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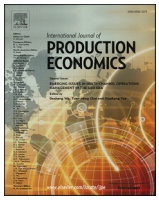

Review

Small and medium manufacturing enterprises and Asia's sustainable economic development

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ABSTRACT

In this piece, we consider the role of small and medium manufacturing enterprises in Asia's sustainable development. Asia has undeniably made huge leaps in its economic growth in the past three decades, however, this growth is not without a cost, especially to societal and environmental wellbeing. More recently, there are signs of increasing realization of this problem and some initiatives to ameliorate it. Yet, the literature has not captured some of these developments and initiatives. This article systematically introduces and summarizes the recent scholarly discussions in IJPE on SED and the role of small and medium manufacturing enterprises (SMMEs) in Asia.

1. Sustainable development (SD)

Sustainable development refers to development that meets the needs of the present generations while not compromising the needs of future generations (Batabyal and Nijkamp, 2017). Sustainable Development Goals identified by the United Nations include among others, terminating poverty while protecting the planet, mitigating climate change, and ensuring that all human beings enjoy peace and prosperity within the next ten years (United Nations Development Programme, n.d.). The focus on sustainable development emerged as a result of increased environmental awareness in the 1970s and 1980s. During this period, environmental awareness increased because of severe pollution and environmental accidents that have occurred due mainly to the attitude of passivity or sheer complicity by manufacturing, mining and oil exploration companies towards sustainability issues in general, and societal and environmental vulnerabilities in particular. The following period of increased environmental awareness has led companies to integrate sustainability into their business practices (McAloone and Pigosso, 2017).

Corporate sustainability expands the traditional bottom line focused on the financial dimension, to a triple bottom line, which incorporates the environmental and social dimensions into corporate performance (Savitz and Weber, 2014). Therefore, the sustainability performance of an organization comprises the financial, social, and environmental performance (Ndubisi and Al-Shuridah, 2019; Sousa Jabbour, Ndubisi and Seles, 2019). An organization's financial performance is commonly measured in terms of corporate profit, return on investment, or shareholder value (Savitz and Weber, 2014). Meanwhile, social and environmental performance including an organization's obligations towards society and the physical environment have been overlooked or relegated for quite a long time. *Social performance* refers to an organization's responsibility towards the labor force, its immediate community, as well as the society in general, throughout its operations. Social performance can be measured with regard to employee relations, health and safety records, community impacts, and human rights in general. *Environmental performance* considers the environmental impact of an organization referring to environmental resource consumption, polluting emissions, carbon footprint, solid and water waste, recycling, and reuse emissions (González-Benito and González-Benito, 2006; Savitz and Weber, 2014; Zhu and Sarkis, 2004). By measuring all three bottom lines, financial, social, and environmental performance, organizations consider the full cost of running their business. To achieve sustainable development, organizations should report a positive return on investment on all three of these sustainable performance measures (Savitz and Weber, 2014).

Implementing sustainable development goals is particularly crucial for countries in Asia and the Pacific. Due to rapid economic growth, this region has experienced a significant reduction of people living in

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extreme poverty, however, 844 million people are living near the poverty line, and economic growth has led to climate change and significant environmental stress (Asian Development Bank, 2017). The quantity of raw materials used to produce one unit of GDP is two times greater in the Asian region as compared to other regions; this rate of raw material consumption leads to severe environmental stress and scarcity (Sousa Jabbour et al., 2019), and often linked to climate change. Albeit climate change is a serious threat to all countries around the world, Asia's rapid economic growth fueled by massive production activities and consequent extreme resources consumption exacerbates the region's environmental vulnerability. Increase in natural disasters, which has negatively impacted food security are some of the unprecedented developments that the continent has witnessed in the last thirty years. The region has implemented various policies aimed at mitigating climate change, however, these policies have not been very successful and have left the region with difficulties in reaching sustainable development (Batabyal and Nijkam, 2017). Therefore, there is a growing need for businesses in this region to implement sustainable development goals and for researchers to pay attention to these developments and in turn contribute towards the advancement of knowledge and managerial practice.

2. Sustainable economic development (SED)

It is clearly evident that economic activities and the environment have a complex relationship. While striving for economic and social development, it is important to take environmental protection into account (Albu, 2018; Ndubisi et al., 2019). Sacrificing the environmental and societal wellbeing for economic growth would lead to disastrous consequences for future generations (Ndubisi et al., 2019). Inability to steward the earth's resources especially the irreplaceable set, would culminate to a negative sum game where the sum of winnings and losses is negative, with the ultimate victims being the future generation-the same group that we wish a better and secure future, and strive to provide for. Sustainable economic development (SED) denotes an economic development that seeks to improve economic welfare in a manner that considers both social development and environmental protection. It is a win-win-win (i.e. +, + & +) strategy for the troika interest groups - firm, society, and environment. It is a positive sum game. By job creation and decent work, quality education and retraining of employees, rise in incomes and earnings, responsible consumption and production, innovative and profitable ventures, preservation of the environment, conservation of resources, improved societal wellbeing and general living standards (Ndubisi et al., 2019) among others, sustainable economic development ensures balanced prosperity and triple wins concerning profit, people, and planet. Particularly, achieving SED involves the optimal consumption and allocation of increasingly scarce natural resources and capital accumulation aimed at the progression of human welfare (Balisacan et al., 2015).

As aforementioned, Asian nations have experienced unprecedented rapid economic growth. However, growth at such a fast rate is seldom sustainable. In much of Asia, there is a high discrepancy between economic growth and human welfare or sustainable economic development, which is a broader term that is not defined solely by financial indicators (Stough et al., 2011). While economic growth is crucial for developing nations, it should be accompanied by emphasis on the way in which this economic growth is created and distributed among the community, for it to be sustainable.

3. The role of small and medium manufacturing enterprises (SMMEs)

Small and medium enterprises (SMEs) refer to non-subsidiary, independent firms that are characterized by their financial assets and the number of employees-the upper limits of employee numbers and financial assets that define SMEs vary across countries and are contingent on the size of the domestic economy (OECD, 2005). For instance, in European Union, firms operating with less than 250 employees and an annual turnover of 50 million euros or less are classified as SME (OECD, 2005). Meanwhile, in China, the upper limits characterizing the size SMEs are 2000 employees and an annual turnover of RMB Yuan 300 million or less (around 37 million euros) (Zeng et al., 2011). SMEs have a crucial function in national economies globally by generating employment and value creation (Ndubisi, 2008; OECD, 2016). Moreover, SMEs are considered as the main form of enterprise with around 99% of all firms in many of the world's markets (Ndubisi et al., 2019; OECD, 2016).

The Asian continent has been one of the fastest-growing economic regions in the world and the region is characterized by a strong SME sector that is crucial in stimulating the economic performance in these countries (Budhwar et al., 2016; Harvie and Lee, 2005; Ndubisi, 2008). The importance of the SME sector to the Asian economy is evident. SMEs improve economic performance through job creation, wealth redistribution, poverty alleviation, and the stimulation of manufacturing exports on a countrywide level. SMEs are also characterized by developing a culture of entrepreneurship and specialized manufacturing processes that support the rural economy (Tambunan, 2009; IFC, 2010).

The Asian manufacturing sector mainly consists of small and medium manufacturing enterprises (SMMEs), which help in meeting the growing demand for goods and services of this region. These SMMEs have made significant contributions in developing countries in Asia in terms of social and economic development (Zeng et al., 2011). SMMEs improve the competitive performance of the economies in Asia, where economic development relies on this fundamental sector. Interestingly, the global market has a proven track record of rewarding economies where SMMEs and SMEs in general contribute to prolonged sustainable growth (Harvie and Lee, 2005).

4. SMMEs and SED in Asia

The involvement of SMMEs in the progression to more sustainable production and consumption of resources is essential for sustainable economic development. We reiterate that whilst the environmental footprint of SMMEs when measured on the individual scale may be comparatively small, their aggregate environmental impacts can surpass those of large organizations. SMMEs are responsible for significant raw materials consumption and waste generation; they also contribute considerably to water and air pollution (Ndubisi et al., 2019). Thus, reducing the negative environmental impacts of SMMEs by implementing and following environmental compliance programs and policies will make significant impact on Asia's overall SED achievement. The focus of SMMEs should be on the efficient use of resources along with economic growth that is in harmony with environmental and societal wellbeing (Ndubisi, 2008).

SMMEs have a crucial role in economic development and the realization of sustainable development goals in Asia for several reasons. They help to alleviate poverty by creating employment opportunities, including many that are now creating decent work for the unemployed. Decent work refers to jobs with a fair income, access to health care, and social services and workers' rights (International Labor Organization, n. d.). By decent employment of unskilled or low-skilled new entrants to the workforce, SMMEs mobilize human capital, the most plentiful resource in Asia for development (Chaturvedi and Saha, 2019), empower them, and give them a sense of pride and psychological ownership of their job and the firm. In the East and Southeast Asian region and China, these new entrants to the workforce have advanced to more skill-intensive segments through learning by doing and empowerment. Decent employment leads to salary increases, higher productivity, improved living standards, and social cohesion (Moazzem and Halim, 2019).

However, due to their negative environmental impacts, some Asian SMMEs are facing increasing pressures from international and (their

respective) government regulations, community requirements, market demand, and consumer environmentalism (Zeng et al., 2011). Indeed significant environmental damage and safety hazards linked to pollution and unsustainable exploitation of natural resources have been caused by SMMEs' operations (Zeng et al., 2011), which is at odds with sustainable economic development. It is vital therefore, to first encapsulate the various perspectives on the role of Asian SMMEs in sustainable economic development, as well as the facilitating and inhibiting factors, in the effort to develop effective strategies and interventions.

5. Methods and outcomes

Consequently, a call was sent out to the global research community for original research and review manuscripts that examine the (past, present and future) role of SMMEs in Asia's sustainable economic development. Potential contributors were encouraged to consider (but not be limited to) the following topics: Challenges to operations management in SMMEs in Asia; Data management and analysis in SMMEs in Asia; Determinants of facility location by SMMEs in Asia; Environmental quality and resource sustainability management in SMMEs in Asia; Green sourcing, green logistics, and green manufacturing by SMMEs in Asia; Human resources management and productivity in SMMEs in Asia; Innovation strategies and outcomes in SMMEs in Asia; Logistics and supply chain management in SMMEs in Asia; Manufacturing technology implementation and management in SMMEs in Asia; New product development and performance of SMMEs in Asia; Operations planning and management in SMMEs in Asia; Organizational mindfulness and mindful operations by SMMEs in Asia; Outsourcing, licensing, and non-ownership business models by SMMEs in Asia; Psychological ownership of operations and stakeholder commitment; Quality and reliability management in SMMEs in Asia; Relationship dynamics and stakeholder management in SMMEs in Asia; Small business and consumer economics in SMMEs in Asia; and Sustainability practices and development in SMMEs in Asia.

The call was well-received by the research community, judging by the size of the eventual submissions. Following the journal's standard double blind review process, ten articles were accepted. These articles address important developments in the area and highlight key areas for future studies. We thank all the contributors and reviewers for their hard work. In the following sections, we present a summary of each of the articles featured in the issue.

In the opening article, Sousa-Jabbour, Ndubisi and Seles open the discourse by looking at the progress made in the comprehension of the subject, and highlighting interesting future research directions. The authors argue that Asian SMEs play an important role in both economic growth and the achievement of the region's sustainable development goals. The article identifies the factors that influence the environmental, social and financial performance of manufacturing SMEs in Asia based on the findings of past studies. Through an integrative literature review, they identified innovation and entrepreneurial orientation, governmental actions, and lean manufacturing system as some of the prominent factors, which are driving Asian SMEs' financial, social and environmental performance.

In the second article, Geng, Lai and Zhu examine eco-innovation and its role in performance improvements among Chinese small and medium-sized manufacturing enterprises. Drawing on the contingency theory, the authors propose the existence of different firm clusters of SMMEs based on their eco-innovation implementation levels, and argue that the performance improvement associated with eco-innovation practices is contingent on the firm clusters and traditional environmental management practices, namely internal source reduction, external compliance and communication, and internal management and control. Their results reveal two firm clusters of SMMEs (eco-innovation adopters and planners) characterized by three types of eco-innovation (technology, management, and marketing) implementation. They conclude that implementing certain eco-innovation practices jointly with TEM practices is beneficial for performance improvements.

The article by Liu argues that despite a growing research interest in innovation strategies, very few studies have explored how regional environmental mechanisms affect the link between new product development and business performance of small and medium manufacturing enterprises (SMMEs) in Asia's high-velocity business environments. To address this research gap, the study integrates the dynamic capability perspective, and the institutional and entrepreneurship theory in the investigation of how the distinct regional characteristics of the intra-national market in which SMMEs operate, along with the dynamic capability of SMMEs, influence the linkage between new product development and firm performance. Based on date from 1321 samples of SMMEs selected from a nationwide survey, they found that regional institutional forces, regional entrepreneurial intensity, and dynamic capability moderate the effect of new product development on firm performance by mitigating the inherent inadequacy of and reliance on firm-specific resources by SMMEs.

In the next article, Mani, Jabbour and Mani move the discussion to supply chain practices and their impact on sustainable performance. They investigate the relationship between supply chain social sustainability practices and supply chain performance of SMMEs in India. Through semi-structured interviews of supply chain managers and practitioners, followed by a survey using structured questionnaire they collected and analyzed data from 327 respondents. Their findings suggest a positive relationship between social sustainability practices and supply chain performance that is mediated by customer, supplier, and operational performance. Additionally, firm size and investment determine supplier performance, operational performance, and customer performance, and chain performance is established.

Continuing with sustainable supply chain practices and SMMs performance, Zhou and Li explore the impact of supply chain practices and quality management on firm business performances including market share performance and innovation performance. Their results show that supply chain information sharing has significant positive impact on quality management practices and supplier specific investment, and quality management practices and supplier specific investment have significant positive impact on both market share performance and innovation performance. Moreover, innovation performance has a positive correlation with market share performance.

Next, Yang, Lau, Lee and Cheng examine how CSR practices in SMMEs lead to sustainable economic development through improved ethical behaviors. Viewed from the transaction cost economics theory and stakeholder theory, the authors examine how buyers' CSR adoption influences suppliers' CSR adoption (i.e. with or without buyers' proactive efforts) and whether CSR adoption in matched buyers and suppliers can achieve a win-win outcome for both firms in terms of enhanced financial performance. Their results support most of the hypothesized relationships.

Continuing on the CSR's role in sustainable economic development, Shou, Shao, Wang and Lai draw upon the signaling theory in their investigation of the relationship between CSR performance and trade credit of SMMEs, as well as the moderating effects of firm-level factors, namely firm size and financial slack. Using a panel dataset of 1020 Chinese SMMEs between 2010 and 2017, they find that CSR performance has a U-shaped relationship with trade credit. They further observe that firm size and financial slack negatively moderate the relationship.

According to Kamble, Gunasekaran, Ghadge and Raut, an important arear that has not been paid adequate attention is how smart manufacturing systems (SMS) compare to traditional systems in enhancing the performance of SMEs. The authors use a combination of exploratory and empirical research design to identify and validate the performance measures relevant to the evaluation of SMS investments in auto-component manufacturing MSME. They found that an SMS offer more competitive benefits compared to a traditional manufacturing system, and the planned investments in SMS can be evaluated on ten

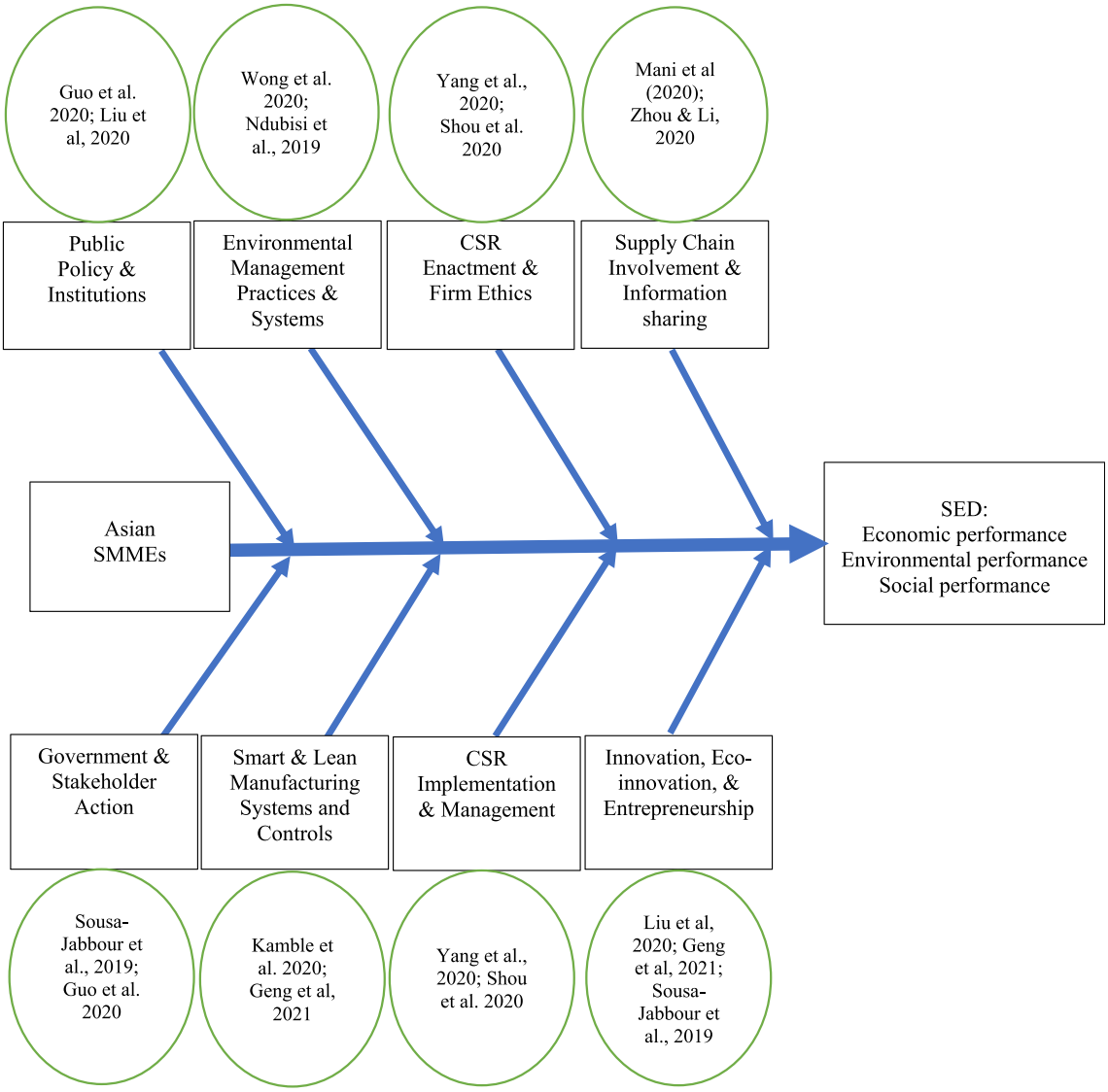

Fig. 1. Drivers of Asian SMMEs contributions to SED

performance dimensions viz., cost, quality, flexibility, time, integration, productivity, real-time diagnosis and prognosis, computing, social and ecological. On the basis of the findings, they propose a smart manufacturing performance measurement system (SMPMS) framework, which can guide practitioners in evaluating their SMS investments.

The penultimate article on environmental management systems, practices and outcomes by Wong, Wong and Boonitt argues that both small and large firms use different resource allocation patterns to benefit from implementing environmental management practices (EMPs) and environmental management systems (EMS). Results from the multi-group structural equation analyses of their survey data obtained from manufacturing firms in Hong Kong and Thailand support the resource allocation arguments - large firms use resource-demanding EMPs such as green product design and green production to improve outcomes in environmental, cost reduction and business performance, while small firms choose resource light EMPs such as green logistics and green packaging to gain only environmental and cost-reduction benefits. Thus, different resource allocation patterns exist, which enables policy makers to address various resource allocation constraints among small and large enterprises.

In the concluding article, Guo, Zou, Zhang, Bo and Li explore how financial slack affects small and medium-sized manufacturing enterprises (SMMEs) performance. By integrating the literature on financial slack and the institutional perspective, they posit that financial slack positively affects the performance of SMMEs, research and development (R&D) investment mediates the effect of financial slack on firm performance, and government subsidies and market-supporting institutions positively moderate this mediating effect. Their study indicates that financial slack promotes firm performance, and R&D investment partially mediates the relationship. Moreover, the relationship between financial slack and R&D investment is weakened at high levels of government subsidies, and the relationship between R&D investment and firm performance is strengthened at high levels of government subsidies and market-supporting institutions.

6. Concluding remarks

Economic development should be celebrated rather than economic growth per se. Asia's impressive economic growth in the past few decades has been lauded in both academic and practitioner writings but its economic development has been less impressive. In the pursuit of economic growth, many Asian economies have compromised social and environmental wellbeing and long-term profitability. Existing scholarship mostly focuses on large firms and their roles in unsustainable

economic development, thereby in/advertently exonerating SMEs, particularly those in manufacturing. Yet, as mentioned earlier, manufacturing SMEs account for a large part of the world's consumption of resources, air and water pollution, and generation of waste, wreaking an aggregate environmental damage than their large counterparts in some sectors. As such, sustainable economic development cannot be achieved without the active participation and commitment of small firms in general and the manufacturing sector in particular. To achieve sustainable development, manufacturing SMEs should simultaneously improve on their financial, social, and environmental performance (Savitz and Weber, 2014; Sousa Jabbour et al., 2019).

As aforementioned, SMMEs are an essential driver of economic growth, especially in emerging Asian economies. However, these enterprises are also responsible for a large part of industrial pollution, significant raw material consumption, and waste generation (Ndubisi et al., 2019). Thus, SMMEs should implement more sustainable development practices to diminish the negative impact of their operations on the environment and society. It adds value to the firm. Firms focused on sustainable development perform better overall in the short and long term. SMMEs should maximize their efficiency in the use of resources; they should minimize waste, and reuse or recycle waste materials. They should not only focus on product design but also on waste design (Albu, 2018). SMMEs are key stakeholders in Asia's sustainable development. We also glean from this collection more strategies SMMEs can use to enhance their contributions to sustainable economic development in Asia. As shown in Fig. 1, these strategies include among others: innovation, eco-innovation, and entrepreneurship (Liu et al., 2020; Geng et al., 2021; Sousa-Jabbour et al., 2019); information sharing and supply chain involvement (Mani et al., 2020; Zhou and Li, 2020); CSR enactment, implementation and management (Yang et al., 2020; Shou et al., 2020); smart manufacturing systems, and environmental management systems and practices (Kamble et al., 2020; Ndubisi et al., 2019; Wong et al., 2020); and public policy and government support (Guo et al., 2020).

We anticipate that the collection of articles in this issue will add momentum to the discussion on the role of small and medium manufacturing enterprises on Asia's sustainable development. It is our hope that readers will take up the challenge of exploring the subject further by considering some of the future research directions suggested in the articles featured in this issue.

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