for future research on Indian SMEs. Results indicate that the leadership and ethical orientation of owners/managers and employees has a strong positive association with sustainable waste management and HRM practices, environmental benefits realized by firms due to adoption of sustainable practices, and firms' financial/non-financial performance. While no association has been found between sustainable waste management practices and environmental benefits or firm performance, a strong positive association has been found between socially sustainable HRM practices and eco-friendly waste management. Although no direct relationship has been found between socially sustainable HRM practices and firm performance, an indirect relationship has been found between them through the mediating role of environmental benefits. The role of moderating variables in the causal relationships has also been explored and SEM multi-group analyses, based on the moderating variables, have been conducted. Managerial implications have been drawn for SMEs, government/regulatory authorities and industry associations/chambers of commerce, which are expected to provide a guideline for removing the roadblocks and facilitate adoption of sustainable environmental and social practices to a greater extent by Indian manufacturing SMEs.

As far as the directions of future research are concerned, a longitudinal study (Leonidou et al., 2017; Chasse and Courrent, 2018), using the scale developed in this paper, may be an opportunity that can be explored, especially in view of the new definition of MSME coming into effect since July, 2020. The present cross-sectional study had been conducted before COVID-19 set in. Therefore, exploring whether there is a change in the measurement and structural models post COVID-19 can be an interesting direction for future research. Locations of SMEs for this study have been limited to a few Indian states, as mentioned before, based on the prevalence of SMEs and SME clusters, which is akin to convenience sampling. Future studies may be more broad-based and may cover pan-India with a much larger sample size for generalizability of results. Also, the survey instrument may be administered to SMEs in other developed and developing countries and the results compared for identifying the similarities and differences for SMEs belonging to different countries (Courrent et al., 2018). The results of the study are based on responses and

interviews of the survey participants. A triangulation method involving multiple sources of primary and secondary information and direct observations by researchers would address the social desirability bias, if any, and provide more validity to the results (Roxas and Coetzer, 2012; Chasse and Courrent, 2018).

The study has focused on five sectors of manufacturing, namely food and beverages, textile, engineering, leather and chemicals. Nulkar (2014) notes that Indian SMEs are highly heterogeneous, and hence it is impossible to generalize the results of a study. Bakos et al. (2020) also note that so far, most of the studies have been generic in nature that hardly can be generalized. Sector-specific studies (Bakos et al., 2020) will provide additional insights and highlight inter-sectoral differences in adoption of sustainable practices and their impact on firm performance. Therefore, more sector-specific studies, e.g. for the service sector (Prashar and Sunder, 2020), or within the manufacturing sector, more industry-specific studies may be conducted in future research.

Further, the same instrument may be administered to large companies and the results compared with those of the present study, which will indicate the similarities and differences across companies of all sizes and may highlight the learning for SMEs with a view to effectively incorporating sustainable operations and practices in their businesses. Gleaning insights from comparative studies into the fundamentals of sustainability and how the roadblocks can be overcome for an effective implementation of sustainable business practices in SMEs would be an interesting direction for future research.

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Appendix

Questionnaire for a survey of sustainable business practices in Indian manufacturing SMEs

Q.1-6 and Q.14-16 are open-ended questions that ask for demographic information about the firm and solicit qualitative comments from the respondent.

Q.7-13 are structured questions that seek the respondent's response on a 5-point Likert scale as follows:

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Following are the descriptions of the questions, Q7-13, and related items:

Q.7 We have adopted sustainable business practices due to the following external drivers:

- (a) Govt. regulations/legislations
- (b) Penalty/fines imposed by govt. for non-compliance
- (c) Financial incentives provided by govt. (soft loan/tax exemption/subsidy)
- (d) Technical support/facilitation provided by govt.
- (e) Awareness/training programmes organized by govt.
- (f) Pressure from NGOs, activists, community, public
- (g) Pressure from customers to implement EMS /ISO 9000/ISO 14000
- (h) Customers' consideration of environmental/ social criteria for supplier selection
- (i) Supplier environmental audit by customers
- (j) Customer requirement of disclosure of material composition data for product(s)
- (k) Financial incentive/preference given by customers
- (l) Collaboration/joint R&D with customers
- (m) Supplier training organized by customers
- (n) Pressure from competitors/peers in industry
- (o) Pressure of compliance with industry norms
- (p) Awareness and training programmes conducted by industry associations/chambers of commerce

Q.8 We have adopted sustainable business practices due to the following internal drivers:

- (a) Owners'/managers' vision, values and beliefs
- (b) Leadership abilities of owners/managers
- (c) Ethical orientation of owners/managers
- (d) Owners'/managers' commitment to environmental/social responsibility
- (e) Owners'/managers' philanthropic activities

- (f) Ethical orientation of company employees
- (g) Motivation and commitment of employees
- (h) Employee aspiration, pride and ownership
- (i) Creativity exhibited by employees
- (j) Volunteerism exhibited by employees
- (k) Reduced energy consumption in operations
- (l) Reduced cost of manufacturing/operations
- (m) Improved quality of products and processes
- (n) Increase in sales, revenue and profitability
- (o) Improved brand image/reputation of company
- (p) Improved/healthy relations with stakeholders
- (q) Improved customer satisfaction/loyalty
- (r) Improved employee satisfaction/loyalty
- (s) Better talent attraction and retention
- (t) Development of new products
- (u) Development of innovation capability
- (v) Access to new customers/new markets

Q.9 We engage in the following sustainable environmental practices with respect to procurement and product and process design in our company:

- (a) Encouraging suppliers to adopt sustainable practices
- (b) Urging suppliers to adopt EMS/ISO 9000/ISO 14000
- (c) Selecting suppliers based on sustainability criteria
- (d) Auditing suppliers' sustainability performance
- (e) Asking suppliers to declare environmental impacts of supplied materials
- (f) Financial incentive/preference given to suppliers meeting/exceeding sustainability criteria
- (g) Collaboration with suppliers for product design
- (h) Awareness and training programmes for suppliers
- (i) Reducing material variety in design of products
- (j) Eliminating hazardous materials in product design
- (k) Using bio-degradable/recyclable materials in product design
- (l) Modular product design for easy assembly/ disassembly/maintainability
- (m) Using Design-for-Environment (DfE) tools for product design
- (n) Life Cycle Analysis (LCA) for environmental impacts during and post products' useful life
- (o) Ensuring energy efficiency in process design
- (p) Energy/environmental audit from time to time

- (q) Using alternative/non-conventional energy sources
- (r) Reducing resource consumption in manufacturing
- (s) Practising lean manufacturing, Total Quality Management (TQM) and Just-in-Time (JIT)
- (t) Reducing waste and spill-over in processes
- (u) Having a formal environmental management policy

Q.10 We engage in the following sustainable environmental practices with respect to packaging, transportation, waste management and office practices in our company:

- (a) Using environment-friendly packaging materials
- (b) Reducing the quantity of packaging materials
- (c) Taking back and recycling packaging materials
- (d) Ensuring economies of scale in transportation
- (e) Using alternate modes (railways/waterways) of transportation
- (f) Using alternate fuels (e.g. CNG) for transportation
- (g) Optimizing distribution networks/vehicle routes
- (h) Segregation of hazardous and non-hazardous waste before disposal
- (i) Environmentally safe disposal of solid waste
- (j) Treatment of effluents before discharging
- (k) Separation of recyclable and non-recyclable materials from waste
- (l) Reducing energy consumption in office (lighting, heating, cooling, ventilation)
- (m) Reducing water consumption (potable/toilet)
- (n) Recycling of used toilet water post treatment
- (o) Installation of energy-/water-efficient equipment
- (p) Using alternative/non-conventional energy sources
- (q) Ensuring a safe and healthy working environment
- (r) Periodic checking of internal air and water quality
- (s) Periodic cleaning and solid waste management
- (t) Recycling of paper/stationeries/office supplies
- (u) Eco-friendly design and layout of office space
- (v) Awareness and training of company employees

Q.11 We engage in the following sustainable social practices with respect to human resources and local community development in our company:

- (a) Ensuring a safe and healthy working condition
- (b) Ensuring rights, dignity and equal opportunities

- (c) Ensuring welfare of employees and their families
- (d) Ensuring fair compensation/pay to employees
- (e) Meeting training/development needs of employees
- (f) Encouraging employees for participation/teamwork
- (g) Encouraging employees for creativity/innovation
- (h) Empowering employees for decision-making
- (i) Motivating employees by job rotation
- (j) Direct/indirect employment generation/earning opportunities for local community
- (k) Training local people for alternative livelihoods
- (l) Providing safe drinking water to local community
- (m) Building infrastructure/roads for local community
- (n) Building schools for education of local children
- (o) Arranging for health check-up/medical facilities
- (p) Improving sanitation facilities in local community
- (q) Engaging in charitable activities in cash or kind
- (r) Rendering voluntary services to local community

Q.12 By adopting sustainable business practices, our company has achieved the following environmental and employee-related social benefits:

- (a) Improved energy efficiency of operations
- (b) Reduced material and water consumption
- (c) Reduced emissions, effluents and wastes
- (d) Reduced disposal and increased recycling
- (e) Reduced penalty/fines for non-compliance
- (f) Improved satisfaction/loyalty of employees
- (g) Improved morale/motivation/commitment
- (h) Higher employee productivity and quality
- (i) Better talent acquisition and retention

Q.13 By adopting sustainable environmental and social practices, our company has achieved the following economic and strategic benefits:

- (a) Reduced cost of operations and products
- (b) Improved product and process quality
- (c) Improved efficiency and productivity
- (d) Innovation in product and process design

- (e) Increased sales volume and sales revenue
- (f) Increased market share of products
- (g) Increased organizational profits
- (h) Increased organizational growth
- (i) Increased competitive advantage
- (j) Improved relationship with stakeholders
- (k) Improved image/reputation/media coverage
- (l) Improved customer satisfaction/loyalty
- (m) Development of new products
- (n) Access to new customers/new markets

Distributions of age, number of employees and annual sales of respondent firms

	No. of respondents	% of respondents	Max	Min	Average	Std. Dev.	Median
Firm age (Months)							
<= 120	51	37.50					
> 120, <= 240	32	23.53					
> 240, <= 360	27	19.85	600	6	225.51	157.37	198
> 360, <= 480	17	12.50					
> 480	9	6.62					
Total	136	100					
No. of employees							
<= 10	28	20.60					
> 10, <= 50	67	49.26					
> 50, <= 100	19	13.97	800	2	74.49	133.10	27
> 100, <= 250	12	8.82					
> 250	10	7.35					
Total	136	100					
Annual Sales (INR Million)							
<= 50	37	46.25					
> 50, <= 250	22	27.50					
> 250, <= 500	8	10.00	13,600	0.50	391.10	1,527.70	75
> 500, <= 750	7	8.75					
> 750	6	7.50					
Total	80	100					