International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 06, 2020
ISSN: 1475-7192

Green Supply Chain Management (GSCM) Practices in Malaysian SMEs: A Comparative Perspective

*[1]Zarinah Abdul Rasit ,[2] Maisurah Zakaria , [3]Marshita Hashim ,[4]Aliza Ramli ,[5]Muzrifah Mohamed

***ABSTRACT**--Environmental issues associated to rising pollution have prompted many organisations to incorporate the green supply chain management (GSCM) in producing and delivering products to their customers. Nevertheless, the implementations of GSCM practices among Malaysian Small and Medium Enterprises (SMEs) is still scarce, yet SMEs are the main contributors to the nation's economy. Consequently, the ISO 14001 certified SMEs from the manufacturing sector were selected for this study which aims to examine the relationship between GSCM practices such as eco-design, green purchasing, environmental cooperation, and reverse logistics with sustainability performance. Using the resourced based theory, this study examined the extent of GSCM practices, both extensive and less extensive GSCM practices and sustainability performance. The data was collected through an online survey questionnaire which was distributed to the respective SMEs in the manufacturing sector through email and analysed using the regression analysis. The results reveal that firms with extensive GSCM practices and less extensive GSCM practices have a strong positive relationship with sustainability performance. Only two dimensions of GSCM practices which are eco-design and environmental cooperation have significantly contributed to sustainability performance. The lack of green purchasing practices was identified among SMEs and the implementation of this practice should be encouraged. The results of this study indicate that GSCM practices are very important for organisations particularly SMEs to achieve business sustainability.*

***Keywords**-- SMEs; Green Supply Chain Management; Extensive GSCM; Less extensive GSCM; Sustainability Performance*

I. INTRODUCTION

Green supply chain management (GSCM) has become increasing prevalent and is a critical agenda among many organisations nowadays (Kirchoff, Tate, & Mollenkopf, 2016). Most organisations regardless of types are concerned with the environmental aspects in creating a long-term value and achievable sustainability in their business performance. Malaysia's manufacturing sector is the major contributor to the country's pollution index (Mohamad Ghozali Hassan, Nordin, & Ashari, 2016). Consequently, GSCM practices have become prevalent in

[1]* *Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Malaysia, zarinahar@gmail.com.*

[2] *Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Malaysia.*

[3] *Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Malaysia.*

[4] *Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Malaysia.*

[5] *Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Malaysia.*

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

this sector to manage environmental issues in order to improve the efficiency and effectiveness of their productions (Wooi & Zailani, 2010). Furthermore, Green technology development is the focus of the Malaysian Economic Transformation Programme (ETP) in the effort to achieve the developed-nation status (Yacob, Aziz, Makmor, & Zin, 2013). Green technology is defined as "the application of technology to conserve natural environment and resources and to curb negative impacts of human involvement". According to The Star Online (2017), SMEs recorded stronger growth in the national gross domestic product (GDP) and provided a higher contribution to Malaysia GDP. However, SMEs are less likely to engage in environmental practices compared to large organisations (Yacob et al., 2013) because of their lack of resources such as knowledge and expertise to incorporate all the green practices into their business practices (Ghazilla et al., 2015). The benefits of environmental related practices are not realised by most of SMEs because of the lack of understanding on environmental risks and benefits (Musa & Chinniah, 2016).

A supply chain is defined as a network comprises of all parties directly or indirectly involved in production and delivery to final customers such as suppliers, manufacturers, distributors, wholesalers, and retailers. It is crucial for the supply chain activities in businesses to be aligned with environmental thinking (Mentzer, 2001). The adoption of environmental management systems (EMS) may facilitate the implementation of GSCM. EMS is considered as a strategic management approach guided by ISO 14001 as a framework to help organisations to define and address their impact on the natural environment (Darnall, Jolley, & Handfield, 2008). Sarkis (2001) asserts with concerns on the environment, having certified EMS may assist organisations' effort to minimise the environmental impacts throughout their supply chain. Organisations that adopt EMS may be more likely to depend on their complementary knowledge-based capabilities in working with their networks of suppliers and customers to reduce system-wide environmental impacts (Darnall et al., 2008). There are several approaches such as cleaner operations of product and eco-efficiency in using natural resources, that have been used in the green management practices in the supply chain operations in organisations (Zhu, Sarkis, & Geng, 2005). The environmental impacts appear at all stages of product's life cycle from the raw materials acquisition phase until the delivery process to the final consumers (Diab, Al-Bourini, & Abu-Rumman, 2015). Therefore, GSCM practices have emerged significantly are to ensure that the environmental issues are managed accordingly to ISO 14001 requirement to achieve a balanced and sustainable performance for the future.

The ISO 14001 certification strengthens GSCM practices to achieve excellence. Darnall et al. (2008) claim that organisations that adopted certified EMS have a better chance of implementing GSCM practices comprehensively where they not only consider environmental impacts on organisational boundaries but also on the supply chain as a whole. The capability of EMS leads to a change in the performance of organisations through the practices of managing the supply chain orientations environmentally which is an effective way of managing the impact on natural environment occurred throughout the production process (Mahmood, Khaliq, & Ahmad, 2017). Considerable number of studies have found that GSCM practices positively influence firm performance (Balasubramanian & Shukla, 2017; Kirchoff et al., 2016 ; Lee, 2015; Lee, Kim, & Choi, 2012) in the environmental, economic, social or operational aspects. Each of these aspects is perceived as an important indicator of sustainable performance in organisations. The businesses environment nowadays is highly competitive and consumers are concerned with environmental issues and are demanding eco-friendly products (Sharma & Jain,

2017). Hence, organisations should put more effort in taking environmental initiatives in their productions to meet the demands.

This study is conducted to measure the influence of GSCM practices on sustainability performance among ISO 14001 SMEs in the manufacturing sector. The research has identified firms with extensive and less extensive GSCM and also further examines which particular GSCM practices influence sustainability performance among these firms. The study focuses on GSCM practices such as eco-design, green purchasing, environmental cooperation, and reverse logistics. By incorporating the resource-based view theory, a framework was developed to deliberate the link between GSCM practices and performance.

II. LITERATURE REVIEW

2.1 Theoretical Framework

The framework of the study in Figure 2.1 depicts GSCM as the independent variable and sustainability performance as the dependent variable. GCSM comprises green practices within the supply chain which include eco-design, green purchasing, environmental cooperation, and reverse logistics. The framework proposes that GCSM with specific green practices to certain extent contribute to sustainable performance. As proposed by Madhani (2010), the resource-based theory provides supports for the link between resources and capabilities within firms in order to achieve sustainability. The extensive use of GSCM practices is considered part of organisational competencies to bring a significant improvement in all dimensions of sustainability performance (Nee & Wahid, 2010).

The resource-based view theory asserts that firms' competencies are values that create a competitive and advantageous situation. The competencies are created from the resources owned by firms which may influence firms' performance (Voola, Carlson, & West, 2004).The theory suggests that an innovative strategy can be implemented to create a competitive advantage from capabilities of the environmental activities (Hart, 1995). Explicitly, firms' performance would depend significantly on their valuable, rare, and inimitable resources while maintaining green practices to generate sustainable development (Yang, Han, Zhou, & Yuan, 2015).

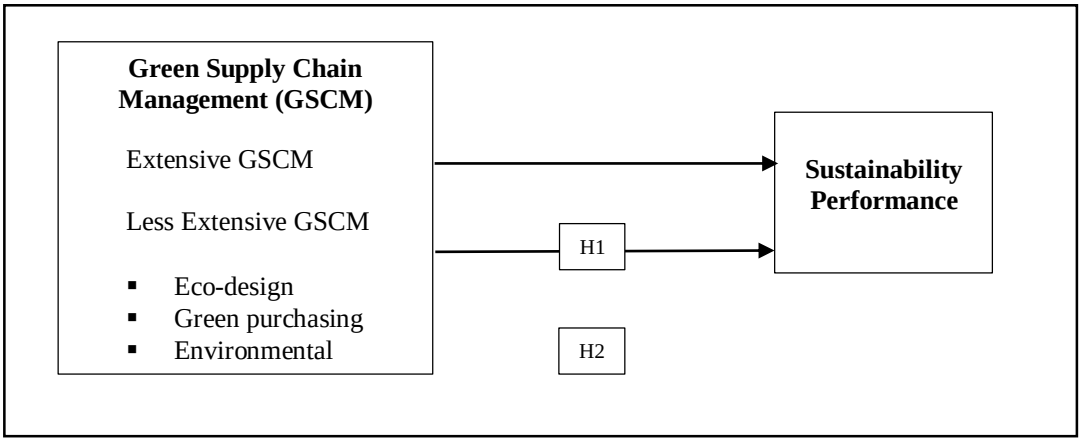

Figure 2.1: Theoretical framework of the research

According to Barney (1991), resources are defined as "anything which could be thought of as a strength or weakness of a given firm". The two branches underpinning this theory are natural resource-based view (NRBV) (Hart, 1995) and relational view (RV) (Dyer & Singh, 1998).There are three key strategic capabilities in NRBV which are pollution prevention, product stewardship and sustainable development. All these have different environmental driving forces, resources and sources of competitive advantage. The extension of NRBV explains that strategy and competitive advantage could be achieved by organisations from capabilities that assist them in environmentally sustainable economic activities (Hart, 1995) and it becomes extensively used in explaining the aims of organisations' adoption of GSCM practices. Hence, ISO 14001 certification is considered as an exclusive award that shows an organisation has the capabilities to enhance its operational, economic, social and environmental performance (Nee & Wahid, 2010). By employing this unique strategy, organisations are able to maximize their resources and competencies to create and maintain a profitable market position (Theriou, Aggelidis, & Theriou, 2009).

As highlighted by Madhani (2010), the RBV draws on unique resources and capabilities within an organisations in order to achieve sustainable performance. Another branch of RBV, RV suggests that an important resource for competitive advantage is specific inter-enterprise relationship that is established through a long-term partnership. According to RV, a network of information and knowledge sharing could be generated through a supply chain integration and the new opportunities created are referred to as a type of competitive advantage resources (D. Q. Chen, Preston, & Xia, 2013; Schroeder, Bates, & Junttila, 2002). As stated by Balashova and Gromova (2016), RBV acts as a perspective management based on the optimum use of resources to stay ahead in the industry and to hold a competitive advantage as global competition becomes complicated. It emphasises on the ability of an organisation to combine all resources and develop strategic opportunities for improvement. Jayarathna (2015) acknowledged the internal drivers of GSCM adoption in an organisation. RBV stresses on knowledge and capabilities for GSCM implementation and is supported by top management which is involved in the interactions through which all the resources are coordinated. NRBV considers innovative environmental solutions through green practices in GSCM as key in developing organisations' capabilities to strengthen performance through unique differentiation compared to their competitors (Kiet & Jamal, 2017). Organisations can achieve a sustainable performance if the resources and capabilities are exploited using the most appropriate method (Wong, Lai, Shang, Lu, & Leung, 2012).

According to NRBV, the intra- and inter-organisational environmental activities quantify the organisations' overall strategy which captures the significance of internal resources and competencies to yield a sustainable competitive advantage (Kiet & Jamal, 2017). When environmental management becomes as an important consideration for organisations to align with the changing business world, such dynamic capabilities may include allocating resources and transforming the operations through GSCM methods (Aragon-Correa & Sharma, 2003; Joseph Sarkis, Gonzalez-Torre, & Adenso-Diaz, 2010). (Hart, 1995) argued that environmental activities are closely related with the three elements stated in NRBV such as eco-design practices representing product stewardship. The improvement in brand image and organisations' reputation could be a major resource as a result of adopting GSCM throughout their business activities, which consequently assists organisations to gain a competitive advantage (Sarkis, Zhu, & Lai, 2011).

2.2 Hypotheses Development

2.2.1 GSCM Practices and Sustainability Performance

The Supply Chain Management (SCM) concept was introduced in 1990 (Jones & Riley, 1985). This concept involves inventory management, relationship between customers and suppliers, and product delivery where all activities are associated with the flow of goods starting from raw materials to the final users (R. Handfield & Nicholas, 1999; Mentzer, 2001; Obiso, 2009). Due to increasing environmental awareness, the Green Supply Chain Management (GSCM) was introduced and acts as a revolution in this current era (Schaper, 2002). A number of studies have found that the adoption of certified EMS by ISO 14001, which ensures that the EMS conforms to the ISO 14001framework, leads to a sustainable performance in an organisation. Once it is certified, the ISO 14001 label verifies that the organisation has implemented EMS accordingly with regards to pollution deterrence and lead to more extensive GSCM (Bansal & Hunter, 2003; Darnall, 2006) which turns GSCM practices into meaningful environmental developments (Chin, Tat, & Sulaiman, 2015; Darnall, 2006; Vijayvargy, 2017)

A certified EMS offers various benefits through green activities in protecting the environment. However, Darnall et al. (2006) specify that despite the good sights of EMS, there is very little concern on the adoption of EMS by an organization's supply chain. This has been questionable as EMS does not have a valuation on supply chain network in an organisation like GSCM. Handfield et al. (2004) argued that the practice of GSCM is an extension of EMS, focusing on the entire value chain of business activities to reduce the negative impacts on the natural environment. This is supported by Preuss (2005) whose research suggests that through GSCM practices, the environmental benefits will more likely be greater as both share the same environmental goals and consequently lead to extensive GSCM. Many studies have been conducted on GSCM practices, however, none reflects the situation in Malaysia due to cultural, economic and ecological differences (Christmann & Taylor, 2001). The green supply chain covers a wide range of GSCM practices, integrating a supply chain flowing from suppliers, manufacturers, and customers (Rao & Holt, 2005; Zhu & Sarkis, 2006).

GSCM practices are divided into four major areas: internal environmental management, external environmental management, investment recovery and eco-design (Zhu & Sarkis, 2004). For the electrical and electronic industry, Chien and Shih (2007) list green procurement practices, green manufacturing practices, recovery and reuse of used products, and green design as GSCM practices. (Younis, Sundarakani, & Vel, 2016) highlighted that GSCM practices include eco-design, green purchasing, environmental cooperation and reverse logistics. Griggs, Stafford-Smith, Gaffney, Rockstrom, Ohman, Shyamsundar, Steffen, Glaser, Kanie and Noble (2013) believed that these GSCM practices are emphasized on dealing environmental impact towards organisation. The implementation of GSCM indicates that organisations holding EMS certification are adopting an environmental behaviour (Younis et al., 2016). As many organisations have incorporated environmental practices in their operations, the focus on their future performance is transformed.

In order to achieve the optimal level of performance, organisations must take environmental performance and social performance into consideration (Chin et al., 2015) instead of solely focusing on high economic performance such as profitability earned and overall market strength (Carter & Rogers, 2008). GSCM is also known as an integration of both environmental and traditional supply chain managements which are proven ways to decrease environmental impacts while lifting business performance to a better position (Ben, Rettab, & Mellahi, 2011;

Torielli, Abrahams, Smillie, & Voigt, 2011). Adopters of EMS may have greater ease during GSCM implementation since they possess the required knowledge and skills to manage environmental impacts in their supply chain and consequently improve the overall organizational performance (Darnall et al., 2008). A study by Younis et al. (2016) looks at four dimensions of corporate performance which are environmental performance, operational performance, economic performance and social performance.

Environmental performance comprises ~~of~~ environmental policies, reduction of emissions and waste disposal while economic performance covers cost reduction, market share growth and (Chien & Shih, 2007). Organisations that adopt GSCM practices may eventually boost both their competitiveness and economic performance (Rao & Holt, 2005) as the outcomes of such practices are positively related to a better performance (Chen, Lai, & Wen, 2006; Vijayvargy, 2017). Unfortunately, if the organisations do not fully implement GSCM practices, they might not meet their ultimate goal~~s~~ to be sustainable whereas not implementing all dimensions of GSCM practices (Ghazilla et al., 2015). There are several studies on GSCM practices and the dimensions are diverged. According to Chin et al. (2015), GSCM practices are conceptualized based on green procurement, green manufacturing, green distributions and green logistics.

Kafa, Hani and Mhamedi (2013) highlighted five GSCM practices such eco-design, green purchasing, reverse logistics, green manufacturing and green distribution. Younis et al. (2016) also focus on eco-design, green purchasing and reverse logistics dimensions in their study but with one difference, they considered environmental cooperation. For the purpose of this study, the four practices highlighted by Younis et al. (2016) in their study were selected as they are more comprehensive and relevant. GSCM acts as a coherent method to strengthen organisational performance at all levels in managing the organisations (Zhu, Sarkis, & Lai, 2007). According to Sharma and Jain (2017), the implementation of GSCM practices throughout business operations acts as a pro-active activity to achieve sustainability performance.

The application of several green practices such as comprehensive supervision with regards to the environment, customer related services and development of organizational orientations capabilities in the supply chain management can help organization achieve excellent outcome (Mahmood et al., 2017). Younis et al. (2016) mention that the four major practices are eco-design, green purchasing, environmental cooperation and reverse logistics practices. There is a necessity for organisations to implement GSCM practices which look into the whole supply chain rather than focusing on certain activities like reverse logistics only (Chang, Kenzhekhanuly, & Park, 2013). Hence, all of GSCM practices are important and can contribute to sustainable performance.

2.2.2 Eco-design and Sustainability Performance

Eco-design is known as green design (Alshura & Awawdeh, 2016) and one of the main reasons for adopting it is to minimize the negative impacts on the environment throughout the production process of a product (Al-Khattab, Abu-Rumman, & Massad, 2015). It is also known as a designation mechanism linked to the lifecycle of a product in which environmental awareness becomes a priority (Deshmukh & Vasudevan, 2014). It has become~~s~~ necessary for products to fit the green design standard so that these products can be reused or recycled in the future and thus, safe for the environment (Mogeni & Kiarie, 2016). Reusing or recycling is a form of saving. According to Teuteberg and Wittstruck (2012), the process of reusing disposed materials through collecting, processing and remanufacturing can create new products. There are some parameters to eco-design practices such as product

designs consisting of ideal consumption of material or energy, minimization or avoidance of usage of hazardous materials in product development, and reduction of wastes and unnecessary costs (Sharma & Jain, 2017).

Amemba, Nyaboke, Osoro and Mburu (2013) highlight-practices involving efficient usage of friendly energy sources such as solar energy and biodegradable energy during manufacturing are aimed to reduce the environmental impact and hence, increase productivity. Nevertheless, there is still a consideration on the performance and cost under this practice because they believed that this design stage is really important to represent the real image of the finished products, raw materials used and production process in measuring the energy used and managing wastage (Hassan et al., 2016). A study by Amemba et al. (2013) indicates that eco-design practices reduce the environmental impacts through efficient usage of friendly energy sources in manufacturing process which consequently increase the productivity in the organisations. According to Zhu et al. (2007), proven eco-design practices will benefits organisations with access to green markets, remanufacturing chances, enhancement in reuse and a developed eco-efficiency; subsequently these practices would lead the organisations to sustainable performance.

2.2.3 Green Purchasing and Sustainability Performance

Green purchasing is a purchasing method that complies with the environmental requirements to ensure the minimization of wastes, recycling of products together with reused materials and other green activities (Younis et al., 2016). It involves various purchasing procedures i.e. selection of suppliers by following specific criteria, evaluation process, acquisition of raw materials, reuse and recycling that comply with the standards of environmental protection (Zsidisin & Siferd, 2001). Green purchasing is considered as a practice of environmental purchasing that aligns with an organisation's sustainability performance objective (Hassan et al., 2016; Lee & Cheong, 2011). In the study conducted by Nderitu and Ngugi (2014), it was found that green purchasing contributes to organisational performance in the long run. In addition, green purchasing requires cleaner technology from suppliers (Ninlawan, Seksan, Tossapol, & Pilada, 2010) and involves clean production routine and efficient technology in managing environmental impacts throughout the production of products (Al-Odeh & Smallwood, 2012).

To achieve a strategic fit, organisations should satisfy customer demands through a better design supply chain in performing any acquisition with suppliers (Eltayeb, Zailani, & Ramayah, 2011). Managers who are responsible for handling purchases should monitor the process taken during purchases (Min & Galle, 1997) including cost, quality and delivery in order to meet the environmental goals ((Zhu, Sarkis, Cordeiro, & Lai, 2008). The green purchasing process will ensure that all purchased materials are safe and meet the environmental criteria (Kafa et al., 2013). Zhu et al. (2008) stated in their study that organisations that implement the green purchasing practices will build a good "green" image in the market and subsequently maintain their business performance through a better acquisition of any products and procedures taken with suppliers. These practices involve several initiatives such as supplier selection, compliance to environmental standards and participative device to develop a cleaner technology to achieve sustainability (Muma, Nyaoga, Matwere, & Nyambega, 2014), which are beneficial to organisations' performance. These kinds of activities are believed to be important for sustainability and performance (Nderitu & Ngugi, 2014).

2.2.4 Environmental Corporation and Sustainability Performance

In response to government guidelines and customer demands for the environmentally-friendly products and services, organisations in the manufacturing sector have been implementing GSCM practices (Murray, 2000). Internally, there has to be cooperation among all departments within an organisation to achieve its green objectives and have better performance in the future (Younis et al., 2016). Besides, commitment to GSCM practices from top management in an organisation plays a critical role in maintaining sustainability and performance (Chin et al., 2015). According to Paulraj (2011), collaboration with suppliers as external stakeholders is also considered important in meeting organisational objectives, strengthening environmental awareness and fulfilling requirements for purchased items. In addition, the integration of suppliers at the strategic, tactical and operational levels acts as a tool for environmental cooperation to meet an organisation's goals (Kim & Chai, 2017).

Environmental cooperation can be an effective way to manage both upstream players e.g. suppliers and downstream players e.g. customers (Chen, Wu, & Wu, 2015). This initiative requires manufacturing organisations, suppliers and customers to work together throughout the supply chain to come up with the best solutions and to monitor these solutions along the way (Green, Zelbst, Bhadauria, & Meacham, 2012). Environmental cooperation creates a competitive advantage for organisation as the monitoring process turns their goals into reality (Sen, 2009). Thus, environmental cooperation is one of the beneficial initiatives to solve environmental issues (Li, 2011).

Vachon (2007) identifies several activities that support environmental collaboration which include monitoring and controlling. These activities consist of reverse flow of materials observation, sharing of knowledge with regards to environmental management, controlling environmental risks related to supplier's operation and working together to persuade appropriate product use. A study by Rahim, Fernando and Saad (2016) revealed that environmental cooperation among all parties could facilitate GSCM practises effectively and the collaborative relationship with the suppliers could lead to the ease of the implementation process of GSCM practices. It has become a trend for organisations to cooperate with each other as part of their strategic plans and processes throughout the implementation of GSCM practices to assure sustainable performance (Sarkis, 2003).

Environmental cooperation is a collaborative tool to facilitate GSCM practices effectively to achieve sustainable performance (Rahim, Fernando, & Saad, 2016). As mentioned by Abbasi, Farsijani, & Raad (2016) (Abbasi, Farsijani, & Raad, 2016)**,** cooperation between organisations and suppliers is considered as a main element of GSCM to facilitate supply-side environmentally and socially responsible events. While implementing GSCM practices, collaboration is necessary since organisations cannot be more environmentally sustainable than their suppliers. Therefore, managers need to inspire all parties to be involved in the chain to ensure GSCM practices are well adopted to achieve sustainable performance (Neramballi, Sequeira, Rydell, Vestin, & Ibarra, 2017). It is suggested that through environmental cooperation like top management support, business performance is improved and becomes a positive determinant of sustainable performance (Dubey, Bag, & Ali, 2014; S. Vachon, 2007).

2.2.5 Reverse Logistics and Sustainability Performance

Fortes (2009) defined reverse logistics as activities for further manufacturing or recycling purposes after products receipt. There are sub-practices of reverse logistics which consist of product return, material reuse, recycling, waste disposal and reproduction (Muma et al., 2014). These practices require organisations to collect used products to reuse, collect used packaging from customers and return products to suppliers for remanufacturing

purposes (Sharma & Jain, 2017). Such practices leads to excellent results and are found to be positively related to environmental performance (Chin et al., 2015; Muma et al., 2014).

Organisations can adopt reverse logistics through recycling and waste logistics which can be established by following the necessities for collection, grouping, processing, packaging, handling, storage and delivery process (Zhang & Zheng, 2010). As highlighted by Muma et al. (2014), a system for the recovery of recycled materials and products and the activities involved are applied to both the upstream and the downstream supply chains (Declan, 2013). Reverse logistics is part of GSCM innovation as it creates new business opportunities (Afuah, 2003) and the functions of reverse logistics have been proven to serve the green supply chain at the optimum level (Rogers & Tibben-Lembke, 2001). The storage or reverse logistics is considered very important as part of the mechanism in reorganising an organisation's business operation to achieve environmentally-friendly endeavours in order to gain a sustainable development (Akdogan & Coskun, 2012).

Lysons and Farrighton (2012) state that reverse logistics respond to the current trends of the entire value chains starting from the reduction of raw material consumptions i.e. cutting down on solid domestic residuals at the end-of-life of products to integration to create value along the chains. Yet, Malaysia is one of the countries that does not have any regulation on reverse logistics and is really unaware of its importance in contributing to a better performance as this fourth phase is the least implemented (Khairani, Rajamanoharan, & Thirumanickam, 2015). Green supply chain involving reverse logistics is able to capture value along the chain. In the implementation process, there is an expectation to improve customer satisfaction, increase the level of environmental conscience, and cut costs for profit saving. In other words, these activities lead to a better structure in organising business operations and upgrading the green logistics performance (Bajor, Babic, & Babic, 2012).

Sustainability in the supply chain could not be achieved without appropriate management in the reverse logistics processes as part of green logistics strategy to meet sustainability performance (Bajor et al., 2012). This is because these practices involve activities that minimize materials in the forward system and ensure reuse and recycling of resources (Muma et al., 2014). All the approaches of reverse logistics have been proven to serve GSCM at the highest level (Rogers & Tibben-Lembke, 2001). It is also proven to be positively related to sustainability performance as studied by Chin et al. (2015).

2.2.6 Extensive Green Supply Chain Management (GSCM) and Sustainability Performance

Not all organisations are concerned with environmental issues which may influence their performance. However, the extensive use of GSCM practices by some organisations shows that they are following today's trend to achieve their goals to become sustainable. As stated by Lee at al. (2012), effective green practices could help organisations to be more competitive in the market. Extensive GSCM practices could be demonstrated by the accomplishment of overall organizations' objectives such as cost savings, improvement in environmental quality and creation of values to customers through implementation of all GSCM dimensions including eco-design, green purchasing, environmental cooperation and reverse logistics. All of these could minimize the operational cost, develop a better product and create value for customers by having eco-friendly products (Neramballi et al., 2017). Thus, the adoption of GSCM practices as well as making continuous improvement and adapting to environmental changes can leads to organisations having a competitive advantage (Kirchoff et al., 2016).

A study by Alshura and Awawdeh (2016) pointed out that GSCM practices are defined as determinants to achieving green performance and the extensive use of these green practices will not only meet external pressures but will upgrade organisations' performance to gain sustainability. All green practices should be implemented accordingly; thus, all are considered important in attaining sustainable development (Kafa et al., 2013). However, some organisations do not utilize the opportunity and are only focus on economically beneficial activities to help them survive in the long run, whereas GSCM practices enhance performance through all aspects instead of only focusing economic gains (Sharma & Jain, 2017). The implementation of all dimensions of GSCM practices is considered a must as each dimension has its own advantage in organisational performance (Darnall et al., 2008). As a result, the following hypotheses were developed to determine the influence of extensive GSCM in the manufacturing sector in Malaysia on sustainability performance.

H1: A company with extensive GSCM has significant relationship with sustainability performance.

H1a: Eco-design practices have a positive relationship ***with sustainability performance for a company with extensive GSCM.***

H1b: Green Purchasing practices have a positive relationship with sustainability performance for company with extensive GSCM.

H1c: Environmental Corporation practices have a positive relationship with sustainability performance for a company with extensive GSCM.

H1d: Reverse Logistics practices have a positive relationship with sustainability performance for a company with extensive GSCM.

2.2.7 Less Extensive Green Supply Chain Management (GSCM) and Sustainability Performance

According to Singh and Trivedi (2016), one of the major challenges which leads to less extensive GSCM practices adopted by many organszations is to be more socially responsible towards the society and the environment. The failure to reformulate business strategy and slow development of green practices have led to poor performance i.e. the inability to immediately respond to the market needs (Chiu & Hsieh, 2016). Nowadays, green products have become popular among customers and thus green practices should be on firms' business agenda (Mahmood et al., 2017). As stated by Sharma and Jain (2017), there are some organisations that do not practice GSCM extensively as they are only motivated by activities that are beneficial to them and this consequently influences their performance.

One of the reasons behind the less extensive use of GSCM is the lack of commitment from top level management and lack of support from mid-level managers (Zhu et al., 2005). The development of integrating environmental practices within the supply chain is very important for sustainability (Neramballi et al., 2017). Most of the studies on GSCM concentrate on developed countries. In Malaysia, the drivers of adoption may differ with those in other countries in terms of culture, regulations and economy. As such, it is very important to understand the real scenario of GSCM in the manufacturing sector in Malaysia (Rahman, Ho, & Rusli, 2014). The study on this issue in Malaysia is still at nascent stage and it is vital to further investigate to differentiate the performance of organisations that extensively practice GSCM and those that practice less extensive GSCM. Hence, the third hypothesis was developed as follows.

H2: A company with less extensive GSCM has a less significant relationship with sustainability performance.

H2a: Eco-design practices have a positive relationship with sustainability performance for company with extensive GSCM.

H2b: Green Purchasing practices have a positive relationship with sustainability performance for company with extensive GSCM.

H2c: Environmental Corporation practices have a positive relationship with sustainability performance for company with extensive GSCM.

H2d: Reverse Logistics practices have a positive relationship with sustainability performance for company with extensive GSCM.

III. METHODOLOGY/MATERIALS

3.1 Sample and Data Collection

To achieve the objectives of this study, a questionnaire survey adapted from Younis et al. (2016) was used as the research instrument for data collection. The unit analysis of this research is firms with ISO 14001 certification. SMEs in the manufacturing sector were selected because they significantly contribute to the Malaysian economy (Kassim & Sulaiman, 2011). This study used a stratified sampling method whereby the total population is divided into smaller groups, focusing on SMEs in the manufacturing sector located in Selangor. The data consist of 92 companies with 200 and less than 200 employees listed in the Federation of Malaysian Manufacturing (FMM) Directory 2017. Apart from relying on the number of employees, the organizations' total assets and total revenue were also taken into consideration. In addition, the sample was selected based on the possession of the ISO 14001 certification. This is because ISO 14001 certified manufacturing organisations are more likely to be involved in the implementation of GSCM (Arimura, Darnall, & Katayama, 2011). A total of 85 out of the 92 questionnaires were returned and usable, giving a response rate of 92.39 percent.

3.2 Measurements of Variables

3.2.1 Green Supply Chain Management (GSCM)

The green practices implemented in the supply chain of a firm is the focus of this research. The measurement of GSCM comprises of four (4) sub-dimensions which are green purchasing, eco-design, environmental cooperation and reverse logistics (Younis et al., 2016) (Younis et al., 2016). **Green purchasing** refers to a purchasing procedure that complies with environmental requirements to minimize cost and reduce negative environmental impacts (Lee & Cheong, 2011; Younis et al., 2016; Zsidisin & Siferd, 2001). The practice is measured based on four (4) items from (Zsidisin & Hendrick, 1998). **Eco-design** is measured based on four (4) items and is referred to as green design of products to reduce negative environmental impacts and cost (Alshura & Awawdeh, 2016). **Environmental cooperation** refers to the support among all departments including suppliers and related environmental matter that exist in an organisation to achieve its green objectives (Kim & Chai, 2017; Paulraj, 2011; Younis et al., 2016). In this study, environmental cooperation is measured using six (6) items (Vachon & Klassen, 2006; Walton, Handfield, & Melnyk, 1998; Zsidisin & Hendrick, 1998). Finally, **Reverse logistics** is measured by three (3) items, using instruments by Rao (2007) which refers to activities related to further manufacturing or recycling purposes after products receipt.

3.2.2 Sustainability Performance

In this study, sustainability performance is comprehensively measured based on four (4) aspects of performance which include environmental performance, economic performance, social performance and operational performance. These dimensions are measured based on a five-point Likert scale with each measured based on five (5) items for environmental performance, six (6) items measuring economic performance, five (5) items measuring social performance and four (4) items measuring operational performance (Younis et al., 2016).

IV. RESULTS AND FINDINGS

4.1 Profile of firms and respondents

The profiles of firms are presented in Table 4.1. The majority of the respondents are food and beverages manufacturers, followed by textiles and apparel, rubber and plastic and paper industries. For years of operation, 84.7% of the firms have been operating for more than 10 years. Most of the small enterprises generate sales in the range RM30 to RM50 million annually. All of the respondents possess ISO 14001 certification, 58.8% having the certification for more than 6 years.

Table 4.1: Profiles of the Organisations

Demographic Information	Categories	Frequency	Percent (%)
Types of products manufactured	Food and beverages	20	23.5
	Furniture	8	9.4
	Textiles and apparel	17	20.0
	Rubber and plastic	13	15.3
	Wood	5	5.9
	Paper	12	14.1
	Motor vehicles	6	7.1
	Others	4	4.7
Years of operation	1-5 years	2	2.4
	6-10 years	11	12.9
	11-20 years	34	40.0
	More than 20 years	38	44.7
Number of employees	0-75 employees	35	41.2
	76-200 employees	50	58.8
Annual sales	Less than RM 5 million	11	12.9
	Less than RM 15 million	23	27.1

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

	Less than RM 30 million	12	14.1
	Less than RM 50 million	39	45.9
Status	Subsidiary organization	35	41.2
	Non-subsidiary organization	50	58.8
Types of ownership structure	Local company	49	57.6
	Foreign company	18	21.2
	Joint venture	18	21.2
Years ~~have~~ with certified EMS	1-3 years	16	18.8
	4-6 years	19	22.4
	More than 6 years	50	58.8

4.2 Descriptive Analysis

Table 4.2 shows descriptive statistics of the main variables based on a total of 85 samples. These samples are then categorised into companies with extensive GSCM and less extensive GSCM. The mean statistics values are quite high for GSCM and all of the four (4) GSCM sub-dimensions.

Table 4.2: Descriptive Statistics of the Main Variables

	Minimum statistic	Maximum statistic	Mean		Standard deviation
			Statistic	Standard error	
GSCM	2.71	5.00	4.353	.054	.497
Eco-design	2.50	5.00	4.423	.063	.580
Green Purchasing	2.75	5.00	4.303	.060	.552
Environmental Cooperation	2.33	5.00	4.402	.061	.562
Reverse Logistic	1.00	5.00	4.227	.072	.663
Sustainability Performance	3.05	4.95	4.310	.051	.467

Table 4.3 categorises the samples into two (2) groups. Based on GSCM practices, mean values, the median of mean are determined.

Table 4.3: Categorising the Samples into Companies with Less Extensive and Extensive GSCM Practices

Category of Samples	**No of Samples**	**Percentage**
GSCM practices	85	100
Less Extensive GSCM practices	43	50.6
Extensive GSCM practices	42	49.4

The median is used to classify the samples into less extensive and extensive subgroups as shown in the table above. Higher GSCM score~~s~~ specify extensive subgroup and less extensive subgroup with lower GSCM score~~s~~. The less extensive group (43 organisations) have means below the mean median whereas the extensive group (42 organisations) comprise~~s~~ companies with means higher than mean median. Those below the median are considered as not extensively practicing GSCM in their business operations. Meanwhile, those above the median score are firms that are extensively practicing GSCM to achieve their long-term goals. Although there are 50 organisations that have ISO 14001 certification for more than 6 years, only 42 organisations were found implementing GSCM extensively. This shows that the longer years of holding ISO 14001 certification, the more GSCM is extensively being practiced by firms. This is aligned with prior studies which found that the possession of ISO 14001 certification could influence how effectively GSCM is implemented (Abdullah, 2016). Essentially, the ISO 14001 certification acts as encouragement for organisations to expand their environmental concern through extensive use of GSCM practices (Darnall et al., 2008). Analysis of GSCM practices is presented in Table 4.4 below. Based on the table, the mean value of extensive GSCM is greater than the mean value of less extensive GSCM which indicates that the routine of extensive GSCM firms is better than those with less extensive GSCM practices.

Table 4.4: Descriptive Statistics of the Independent Variable & Sub Dimensions of GSCM (Between Companies with Less and Extensive GSCM practices)

Dimensions	Less Extensive		Extensive	
	Mean	Standard deviation	Mean	Standard deviation
Green supply chain management (GSCM)	3.98	0.445	4.73	0.089
Eco-design	4.05	0.586	4.80	0.196
Green purchasing	3.92	0.522	4.68	0.209
Environmental cooperation	4.03	0.567	4.77	0.164
Reverse logistics	3.87	0.728	4.60	0.290

The overall mean for companies with less extensive GSCM is 3.98 and this value implies that these companies are still at the initiating stage of implementation. However, for companies with extensive GSCM, the overall mean of 4.73 indicating that they are currently implementing GSCM practices. As for the sub-dimensions, for companies with less extensive GSCM, eco-design records the highest mean of 4.05. This is followed by environmental cooperation (mean = 4.03), green purchasing (mean = 3.92) and reverse logistics (mean = 3.87). This indicates that all the dimensions are still in the initiating implementing stage. As for companies with extensive GSCM, the means are at a higher value eco-design (4.80), environmental cooperation (4.77), green purchasing (4.68) and reverse logistics (4.60), confirming that all components are currently being implemented.

Table 4.5: Descriptive Analysis for Sustainability Performance between Companies with Less and Extensive GSCM

Dimension	Less Extensive		Extensive	
	Mean	Standard deviation	Mean	Standard deviation
Sustainability performance	3.98	0.421	4.64	0.176

Table 4.5 presents the analysis conducted based on sustainability performance. The mean is 3.98 for firms with less extensive GSCM practices. This indicates that it is relatively significant. However, as for companies with extensive GSCM, the mean is 4.64, which shows that it is highly significant. A normality test using the Skewness and Kurtosis value was carried out on eco-design, green purchasing, environmental cooperation, reverse logistic, green supply chain management and sustainability performance between companies with less and extensive GSCM. The skewness and kurtosis for both groups of companies have values for all the variables in the range of -2 to 2 which indicates that the mean scores for GSCM and its dimensions for both groups are normally distributed.

4.3 Test of Hypotheses

Regression analyses were used for hypotheses testing to examine the relationship between GSCM practices and sustainability performance. The regression analyses were divided into simple linear regression and multiple linear regression. The simple linear regression analysis shows the overall relationship between GSCM and sustainability performance whilst multiple regression shows the relationship between each GSCM dimension and sustainability performance where sustainability performance is the dependent variable.

4.3.1 Simple Regression Analysis

The simple regression analysis was carried out to examine the overall relationship between each sub-group, less extensive and extensive GSCM practices towards sustainability performance. Table 4.5 presents the results of the analysis between companies with less extensive GSCM practices with sustainability performance. The results show a significant positive relationship between GSCM practices and sustainability performance based on the adjusted R-square 0.340. GSCM practices can justify 34% of the variation in sustainability performance. Beta coefficient of 0.583 indicates a significant positive relationship between GSCM and sustainability performance ($F = 21.164$, $p < 0.01$). Thus, the results provide evidence to support H1 which is consistent with findings from prior research that claim GSCM practices positively influence sustainability performance (Kafa et al., 2013; Sharma & Jain, 2017; Younis et al., 2016).

Table 4.5: Simple Regression on Less Extensive GSCM practices and Sustainability Performance (N=43)

Variable	Coefficient	*t*-value	*p*-value	Hypothesis
Less Extensive GSCM	0.583	4.600	0.000**	H1 is supported
F	21.164		0.000**	

R^2	0.340	

** *Significant at 0.01*

Table 4.6: Simple Regression on Extensive GSCM practices and Sustainability Performance (N=42)

Variable	Coefficient	*t*-value	*p*-value	Hypothesis
Extensive GSCM	0.489	3.549	0.001**	H2 is supported
F	12.958		0.001**	
R^2	0.240			

** *Significant at 0.01*

Table 4.6 provides the results for the relationship between companies with extensive GSCM practices and sustainability performance. The results show evidence to support H2. The regression equation is statistically significant at 0.01 (p<0.01), implying that there is an association between GSCM practices and sustainability performance. However, the R-square value being 0.240 means that GSCM as a whole account for 24 per cent of the variation in sustainability performance. The coefficient of GSCM of 0.489 implies that an increase in GSCM practices by companies will lead to an increase in sustainability performance.

4.3.2 Multiple Regression Analysis

The multiple regression analysis was carried out to examine the relationship between each sub-dimension of GSCM practices which are eco-design, green purchasing, environmental cooperation and reverse logistics towards sustainability performance.

Table 4.7: Multiple Regression on Less Extensive GSCM and Sustainability Performance (N=43)

Variable	Coefficient	*t*-value	*p*-value	Hypotheses
Eco design	0.518	4.293	0.000**	H1a is supported
Green purchasing	-0.066	-0.420	0.677	H1b is not supported
Environmental cooperation	0.488	2.757	0.009**	H1c is supported
Reverse logistic	-0.189	-1.425	0.162	H1d is not supported
F	11.117		0.000**	
R^2	0.539			

** *Significant at 0.01*

Table 4.7 presents the results from the multiple regression analysis between less extensive GSCM practices and sustainability performance. Based on the results, there is statistically a significant relationship between less extensive GSCM and sustainability performance at 0.01(p<0.01). The R-square value at 0.539 means that the four

sub-dimensions of GSCM as a whole account for 54 per cent of the variation in sustainability performance. Eco-design practices have significantly positive influence on sustainability performance (t = 4.293, p = 0.0001, b = 0.518). Thus, H1(a) is supported. The result indicates eco-design is the strongest contributor in influencing sustainability performance. This result is aligned with prior literature that identifies product eco-design incorporate environmental awareness as this practice is adopted in the first phase of product lifecycle (Deshmukh & Vasudevan, 2014). Al-Khattab, Abu-Rumman & Massad (2015) also highlights the importance of product eco-design in minimising negative environmental impacts along the production process.

The beta value for environmental cooperation is 0.488 indicating strong contribution to describe sustainability performance (t = 2.757, p = 0.009). Thus, it supports H1(c). This result is consistent with Younis et al. (2016) who acknowledged in their study the need for solid cooperation of all departments in an organisation with regards to environmental issues to meet their green objectives and subsequently, achieve better performance. Despite of aligned with the result of study by Rahim, Fernando and Saad (2016), the cooperation not only relates to internal to the organisation but also all parties. Environmental cooperation among all parties allows GSCM practices to be effectively adopted and the collaboration with the suppliers would also make the process of GSCM implementation easier (Rahim et al., 2016). Additionally, environmental cooperation is a trend and part of the strategic plans in GSCM practices is to assure sustainability performance (Sarkis, 2003).

Green purchasing and reverse logistics on sustainability performance are rather weak with beta coefficients of 0.066 and 0.189 respectively. The link between green purchasing and reverse logistics are not significant to sustainability performance with p>0.1. These results indicate that there is no relation between these two (2) practices with sustainability performance. Hence, the results do not support H1(b) and H1(d). However, the results from this study are in contrast with Nderitu and Ngugi's finding (2014) where they found green purchasing provides a high contribution organisational performance. Meanwhile, Rogers and Tibben-Lembke (2001) also provide evidence that reverse logistics serve GSCM at the optimum level. As a developing country, Malaysian SMEs are still behind in the implementation of green practices. Green purchasing is not popular among firms and reverse logistics is less advanced in Malaysia.

Table 4.8: Multiple Regression on Extensive GSCM and Sustainability Performance (N=42)

Variable	Coefficient	*t*-value	*p*-value	Hypotheses
Eco-design	0.240	1.666	0.046*	H2a is supported
Green purchasing	0.132	0.934	0.356	H2b is not supported
Environmental cooperation	0.429	2.980	0.005**	H2c is supported
Reverse logistics	0.352	2.413	0.021*	H2d is supported
F	3.555		0.015	
R^2	0.278			

* *Significant at 0.05*

** *Significant at 0.01*

The regression equation is statistically significant at 0.05 (p<0.05), implying that there is an association between all the GSCM dimensions for companies with extensive GSCM and sustainability performance. The R-square value of 0.278 means that the four independent variables as a whole account for 28 per cent of the variation in sustainability performance. Based on each dimension regression coefficient, the coefficient of environmental cooperation is statistically significant at 0.01 (p<0.01). However, eco-design and reverse logistics are only significant at 0.05 (p<0.05). The coefficient of eco-design (0.240), environmental cooperation (0.429) and reverse logistics (352) means that an increase in each of these dimensions would lead to an increase in sustainability performance, whilst changes in green purchasing have no impact on sustainability performance.

The regression analysis results for less extensive GSCM practices can be compared with the results of companies with extensive GSCM practices. Both sub-groups indicate that there is no relationship between green purchasing practices and sustainability performance, indicating very poor implementation of green practices particularly green purchasing among the Malaysian SMEs. However, prior research has highlighted the importance of green purchasing achieving the sustainability objective (Nderitu & Ngugi, 2014). The importance of green purchasing practices is emphasised for organizational performance in the long run (Nderitu & Ngugi, 2014). For the less extensive GSCM sub-group, only two (2) out of four (4) GSCM dimensions, eco-design and environmental cooperation, contribute to sustainability performance. As for the extensive GSCM sub-group, three (3) out of four (4) dimensions of GSCM, which are eco-design, environmental cooperation and reverse logistics do influence sustainability performance. This comparative information implies that Malaysian SMEs with extensive GSCM practices have better awareness of implementing green practices to improve their performance. These companies adopt more green practices that help them achieve sustainability performance. However, there is a need to enhance awareness of green purchasing among Malaysian SMEs as the results show poor awareness of green practices among the companies with extensive and less extensive GSCM practices. Table 4.9 provides a summary of the research hypotheses and findings.

Table 4.9: Summary of Research Hypotheses and Findings

Hypotheses	Description	Results
H1	***Companies with extensive GSCM have significant relationship with sustainability performance.***	Supported
H1a	Eco-design practices has a positive relationship with sustainability performance for companies with extensive GSCM.	Supported
H1b	Green Purchasing practices have a positive relationship with sustainability performance for companies with extensive GSCM	Not supported
H1c	Environmental Corporation practices have a positive relationship with sustainability performance for companies with extensive GSCM.	Supported
H1d	Reverse Logistics practices have a positive relationship with sustainability performance for companies with extensive GSCM.	Supported

H2	***Companies with less extensive GSCM have less significant relationship with sustainability performance.***	Supported
H2a	Eco-design practices have a positive relationship with sustainability performance for companies with extensive GSCM.	Supported
H2b	Green Purchasing practice have a positive relationship with sustainability performance for companies with extensive GSCM.	Not supported
H2c	Environmental Corporation practices have a positive relationship with sustainability performance for companies with extensive GSCM.	Supported
H2d	Reverse Logistics practices have a positive relationship with sustainability performance for companies with extensive GSCM.	Not supported

V. CONCLUSION

Prior literature in the area of GSCM practices has highlighted the lack of research relating to the influence of green practices on organisational performance. In relation to this issue, this study has attempted to examine the relationship between GSCM practices and sustainability performance among Malaysian SMEs. The research extends prior GSCM research conducted by Rasit, Zakaria, Hashim, Ramli and Mohamed (2019) to further examine the difference in the implication on sustainability performance for companies implementing GSCM practices which are dichotomised into two (2) sub groups: companies with extensive GSCM practices and those with less extensive GSCM practices. The GSCM practices examined in this research comprises various dimensions such as eco-design, environmental cooperation, green purchasing and reverse logistics. For each sub-group of companies, these GSCM dimensions are individually examined towards sustainability performance. This is to identify the influence of each GSCM activity or dimension towards sustainability performance. Organisations that fully implement GSCM practices are believed to better perform when compared to those that do not adopt these practices.

The first and second hypotheses were developed to measure the extent of influence of GSCM practices on sustainability performance. H1 assumes that extensive GSCM practices has a significant relationship with sustainability performance and through analysis, this hypothesis is supported. It indicates that organisations have to utilise GSCM practices to the maximum for their performance to be sustainable. This is because GSCM acts as a valuable tool for organisations to strengthen their position in the market. In addition by exploiting the green practices, organisations can gain a competitive advantage (Kirchoff et al., 2016). Although all organisation selected in this study are certified with ISO 14001, the extent of GSCM implementation might be different due to the number of years these organisations have this certification. The longer the organisations have been certified, the more extensive GSCM is implemented.

Meanwhile, H2 suggests that firms with less extensive GSCM practices have a less significant relationship with sustainability performance. Employing empirical analysis, this hypothesis is supported. When organisations are not utilizing GSCM, their performance is lower compared to those organisations that implement GSCM practices extensively. In a highly competitive environment, it is very important for organisations to follow the

trends of adopting GSCM practices to achieve sustainability performance. Nowadays, most products in the market are produced according to the green concept. Thus, organisations that do not seize the opportunity to utilize GSCM practices in their production would experience poor performance as they are unable to immediately respond to market demands (Chiu & Hsieh, 2016).

Broadly, the findings from this research provide evidence that GSCM practices have positive influence on sustainability performance for companies implementing extensive or less extensive GSCM. The findings show that the adoption of green practices will significantly contribute to the sustainability of the business operation. This is because customers are selecting products that are environmentally friendly. GSCM is a proven way to upgrade business performance to be sustainable while minimizing environmental problems (Ben et al., 2011; Torielli et al., 2011). Nevertheless, findings from this research provide evidences that only certain GSCM activities influence sustainability performance. Out of the four dimensions of GSCM practices examined in this research, only green purchasing does not contribute to sustainability performance either with firms adopting extensive or less extensive GSCM. For those with less extensive GSCM practices, reverse logistics is another dimension that does not contribute towards sustainability performance.

Findings from the research also imply that eco-design and environmental cooperation practices play a better roles in influencing sustainability performance. The performance of an organisations becomes sustainable because of the significant influence of green practices activities such as eco-design and environmental cooperation practices. These practices show significant contribution towards sustainability performance among SMEs in the manufacturing sector in Selangor. Green purchasing and reverse logistics still contribute to sustainability performance but with weak relation and insignificant to organisations' performance. This study also provides empirical evidence of the relationship between GSCM practices towards sustainability performance.

The RBV theory adopted in this study describes how the utilization of resources could help organisations achieve sustainability performance. The ISO 14001 certification may act as part of the organisations' valuable resources to adopt GSCM practices extensively towards achieving a sustainable performance. It is believed that the regulations of ISO 14001 would lead organisations to be more disciplined in their green practices in their business operations. Findings from prior research provide evidence that having ISO 14001 certification among SMEs in the manufacturing sector can promote sustainability performance whereby it was also linked with the GSCM implementation (Rasit et al., 2019). This study adds to prior GSCM literature by examining the influence of GSCM practices on sustainability performance and lays as foundation for future research for other relevant sectors such as agriculture, construction, industrial as well as consumer products which include environmentally sensitive industries. Green practices adopted in other sectors might yield different results from the manufacturing sector. Thus, it is crucial to look into how green practices such as GSCM would impacts performance in these other sectors.

Practically, this study contributes to the field of green practices for the manufacturing sector. It helps to create awareness that fully utilising GSCM practices can lead to sustainable performance and indirectly minimize environmental issues in this country. Besides, the performance of SMEs in the manufacturing sector in Selangor were measured empirically, assessed and monitored effectively to determine the necessary actions to be taken in order to strengthen the economic development of this country. Based on the outcomes of this study, not all the dimensions of GSCM practices are found to significantly contribute to sustainability performance. Hence, the most

significant green practices contributors (eco-design and environmental cooperation) should be focused by the organisations to boost their performance. It will lead the implementation of GSCM practices are at a better level.

There are several limitations in this study. First, the sample selection only focused on the ISO 14001 certified SMEs in the manufacturing sector located in Selangor. Hence, the results of this study are restricted to Selangor and do not fully represent the whole population of the manufacturing sectors. Other factors besides ISO 14001 certification which might influence an organisation's decision to utilize GSCM practices should be examined. It is because the certified EMS is considered as an external element while top management support and the knowledge and skills of managers are considered as an internal part in organisations to practise GSCM extensively. However, this study only focused on the role of ISO 14001 certification in the implementation of GSCM practices to achieve sustainable performance.

Besides the response rate in the data collection is low as the unit analysis of this study is the organisations themselves. It was time-consuming due to the need to follow up with the respective managers in each of the chosen organisations to complete the questionnaire survey. Additionally, this study did not distinguish between the early and the late adopters of GSCM practices due to the difficulty in obtaining this specific information. Thus, the level of performance could not be measured precisely based on the real experience in implementing green practices. It is also a limitation that the performance among organisations is most likely the same regardless of the number of years they have practised GSCM in reality. This is because the questionnaire of this study did not ask any question pertaining to this matter. Thus, the real performance could not be measured based on the number of years GSCM was employed.

Based on the findings of this study, there are some recommendations which might be useful for future research. Research on GSCM practices and sustainability performance in developing countries like Malaysia is scarce. Hence, future studies should not be restricted to some area only but must represent the whole population of Malaysia. As an example, a study by Seman, Zakuan, Jusoh, Arif & Saman (2012) focused on all ISO 14001 certified manufacturing organisations in Malaysia in order to study GSCM in depth and provide the reliable results. In terms of research instrument, instead of only using questionnaire, it will be more effective to use a mixed method consisting of short interview sessions with respondents. Additional questions about the organisations could be asked personally and thus, may expand the results of the study. Future studies may provide additional information on implement green practices and how the different dimensions of sustainability performance could be influenced.

VI. ACKNOWLEDGEMENT

Funding for this research is supported by the Dana UiTM Cawangan Selangor (DUCS) grant [File No: 600-UiTMSEL (PI.5/4) (011/2018]. The authors would like to extend their appreciation to the Universiti Teknologi MARA (UiTM), particularly the research unit of the Universiti Teknolologi MARA Selangor for its support in this research and the publication.

REFERENCES

1. Abbasi, B., Farsijani, H., & Raad, A. (2016). Investigating the Effect of Supply Chain Management on Sustainable Performance Focusing on Environmental Collaboration Modern Applied Science, 10(12), 115-126.
2. Abdullah, R. (2016). Green Supply Chain Management Practices And Sustainable Performance Among Iso 14001 Manufacturing Firms: The Moderating Effect Of Supply Chain Integration
3. Afuah, A. (2003). Innovation management: strategies, implementation and profits: Oxford University Press: Inc.
4. Akdogan, M. S., & Coskun, A. (2012). Drivers of Reverse Logistics Activities: An Empirical Investigation. 8th International Strategic Management Conference. Procedia - Social and Behavioral Sciences, 58, 1640-1649.
5. Al-Khattab, S. A., Abu-Rumman, A. a. H., & Massad, M. n. M. (2015). The Impact of the Green Supply Chain Management on Environmental-Based Marketing Performance Journal of Service Science and Management,, 8, 588-597.
6. Al-Odeh, M., & Smallwood, J. (2012). Sustainable Supply Chain Management: Literature Review, Trends, and Framework IJCEM International Journal of Computational Engineering & Management, 15(1).
7. Alshura, M. S. K., & Awawdeh, H. Z. Y. (2016). Green Supply Chain Practices as Determinants of Achieving Green Performance of Extractive Industries in Jordan. International Journal of Business and Social Science, 7(7), 166-177.
8. Amemba, C. S., Nyaboke, P. G., Osoro, A. & Mburu, N. (2013). Elements of Green Supply Chain Management. European Journal of Business and Management, 5(12), 51-61.
9. Aragon-Correa, J. A., & Sharma, S. (2003). A Contingent Resource-Based View of Proactive Corporate Environmental Strategy. Academy of Management Review, 28(1), 71-88.
10. Arimura, T., Darnall, N., & Katayama, H. (2011). Is ISO 14001 a gateway to more advanced voluntary action? The case of green supply chain management. Journal of Environmental Economics and Management, 61(2), 170-182.
11. Bajor, I., Babic, D., & Babic, M. I. (2012). Sustainabilty Through Greening and Reversing the Supply Chain.
12. Balashova, E. S. & Gromova, E. A. (2016). Resource-based view as a perspective management model in Russian reality. Problems and Perspectives in Management, 14(2), 325-330.
13. Balasubramanian, S., & Shukla, V. (2017). Green supply chain management: an empirical investigation on the construction sector. Supply Chain Management, 22(1), 58-81.
14. Bansal, P., & Hunter, T. (2003). Strategic Explanations for the Early Adoption of ISO 14001. Journal of Business Ethics volume, 46, 289-299.
15. Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99–120.
16. Ben, A., Rettab, B., & Mellahi, K. (2011). Market Orientation, Corporate Social Responsibility, and Business Performance. Journal of Business Ethics volume, 99, 307-324.

17. Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: moving toward new theory. International Journal of Physical Distribution & Logistics Management, 38(5), 360-387.
18. Chang, B.-Y., Kenzhekhanuly, Y., & Park, B. (2013). A Study on Determinants of Green Supply Chain Management Practice. International Journal of Control and Automation, 6(3), 199-208.
19. Chen, D. Q., Preston, D. S., & Xia, W. (2013). Enhancing hospital supply chain performance: A relational view and empirical test. Journal of Operations Management, 31(6), 391-408.
20. Chen, Y.-S., Lai, S.-B., & Wen, C.-T. (2006). The Influence of Green Innovation Performance on Corporate Advantage in Taiwan. Journal of Business Ethics volume, 67, 331-339.
21. Chen, Y. J., Wu, Y. J., & Wu, T. (2015). Moderating effect of environmental supply chain collaboration: Evidence from Taiwan. International Journal of Physical Distribution and Logistics Management, 45(9-10), 959-978.
22. Chien, M. K., & Shih, L. H. (2007). An empirical study of the implementation of green supply chain management practices in the electrical and electronic industry and their relation to organizational performances. International Journal Of Environmental Science And Technology (IJEST), 3(15), 383-394.
23. Chin, T. A., Tat, H. H., & Sulaiman, Z. (2015). Green Supply Chain Management, Environmental Collaboration and Sustainability Performance. 12th Global Conference on Sustainable Manufacturing, 26, 695-699.
24. Chiu, J.-Z., & Hsieh, C.-C. (2016). The Impact of Restaurants' Green Supply Chain Practices on Firm Performance. Sustainability, 8(42).
25. Christmann, P., & Taylor, G. (2001). Globalization and the Environment: Determinants of Firm Self-Regulation in China. Journal of International Business Studies, 32, 439-458.
26. Darnall, N. (2006). Why Firms Mandate ISO 14001 Certification. Business Society, 45(3), 354-381.
27. Darnall, N., Jolley, G. J., & Handfield, R. (2008). Environmental management systems and green supply chain management: complements for sustainability? Business Strategy and the Environment, 17(1), 30-45.
28. Declan. (2013). The moderating effects of institutional pressures on emergent green supply chain practices and performance. International Journal of Production Research, 45(18/19), 4333-4355.
29. Deshmukh, A. J., & Vasudevan, D. H. (2014). Emerging Supplier Selection Criteria In The Context of Traditional Vs Green Supply Chain Management. International Journal of Managing Value and Supply Chains (IJMVSC), 5(1), 19-33.
30. Diab, S. M., Al-Bourini, F. A., & Abu-Rumman, A. H. (2015). The Impact of Green Supply Chain Management Practices on Organizational Performance: A Study of Jordanian Food Industries. Journal of Mangement and Sustainability, 5(1).
31. Dubey, R., Bag, S., & Ali, S. S. (2014). Green supply chain practices and its impact on organisational performance: an insight from Indian rubber industry. International Journal Logistics Systems and Management, 19(1), 20-42.
32. Dyer, J. H., & Singh, H. (1998). The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. Academic Management Review, 23(4), 660-679.

33. Eltayeb, T. K., Zailani, S., & Ramayah, T. (2011). Green supply chain initiatives among certified companies in Malaysia and environmental sustainability: Investigating the outcomes. Resources, Conservation and Recycling, 55(5), 495-506.
34. Fortes, J. (2009). Green Supply Chain Management: A Literature Review. Otago Management Graduate Review, 7(1), 51-62.
35. Ghazilla, R. A. R., Sakundarini, N., Abdul-Rashid, S. H., Ayub, N. S., Olugu, E. U., & Musa, S. N. (2015). Drivers and barriers analysis for green manufacturing practices in Malaysian SMEs: A Preliminary Findings. 12th Global Conference on Sustainable Manufacturing, 26, 658-663.
36. Green, K. W., Zelbst, P. J., Bhadauria, V. S., & Meacham, J. (2012). Do environmental collaboration and monitoring enhance organizational performance? Industrial Management & Data Systems, 112(2), 186-205.
37. Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M. C., Shyamsundar, P., . . . Noble, I. (2013). Sustainable development goals for people and planet. Nature, 49, 305-307.
38. Handfield, R., & Nicholas, J. R. E. (1999). Introduction to Supply Chain Management, New Jersey: Prentice Hall.
39. Handfield, R., Sroufe, R., & Walton, S. (2004). Integrating environmental management and supply chain strategies. Business Strategy and the Environment, 14(1), 1-19.
40. Hart, S. L. (1995). A Natural-Resource-Based View of the Firm. Academy of Management Review, 20(4).
41. Hassan, M. G., Abidin, R., Nordin, N., & Yusoff, R. Z. (2016). GSCM Practices and Sustainable Performance: A Preliminary Insight Journal of Advanced Management Science, 4(5), 430-434.
42. Hassan, M. G., Nordin, N., & Ashari, H. (2016). Environmental stewardship issue among Malaysian manufacturing firms. International Journal of Supply Chain Management (IJSCM), 5(2), 36-42.
43. Jayarathna, B. C. P. (2015). Building a conceptual model for adopting green supply chain practices. Proceedings of 4th ISERD International Conference, Kuala Lumpur, Malaysia.
44. Jones, T. C., & Riley, D. W. (1985). Using Inventory for Competitive Advantage through Supply Chain Management. International Journal of Physical Distribution & Materials Management, 15(5), 16-26.
45. Kafa, N., Hani, Y., & Mhamedi, A. E. (2013). Sustainability Performance Measurement for Green Supply Chain Management. IFAC Proceedings Volumes, 46(24), 71-78.
46. Kassim, Z. A., & Sulaiman, M. (2011). Market Orientation and Leadership Styles Of Managers In Malaysia International Journal of Leadership Studies, 6(2), 231-245.
47. Khairani, N. S., Rajamanoharan, I. D., & Thirumanickam, N. (2015). Green Supply Chain Management Practices: Evidence from Malaysia. Malaysian Accounting Review Special Issue, 11(2).
48. Kiet, W. W., & Jamal, N. M. (2017). Green Supply Chain Management Concepts and Natural Resource Based View. Medwells Journal.
49. Kim, M., & Chai, S. (2017). Implementing Environmental Practices for Accomplishing Sustainable Green Supply Chain Management. Journal of Sustainability, 9, 1-17.
50. Kirchoff, J. F., Tate, W. L., & Mollenkopf, D. A. (2016). The impact of strategic organizational orientations on green supply chain management and firm performance. International Journal of Physical Distribution & Logistics Management, 46(3), 269-292.

51. Lee, K. H., & Cheong, I. M. (2011). Measuring a carbon footprint and environmental practice: the case of Hyundai Motors Co. (HMC). Industrial Management & Data Systems, 111 (6), 961-978.
52. Lee, S. (2015). The effects of green supply chain management on the supplier's performance through social capital accumulation. Supply Chain Management: An International Journal, 20(1), 42-55.
53. Lee, S. M., Kim, S. T., & Choi, D. (2012). Green Supply Chain Management and Organizational Performance. Industrial Management and Data Systems, 112(8), 1148-1180.
54. Li, Y. (2011). Research on the Performance Measurement of Green Supply Chain Management in China. Journal of Sustainable Development, 4(3), 101-107.
55. Lysons, K., & Farrighton, B. (2012). Purchasing and supply management (8th edition). Great Britain. Pearson Education Hall.
56. Madhani, P. M. (2010). Resource Based View (RBV) of Competitive Advantage. Retrieved on 15 August 2018 from https://papers.ssrn.com/sol3/papers.
57. Mahmood, A., Khaliq, A., & Ahmad, A. (2017). Organizational Orientations, Green Supply Chain Practices and Organizational Performance. . Journal of Quality and Technology Management, 8(1), 117-138.
58. Mentzer, J. T. (2001). Supply chain management. United States of America: Sage Publications, Inc. .
59. Min, H., & Galle, W. (1997). Green Purchasing Strategies: Trends and Implications. International Journal of Purchasing and Materials Management,, 14, 10-17.
60. Mogeni, L. M., & Kiarie, D. M. (2016). Effect of Green Logistics Practices on Performance of Supply Chain in Multinational Organizations in Kenya. .
61. Muma, B., Nyaoga, R., Matwere, R., & Nyambega, E. (2014). Green supply chain management and environmental performance among tea processing firms in Kericho County- Kenya. International Journal of Economics, Finance and Management Sciences, 2(5), 270-276.
62. Murray, G. (2000). Effects of A Green Purchasing Strategy: The Case of Belfast City Council. Supply Chain Management. An International Journal, 5, 37-44.
63. Musa, H., & Chinniah, M. (2016). Malaysian SMEs Development: Future and Challenges on going Green. Procedia - Social and Behavioral Sciences, 224, 254-262.
64. Nderitu, M., & Ngugi, K. (2014). Effects of green procurement practices on an organization performance in manufacturing industry: case study of East African Breweries Limited. European Journal of Business Management, 2(1), 341-352.
65. Nee, G. Y., & Wahid, N. A. (2010). The Effect of ISO 14001 Environmental Management System Implementation on SMEs Performance: An Empirical Study in Malaysia. Journal of Sustainable Development, 3(2), 215-220.
66. Neramballi, A., Sequeira, M., Rydell, M., Vestin, A., & Ibarra, M. (2017). A Comprehensive organizational performance: A review. Asia Pacific Journal of Research, 1, 104-109.
67. Ninlawan, C., Seksan, P., Tossapol, K., & Pilada, W. (2010). The Implementation of Green Supply Chain Management Practices in Electronics Industry. Proceedings of the International Multi Conference of Engineers and Computer Scientists, 17-19 March 2010 Hong Kong.
68. Obiso, E. I. (2009). A Survey of Green Supply Chain Management Practices in the Petroleum Marketing Firms in Kenya.

69. Paulraj, A. (2011). Understanding the Relationships between Internal Resources and Capabilities, Sustainable Supply Management and Organizational Sustainability. Journal of Supply Chain Management, 47, 19-37.
70. Preuss, L. (2005). Rhetoric and reality of corporate greening: a view from the supply chain management function. Business Strategy and the Environment, 14, 123-139.
71. Rahim, S. A., Fernando, Y., & Saad, R. (2016). Sustainable Green Supply Chain Management and Impact on Organizations. Journal of Emerging Trends in Economics and Management Sciences, 7(3), 147-155.
72. Rahman, A. A., Ho, J. A., & Rusli, K. A. (2014). Pressures, Green Supply Chain Management Practices and Performance of ISO 14001 Certified Manufacturers in Malaysia. International Journal of Economics and Management, 8, 1-24.
73. Rao, P. (2007). Greening of the supply chain: an empirical study for SMES in the Philippine context. Journal of Asia Business Studies, 1(2), 55-66.
74. Rao, P., & Holt, D. (2005). Do green supply chains lead to competitiveness and economic performance? . International Journal of Operations and Production Management, 25(9), 898-916.
75. Rasit, Z. A., Zakaria, M., Hashim, M., Ramli, A., & Mohamed, M. (2019). Green Supply Chain Management (GSCM) Practices for Sustainability Performance: An Empirical Evidence of Malaysian SMEs. International Journal of Financial Research, 10(3), 371-379.
76. Rogers, D. S., & Tibben-Lembke, R. (2001). An examination of reverse logistics practices. Journal of Business Logistics,, 22(2), 129-148.
77. Sarkis, J. (2003). A Strategic Decision Framework for Green Supply Chain Management. Journal of Cleaner Production, 11, 397-409.
78. Sarkis, J., Gonzalez-Torre, P., & Adenso-Diaz, B. (2010). Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. Journal of Operations Management, 28(2), 163-176.
79. Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. International Journal of Production Economics, 130(1), 1-15.
80. Schaper, M. (2002). The challenge of environmental responsibility and sustainable development: Implications for SME and entrepreneurship academics. Radical changes in the world: Will SMEs soar or crash. 541-553.
81. Schroeder, R. G., Bates, K. A., & Junttila, M. A. (2002). A resource-based view of manufacturing strategy and the relationship to manufacturing performance. Strategic Management Journal, 23, 105-117.
82. Seman, N. A. A., Zakuan, N., Jusoh, A., Arif, M. S. M., & Saman, M. Z. M. (2012). Green Supply Chain Management: A Review and Research Direction. International Journal of Managing Value and Supply Chains (IJMVSC), 3(1), 1-18.
83. Sen, S. (2009). Linking green supply chain management and shareholder value creation. The IUP Journal of Supply Chain Management, 7(3/4), 95-109.
84. Sharma, S., & Jain, V. K. (2017). Impact of green supply chain management practices on on organizational performance: A review. Asia Pacific Journal of Research, 1, 104-109.
85. Singh, A., & Trivedi, A. (2016). Sustainable green supply chain management: trends and current practices. Competitiveness Review, 26(3), 265-288.

86. Teuteberg, D., & Wittstruck, F. (2012). Understanding the Success Factors of Sustainable Supply Chain Management: Empirical Evidence from the Electrics and Electronics Industry. Corporate Social Responsibility and Environmental Management,, 19(3), 141-158.
87. The Star Online (2017). SMEs growth outspaces country's GDP growth. Retrieved on 17 April 2018, from https://www.thestar.com.my/busines
88. Theriou, N. G., Aggelidis, V., & Theriou, G. N. (2009). A theoretical framework contrasting the resource-based perspective and the knowledge-based view. European Research Studies, 7(3), 177-190.
89. Torielli, R., Abrahams, R., Smillie, R., & Voigt, R. (2011). Using lean methodologies for economically and environmentally sustainable foundries. China Foundry, 8(1), 74-88.
90. Vachon, S. (2007). Green supply chain practices and the selection of environmental technologies. International Journal of Production Research, 45(18/19), 4357-4379.
91. Vachon, S., & Klassen, R. (2006). Extending green practices across the supply chain: the impact of upstream and downstream integration. International Journal of Operations & Production Management, 26(7), 795-821.
92. Vijayvargy, L. (2017). Empirical Study on Adoption of Green Supply Chain Practices for Developing Economy. Proceedings of the International Multi-Conference of Engineers and Computer Scientists, 2.
93. Voola, R., Carlson, J., & West, A. (2004). Emotional intelligence and competitive advantage: examining the relationship from a resource-based view. Strategic Change, 13(2), 83-93.
94. Walton, S., Handfield, R., & Melnyk, S. (1998). The green supply chain: integrating suppliers into environmental management processes. Journal of Supply Chain Management, 34(2), 2-11.
95. Wong, C. W., Lai, K. H., Shang, K. C., Lu, C. S., & Leung, T. K. P. (2012). Green operations and moderating role of environmental management capability of suppliers on manufacturing firm performance. International Journal Production Economic,, 140, 283-294.
96. Wooi, G. C., & Zailani, S. (2010). Green Supply Chain Initiatives: Investigation on the Barriers in the Context of SMEs in Malaysia. International Business Management, 4(1), 20-27.
97. Yacob, P., Aziz, N. S., Makmor, M. F. M., & Zin, A. W. M. (2013). The Policies and Green Practices of Malaysian SMEs. Global Business and Economics Research Journal, 2(2), 52-74. The International Journal of Business & Management, 4(4), 189-198.
98. Yang, J., Han, Q., Zhou, J., & Yuan, C. (2015). The influence of environmental management practices and supply chain integration on technological innovation performance - Evidence from China's manufacturing industry. Sustainability, 7.
99. Younis, H., Sundarakani, B., & Vel, P. (2016). The impact of implementing green supply chain management practices on corporate performance. Competitiveness Review,, 26(3), 216-245.
100. Zhang, J., & Zheng, L. (2010). Research on the Building of Green Logistics System and the Development Strategy in Jilin Province. International Conference, Logistics Engineering and management.
101. Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. Journal of Operations Management, 22(3), 265-289.
102. Zhu, Q., & Sarkis, J. (2006). An inter-sectoral comparison of green supply chain management in China: drivers and practices. Journal of Cleaner Production, 14(5), 472-486.

103. Zhu, Q., Sarkis, J., Cordeiro, J., & Lai, K. H. (2008). Firm-level correlates of emergent green supply chain management practices in the Chinese context. Omega, 36(4), 577-591.
104. Zhu, Q., Sarkis, J., & Geng, Y. (2005). Green Supply Chain Management in China: Pressures, practices and performance. International Journal of Operations & Production Management, 25(5), 449-468.
105. Zhu, Q., Sarkis, J., & Lai, K. H. (2007). Initiatives and outcomes of green supply chain management implementation by Chinese manufacturers. Journal of Environmental Management,, 85(1), 179-198.
106. Zsidisin, G., & Siferd, S. (2001). Environmental purchasing: a framework for theory development. European Journal of Purchasing & Supplying Management, 7, 1-73.
107. Zsidisin, G. A., & Hendrick, T. E. (1998). Purchasing's involvement in environmental issues: a multi-country perspective. Industrial Management & Data Systems, 98(7), 313-320.

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020