Innovation Framework Towards Sustainability Supply Chain Management

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Abstract: Sustainability is hinged on innovation. The importance of sustainable innovation management in sustainable supply chain management (SSCM) cannot be underestimated. Studies on SSCM have emphasised the need for sustainable innovation in achieving sustainability but none provides deep insights into sustainable innovation management in SSCM implementation in organisation. This lack of research depth stimulates this study to identify and investigate criteria for sustainable supply chain management innovation advancement. This paper proposes a sustainable innovation criteria framework in investigating sustainable supply chains in manufacturing companies. The results of the study will inform industrial managers, practitioners and decision-makers on which criteria to focus on during the implementation stage, to increase sustainability in manufacturing supply chains, and further advance corporate and supply chain sustainable development. The framework may also serve as a theoretical construct for a future empirical study on sustainable supply chain innovation in the manufacturing sector. This paper sets the stage for further research in sustainable innovation practices in the manufacturing sector and its supply chains.

Keywords*: Supply chain management, Sustainability, Innovation management*

1. INTRODUCTION

Sustainable development issue is a rapidly developing area of studies and has garnered a lot of interests from industry, academia and society [44]. This would positively affect the environment as most business and industrial activities nowadays have a deleterious culmination towards the environment health. As a consequence, emissions of carbon dioxide from energy sources worldwide and emissions of carbon dioxide due to transportation will rise respectively by 52% and 58% by 2030 respectively. Therefore, both business entities and governments were hampered with pressures to reduce the environmental effects of goods and services production [59]. It was expected for organisations to sanction strategies in order to ameliorate and lessen the detrimental impact towards environment caused by their products or services [46],[76],[77]. Within the context of environmental protection, the most common notions are the ability to adopt sustainability in business organizations [58]. Sustainability is defined and interpreted in multitudinous different ways. In general, the term "sustainability" is also mean "green" which is strictly comply with the environmental regulations or public demand [61].Thus, it must be considered at all of the stages such as the lifecycles of products, design and development, manufacturing, distribution, sale, use and disposal and the system closed-loop operation; it is vital to react and propel the organisation towards improved capabilities in supply Chain Management (SCM) [47].

As per literatures reviewed, tonnes of authors have stressed and discussed the Sustainable Supply Chain Management (SSCM) as one of the innovations or game changer in order to improve SCM to preserve and protect the environment [44], [58], [59], [66],[47]. Therefore, in order to rejuvenate and counter the damaging traditional approach of SCM, SSCM was introduced as an alternative. To boot, it is an alternative that is widely accepted throughout the

International Journal of Supply Chain Management
IJSCM, ISSN: 2050-7399 (Online), 2051-3771 (Print)

globe and industries where its main purpose is to boost the capability of environmental preservation and salvation [44], [1],[71],[5]. Additionally, SSCM concept leads to the direction in which economic activity evolves and more businesses are integrated with social and environmental considerations in their operations [44]. For SCM to be sustainable, [5] pointed out that there is a need to eradicate or abate adverse environmental effects (land, air, water) and waste products (materials, products) from the beginning of supply chain (e.g. acquisition of material) to the end of supply chain management (e.g. materials disposal). Over and above that, numerous previous studies have supported and explained the effective approach of SSCM in improving overall performance of organisation [44].[68], [71] are pointed out the advantages of waste management by recycling. To boot, the recycled products can be used to disposed or create a new product at the same time and this could save the environment and resources used for the respective product. This is fully supported by [8] , [37] where they stated that recycling lowers new production costs and increases productivity.

Additionally, [69] stated that SSCM not only makes significant cost savings, but also increases sales, market share and encourages new market growth, contributing to profit margins. By implementing SSCM initiative, it would benefit the organisations from all these advantages and contribute to the organization's economic performance. Correspondingly, organisations could achieve competitive advantage and increase survival chance in the market [73]. In Malaysia, the government has spent a lot of money among industry players on promoting and implementing green technology [41]. In April 2009 the government also took action by setting up the Ministry for Energy, Green Technology and Water. Malaysia also has attracted top companies to invest and has collected approximately 12 billion in the solar photovoltaic industry. These capitals enable Green Technology producers and users to get the budget through loan in order to fund and support their events and some of them received it as grant as they will implement the process of SSCM in their operation [58]. To boot, it is regarded as a stepping stone for Malaysia in order to implement a sustainable supply chain in this country.

Unfortunately, it was narrated by [20],[23] that Malaysia owned organisation has the lowest level of participation in the sustainable supply chain management. In reality, the small and medium-sized enterprises in Malaysia are still lagging behind and lack of knowledge in environmental preservation compared to big industries in developing countries. In addition, environmental factor is among the vital aspect in SSCM in Malaysia; yet, statistics elucidated that Malaysia failed so hard in handling and lessen the pollution occurred. According to the Environmental Protection Report, the annual growth rate of environmental protection expenditure was 0.8 percent with RM 2.59 billion in 2017 as compared to 2015. It was the largest contributor to operating expenses with 72.3 per cent and 27.7 per cent capital expenditure. In addition, for environmental media such as air, surface water, groundwater and noise; it was found that it has contributed to highest contributors with RM 1659.7 million or 64.0 per cent [19]. In addition, it was found that manufacturing industry contributed to majority of the water pollution in Malaysia [74], [72]. This showed that the SSCM fails to be implemented in Malaysia as the expenses keep on heightening. The inconvenience truth is that the proper study on SSCM especially in Small-medium enterprise to alleviate and ameliorate this problem still failed to get the attention of researchers. Yet, most studies focused on with bigger industry name such as Multinational corporation and companies.

Therefore, there is a need for this study in order to find out the strategy of SSCM to improve performance and make it sustainable. The results from this study are very helpful and will be used as benchmark and guide for improvement in the future. The objectives of this study is to develop a model which could be used to strengthen the practice of SSCM in achieving sustainability performance; Therefore, based on the research objectives mentioned, the research questions raised are: a) What are the variables that affect SSCM performance?; b) What is the appropriate model that can be used to improve the SSCM practice?

2.0 LITERATURE REVIEW

2.1 *Supply chain* management

Supply Chain Management (SCM) is typically an integrated method in which raw materials have been manufactured to final products and then distributed to consumers through distribution, retail or both. All people, organisations, equipment, activities and technology involved in the development and distribution of a product or a service are included in the supply chain. Although a supply chain is commonly used, it is typically viewed as a network of actors at the different production and service points [13],[73]. SCM is a holistic approach to demand management, sourcing, manufacturing and logistics [16]. It is a network consists of all parties directly or indirectly involved in producing and offering products or services to end customers on either upstream or

downstream sides, including manufacturers, suppliers, retailers, customers and so on [94] through physical distribution, information flow and finance [91] With SCM undergoing a significant transformation [56] and rapid growth modern SCM principles include strategic differentiation, performance enhancement, improved operational efficiency, reduction of costs in the new economy, supply chain integration and collaboration, operational excellence and virtual supply chains [73].

It was narrated by [87] supply chain involves with a cash flow that take place between two sides in the SCM through the exchange of services or product to various forms payment methods in order to fulfil customers' needs. Meanwhile, [31] stated that supply chain is supplied by an information flow that takes place both in materials, customer request, facilities and cash and in many other. Cooperation and collaboration between various supply chain facilities can further achieve better performance of the supply chain. It will boost not only the flow of goods, prices and the flow of information but also the flow of production, reused products, repair and post-sales service flows, and so on. Additional performance criteria can be implemented according to service or output type of supply chains [38]. The activities combination, approaches and knowledge are efficiently being used to integrate the supplier raw material, manufacturers, distributors, retailers, and customers. That being so, it is so that goods that are produced would be distributed in a precise quantity to the precise location is a process that occurs in supply chain [62].

The critical concerns in SCM are the decision of talent where sources, location, production, inventory, and transportation from the time perspective [14]. Hence, activities like sourcing, skills planning, equipment usage, ease of use, management of the production, timetable preparation, planning of material requirements, delivery planning, inventory management as well as order forecasts should also be prepared carefully in order to achieve optimum results [73].

2.2 Evolution of Sustainable Supply Chain Management (SSCM)

SSCM is an extended form of SCM from the conservative old SCM. SSCM takes into account environmental considerations when meeting and targeting the goals of supply chain management. Multi-national companies (MNCs) are mostly involved in SSCM as these distribution chains main focus is not only on internal performance but also on their impact on the environment. Numerous companies issue a Corporate Social Responsibility to show support for the environment consciousness and social responsible behaviour. It was also found that SSCM is also practical for Small and Medium Enterprises; this is to help them to endure and compete in the competitive-based market. Hence, SSCM is therefore more realistic, systemic and comprehensive in its approach or approach to sustainable development than any of the Supply Chain principles [73] Sustainable development must be more environmentally friendly, and natural resources must be regulated to reduce the negative environmental effects. Green technology are expected to affect global environmental efficiency in all sectors and supply. These include designing and implementing goods, facilities, structures and natural resources which can reduce the negative impact of human activities [80].

Previous studies have shown that green technologies are a social responsibility of an eco-friendly company. [52] found that efforts to promote the sustainability of the supply chain must involve all parties, including customers and suppliers. This is fully supported by [7] which narrated that the main key factors in sustainability are affected by external third parties or companies. [71] found that in order to achieve environmental protection, the innovation of SSCM and organizational efficiency required environmental management systems (EMS) and ISO 14001. As stated by [79], the increased environmental regulations pressured the company to embrace SSCM for increased competition in global supply chain management in terms of product development, inventory management, manufacturers, consumers, and infrastructure systems. The transformation of SSCM is constantly recognised as it represents the first choice for any customer based on continuously improving health, social culture and sustainable manufacturing operations or services[18]. In addition, one of the prior measures of the supply chain management activity is environmental performance [94]. It was also stated that SSCM is a main key strategy and policy in electronics companies (Dell, HP, IBM, Motorola, Panasonic, Fujitsu, Toshiba and etc.). Additionally, literatures have discussed that there are companies carry out research and development (R&D) in order to properly set the standard of the used substance so that it is complied with ISO standard and do not have negative consequence towards the environment especially towards their supplier [4]. This situation is seen as beneficial for the SSCM sector in raising awareness of the value of environmental sustainability and also provides business competitiveness [101]. SSCM also assists companies to enhance environmental management performance, reduce waste and save money, and also to encourage energy efficiency [70].

Additionally, it also adds value to the overall control of the supply chain [39].

2.3 Sustainable Supply Chain Management (SSCM) Concept and Definition

There is no special definition of SSCM and its application although there are tonnes of definitions and concepts in the literature [97],[89]. There is an oriented approach to the organizational strategies for the introduction of sustainable technology as a whole, in which certain particular elements can be considered a priority for implementation [78]-[80], [68],[106], [108]. Additionally, SSCM is governed by the perspective and its implementation in companies [93], [68]. SSCM incorporates sustainability awareness into supply chain management including product design, material sourcing and selection, manufacturing processes, consumer distribution of the finished product, and end of life management of product [89]. In contrast, [77], [81] have different opinions on the sustainability of the supply chain. The author stated that there is no specific guidelines for the implementation of SSCM and the common concept and definition is to preserve and protect the environment in the management system.

Other than that, there are also researchers that focused on the resources procurement, environmentally-friendly regulation, customer management, vendors' management, logistics administration and transport system [56],[10],[30],[28]. Meanwhile, [13],[92] are narrated that SSCM is an approach to enhance resource efficiency, including product design and handling consumer life, equipment and machinery, inventory management, waste management, recycling, recycling, reuse and protection and well-being at work. To boot, it was concluded that the implementation of SSCM would enhance the information sharing capabilities that provide the company with a competitive advantage in compliance with the environmental sustainability cycle [33]. On top of that, [34] stated SSCM is also aimed at reducing the negative environmental impact through organizational and supply chain operations. Overalls, all features of SSCM have been addressed and become a crucial part of the structural impact on society, the economy and the environment. Selection of SSCM elements is subject to organizational criteria [8] ,[25]. However, this study is only focused on the elements that include the internal sustainability of the product. Therefore, supplier production is not to be addressed in the elements of this study scope.

2.4 SSCM Benefits

There are many to be benefited or learned by organisation from the SSCM Implementation Literatures. [68] stated that SSCM can increase its confidence in environmental sustainability by explaining the benefits of the practices. [8] has recognized it, which he agrees to the advantages of adopting SSCM. This is because if less apparent advantages are obtained, the organisation will not engage in SSCM [71]. [68] also found that customer and manufacturer complaints and criticism were improved in order to improve SSCM performance. In fact, SSCM helps the organization to detect through third party eyes the vulnerabilities and flaws in the organization[6],[71].

In order to remain competitive on the market, all complaints must be processed prudently and systematically [15]. This is because the effectiveness of complaint management will boost consumer satisfaction and a competitive advantage in the market [17], [69], [90].

The successful implementation of SSCM has been influenced by the work and the commitment of the organization in the elimination of non-compliance [96]. There are two types of non-compliance and non-compliance of minor nonconformities key. It is able to increase operating costs, including sorting or scraping, which cannot be recycled [104]. It was suggested by [83] that organizations should have a benchmark for the successful implementation of the SSCM. It also provides a learning process to gain a competitive advantage on the market[2]. To boot, it also provides continuous improvement process to market deflation, customer satisfaction and problems [60]. [99] has pointed out that the benchmark is mainly concerned with the process of continuously achieving better performance. It is undeniable that senior management is responsible to the implement SSCM in organisation. Nevertheless, some of the literatures suggested that every worker should be dedicated so that SSCM will be successful [21],[31],[106]-[108]. The commitment of top management should be in line with the workers so that it would catalyst them to dedication. This is mainly because the workers are the organization's largest group and their dedication and enthusiasm are vitally essential in ensuring the success of SSCM [116],[37],[43].

Some literatures suggest that the benefits of SSCM can be addressed in categories such as climate, economic advantages and the advantages of skills. Nevertheless, the definition of the interest group had to be made on the basis of factor analyzes [12]. This is supported by [111] who found that interest groups had to be formed based on the organization's feedback. Additionally, [70], [10] stated that SSCM has significant cost reductions, integration with suppliers

and promotion of environmental innovation in participatory decision-making processes. It was also found that implementing SSCM can reduce the cost of purchasing materials and energy consumption]. [88] has developed 10 reasons for organisation to embrace and apply SSCM which are target marketing, resource sustainability, lower cost / efficiency, product differentiation and competitive benefit, competitive chain pressure and supply pressures, adjustment to regulation and risk reduction, brand reputation, return on the investment, employee morals and ethical imperatives. Nevertheless, the focus of this study is on implementing SSCM stakeholder interest including internal stakeholders, external stakeholders, internal and external customers.

Human rights are fundamental rights, equality and a decent standard service that everybody owns or receives, and companies have a responsibility to respect human rights. Human rights consist of all stakeholders, not only to the external stakeholders but also to internal stakeholders, internal and external customer. At the same time, human rights in the supply chain context include all business activities of products, transport and other things that do not affect people around the organization [42] There are tonnes of different ways to support workers to get value for the sustainability practice. One of them includes support, financial rewards and, inter alia, good working conditions. Other than that, prevention of health deviation caused by work conditions among employees; placing and retaining employees in a working environment that is suitable to their capabilities are also a good reference. It strengthens the employee's health and safety incentive as drivers of SSCM and helps to introduce and embrace SSCM in workplace[9].Working in a friendly workplace improves the quality of the workplace, too. So companies can enhance employee moral through the adoption of SSCM manufacturing practices. Additionally, customers are always welcoming to reduce expenses for the same feature or characteristics products or services. Often, when there are competitors in the market, they demand more function and characters at the same price. The costs of product sales should decrease as production costs are reduced, and job and communication quality is increased. This will take advantage of a lower price of items which helpes to distinguish the company and compensate for sales in which is affecting sustainable marketing strategy for stakeholders [63].

Table 1: The Benefits of SSCM Implementation

The Benefits of SSCM Implementation	Rao (2002)	Evans & Johnson (2005)	Rao (2005)	Rao & Holt (2005)	Shuwang et al (2005)	Zhu et al (2005)	D' Souza et al (2006)	Tsoulfas & Pappis (2006)	Rao (2007)	Zhu et al (2007a)	Zhu et al (2007b)	Zhu et al (2008a)	Zhu et al (2008b)	Zhu et al (2008c)	Holt & Ghobadian (2009)	Jun (2009)	Minggiang & Yabo (2009)	Chiang et al (2010)	Essoussi & Linton (2010)	Zhu et al (2010)	Vantaj Lophleh.,(2012)	M. Javaid &M. Shoeb (2015)	Thoo Ah Chin et.al,. (2015)
Increased efficiency	x		x	x		x			x	x	x	x	x	x	x	x	x			x		x	
Improvement in product quality	x		x	x	x	x			x	x	x	x	x	x	x					x		x	
Increased productivity	x			x																		x	
New market opportunities	x		x	x	x				x						x		x					x	x
cost savings	x			x	x	x				x	x	x	x	x		x	x	x		x	x	x	x
Increased corporate image	x		x	x		x			x	x	x	x	x	x	x			x		x		x	
Reduction of solid waste / liquid	x		x	x	x	x		x	x	x	x	x	x	x	x	x	x			x			
Reduction of air pollution dispersion	x		x	x		x			x	x	x	x	x	x	x	x				x			
Recycling	x		x	x					x	x	x			x	x		x	x	x	x			
Improvements in compliance with environmental laws	x	x	x	x		x	x		x	x	x	x	x	x	x			x		x			
Increases in product prices	x		x	x			x		x														
profit margins	x		x	x		x			x	x	x	x	x	x		x				x		x	
social responsibility						x				x	x	x		x	x					x		x	
The increase in sales						x				x	x	x	x	x	x	x				x		x	
market share	x		x	x					x						x							x	x
Increased efficiency	x		x	x	x	x			x	x	x	x	x	x	x	x	x	x		x		x	x

Source:Mohd Rozar,N.L., 2017

2.5 Identifying the SSCM Benefits according to the Customer and Stakeholder Requirement

The needs of consumers and stakeholders should be taken into account in order to improve the overall performance of SSCM.

i) Internal Stakeholder

Many analysts have acknowledged the ability of group members to manipulate and alter public corporation's feelings. Suppliers are active in the sustainability of supply chain such as in cost reduction and creativity in the environment [22]. In a study by [65], the group stakeholders is a group of people who have experienced with the group and sector, are not essentially part of the firm's relationship network. Since public perception must be properly represented and the decision-making process is affected, it is important to understand with certainty the health effects and sustainable solutions.

ii) External stakeholder

In most businesses, partnership with ecologically sensitive suppliers is now becoming important criteria [29]. The criteria are quality, costs, on time delivery, capacity utilization and position in the marketplace, resulting in better products and equipment selection decisions, shortened lead time, reduced waste in production and improved chances for selling products in the international markets [103],[102],[115],[45]. [75] stated suppliers improve the efficiency of the entire distribution chain and can affect the overall performance of the supply chain. Therefore, manufacturer-supplier association could be seen as a critical component for the development of a sustainable business competitive benefit.

iii) Internal customer

This is a significant indication that the involvement of workers in the SSCM process is calculated. According to [53], sustainability practice impacts the loyalty of customers and employees. The numbers of the special sustainability training program and the number of conferences and expositions linked to the organization's sustainable development are different metrics measures.

iv) External customer

It was regarded as an important factor in the success of the SSCM because every company wants to market its products to consumers. [109] stated measurement of the supply chain shall be focused on the satisfaction of the customer. The customers' interest in sustainable products and the customer satisfaction with the goods are various measures under this metric. Improving the capacity of various supply chain members to manage activities to meet shifts in customer needs is seen as leading to greater customer satisfaction [26]. Organizations implementing customer-centric SSCM are capable of reducing costs and of improving quality [98].

2.6 Technical requirement (TR) and Customer Requirement (CR)

Recently, the green supply chain has drawn academics' interests. Numerous studies were carried out and the SSCM focuses on the definition and connotations of SSCM's green supply chain, architecture and structure. Each SSCM study or technique has dealt with a number of insights, but a lack of holistic perspectives becomes a problem because green capacities and evaluations of firms should be closely connected to SSCM drivers [48]. Therefore, a broader perspective is needed to examine for SSCM improvements. However, there is little clarity on how to turn SSCM goals into action plans. Previous methods do not answer specifically the interactions between SSCM drivers in the SSCM improvements action plans [48]. In this study the customer requirements and technical requirements as SSCM drivers and action plans were considered. Technical requirements are a key success factor in improving this region. There are a number of critical performance factors influencing the organizational adoption of SSCM[80][98]'[97][106]-[114]. It is also intimately related to management of quality, including the company's internal and external activities [68]-[70], [37]. [3] narrated that the crucial factor for successfully adopting SSCM is indeed a benchmarking, allowing companies to gain a better understanding of the solution to be selected.

2.7 The Critical Success Factor in SSCM

There are various vital antecedents that uphold the SSCM implementation in organisation [107,[109]. It is also closely linked to quality management practices including the company's internal and external activities [37], [[68]-[70]. To boot, a positive result of investments in SSCM can be achieved through the needs of consumers who control goods, including demand and costs [37]. Organizations must be constructive, with competition increasing dynamic, to increase output operational efficiency [40]. It is motivated by the actions of certain clients who cut purchasing costs for the next year without impacting production capacity [59]. In addition, organizations must become sensitive to operational changes and maximize production with a focus on sustainable technology applications as a continuous

improvement[106] . Efficient documentation system is also found to be vital and essential in the SSCM success [96]. This is because it allows the provider to consider the operational needs or vice versa of an organisation (Luthra et al., 2016). Such system may help employees define supplier status to increase production efficiency [15].

In some literature the training needs of every employee should be recognized and training records should be implemented as employees are properly trained or knowledgeable to effectively perform their tasks in order to execute SSCM [32], [43], [50]. Other than that, training and communication have been found to be the catalyst of increased awareness, knowledge and understanding of employees in SSCM adaptation [116],[11]. To boot, efficient communication in teams really do improve the sharing of information and improve overall performance. The execution of SSCM needs to cater to the complaints and criticism from customers and suppliers in order to improve [68].This is vital as it is the basic requirement so that customer satisfaction could be met and boosted. It was also stated that the weakness and deficiency of organisation could be identified through the eyes of third party [6],[71]. Thus, it is a need for organisation to handle the issue and complaint with care and prudent in order to remain relevance and competitive in the market (Chopra and Meindl, 2006). To boot, the confidence of customers towards the organisation would improve linearly with the efficiently and effectiveness of organisation in managing the complaint from customers [17],[69][90]. [51] cited that successful implementation of SSCM is benchmarking the success of the critical factors and they also help respective organisation to better comprehend the approaches chosen. Table 2 depicts the critical success factors for the implementation of SSCM identified through previously researchers.

Table 2: The critical success factor for SSCM

The Critical success factor for SSCM	Rao (2002)	Burnes et al (2003)	Zhu & Sarkis (2004)	Zutshi & Sohal (2004)	Evans & Johnsons (2005)	Rao (2005)	Rao & Holt (2005)	Vorhies & Morgan (2005)	Zhu et al. (2005)	Hu & Hsu (2006)	Tsoulfas & Pappis (2006)	Zhu & Sarkis (2006)	Manaktola & Jauhari (2007)	Rao (2007)	Zhu et al. (2007a)	Zhu et al. (2007b)	Zhu et al. (2008a)	Zhu et al. (2008b)	Zhu et al. (2008c)	Holt & Ghobadian (2009)	Sarmiento & Thomas (2010)	Zhu et al. (2010)	Sunil Luthra et.al (2014)	Singh & Kumar (2017)	Luthra et.al (2016)
Identify requirements /customer focus.	x		x			x	x		x		x	x	x	x	x	x	x	x	x	x		x			x
Determining production procedures /operations to ensure greater efficiency.	x					x	x		x		x	x		x	x	x	x	x	x	x		x			x
Update the documentation to ensure that employees perform.	x					x	x				x			x											x
Ascertain the identity of the supplier of choice and supply information systems to inform.	x		x			x	x		x		x				x	x	x	x	x	x		x	x		
Ensure training needs and attendance records by topic.	x					x	x				x			x									x		x
Ensure that customer complaints are handled properly.	x					x	x							x											
Ensure minimization and commitment to abolish the non-compliance problem.	x		x			x	x				x			x	x	x	x	x	x			x			
Identifying the problem nonconformities.	x					x	x				x			x											
Ensure employee commitment.	x					x	x		x	x	x	x		x	x	x	x	x	x	x		x		x	
Engagement / employee training	x	x		x		x	x				x			x						x				x	
Benchmark.						x		x			x										x			x	
Commitment of top management.			x		x					x	x	x			x	x	x	x	x	x		x		x	

2.8 Identifying the critical success factor in SSCM according to the Social, Economic and Environmental factors

Today's research on SSCM has concentrated on one and two dimensions rather than on achieving SCM in the three dimensions "sustainable". Researchers can focus on improving economic benefits as well as on meeting environmental and social demands in order to achieve sustainable performance. In terms of production objectives, corporate growth and profits should not be at the expense of employee well-being. In turn, to achieve truly green supply chains,[67] suggested to look from the point of view of other players, such as NGOs and communities. Therefore, social performance could be considered an important factor in ensuring sustainable supply chains. Hence, there must be integration of more environmental and social indicators of performance in the supply chain [8]. It is worth exploring and it will be the focus of this study.

In addition to these factors, however, the results of the analysis showed a different factor. It was referred to as an operating factor. The business efficiency, such as reduced waste and delivery times, reduced stocks and enhanced capacity utilization, is linked to the company's operational results [115].In the meta-analysis of [22], different indicators relating to the company's operations performance were included, for example, scrap rate, delivery time, inventory levels and capability utilization. In addition, organizational consideration can be inferred that SSCM activities have a significant impact on organization's environmental and organizational efficiency. The businesses cited a wide range of opportunities with respect to environmental and organizational efficiency. Improved risk management and integrity are one of the aspects of organizational efficiency to be integrated into the system [54]. Following the evaluation of some studies earlier, the specific effects of SSCM practices on business performance were compared to three dimensions. Therefore, following the insight from the systematic review of the literature on performance measurement found that three dimensions of economic, environmental, social performance were coded in SSCM.

2.9 Performance measurement in SSCM

Current performance measurements study in SSCM was motivated from [8], in which supply chain management is an important component which can help companies to reduce their social and environmental costs. Confronted with an increasingly competitive global market, some large multinationals have established networks of their providers globally to increase their competitiveness in order to achieve the cost balance, growth and friendship with the environment. In this way, more and more companies in Malaysia are continuously examining common strategies to improve their supply chain systems to reduce costs, increase productivity and improve environmental performance. For an effective green supply chain management, it is important to assess the overall performance of the entire chain. In turn, performance measures promote decision-making efficiency, accomplish targets and improve overall performance and increase transparency [64]. In addition, the performance assessment within SSCM helps to improve the organisation's supply chain efficiency[100].

On top of that, it is undeniable that reviewing the measurement of performance could lead to SSCM success (Shuwang et al., 2005; Shepherd and Gunter, 2006). Other than that, product quality, product time to market, cost reduction and environmental impact are expected to improve [86] and also the efficiency of life cycle supply management [36],[57]. This study defines the SSCM as a management philosophy that emphasizes the importance of environmental sustainability in the supply activities that will enhance the overall performance of an organization. Henceforth, SSCM internal processes and external processes must be assessed [66]. It was further narrated that companies need to have a performance measure or appraisal in order to gain relevant information on the companies performance. The theoretical framework of [68] has shown a highly positive impact for SSCM and has shown that SSCM implementation works effectively to enhance environmental and company efficiency as well as to increase quality and economic benefits. Because the global focus on environment problems has made production in this area more competitive in its environmental performance in the region, it is still acceptable and relevant up until now [73].

In social performance terms, [104] found a positive impact on social success of sustainability from buying and packaging. This can trigger a chain effect which will lead to rapid and significant changes in social behavior [104]. Now, social issues such as working conditions play an important role in SCM [27] Employees are assets to an organisation, fail to provide proper working condition would lead to negative and bad consequence such as turnover or suicide. Todays, a performance-oriented environment concept has changed to a complete performance-based concept. It was proposed by [84] that the SSCM concept includes comprehensive performance measurements to offset organizational growth from time to time. This has sparked some debates by [93],[[24],[93] that pointed

out that SSCM performance measurement is more relevant for sustainability growth. It was proposed by [101] by their study in the climate, social responsibility, commercial and non-economic of the SSCM. The calculation of three factors to achieve balance between financial returns, social success and environmental concerns was also proposed and added by other researchers [58].In summary, Table 3 illustrated the performance measurement in SSCM from previous studies.

Table 3: Conceptual Model for Performance Measurement in SSCM

SSCM Practice	Performance	Model
Suppliers development	Economic, Environmental and Competencies	Rao (2002)
Supplier's development, Green productivity and Green uses.	Economic, Competencies	Rao and Holt. (2005)
Green productivity, R&D green and Green Marketing.	Economic, Financial	Peng and Lin. (2008)
Environmental and Supplier development.	Environmental and Economic	Giovanni and Vinzi. (2012)
The critical success factor, Benefits and Element.	Competency(Manufacturing)	Wan Mahmood (2012)
Green Procurement, Green Manufacturing, Green Distribution and Green Logistics	Economic, Environmental and Social	Thoo Ai Chin. (2015)

2.10 Sustainability Performance in SSCM

The current sustainable development strategies are divided into four groups in the supply chain or organization: (i) the Global Reporting Initiative usage (GRI 2007); (ii) the use of the International Organization for Standardization (ISO) like ISO 14031 (ISO 2004); (iii) the use of performance measurement system like Green SCOR (SCC 2008), and sustainability balanced Scorecard (SBSC); (iv) the use of others approach such as decision-making tool. In addition, the literatures fail to determine the overall effect on sustainability of SSCM activities. It was stressed that there is need for thorough research into ties between SSCM elements and performance assessment steps [112].

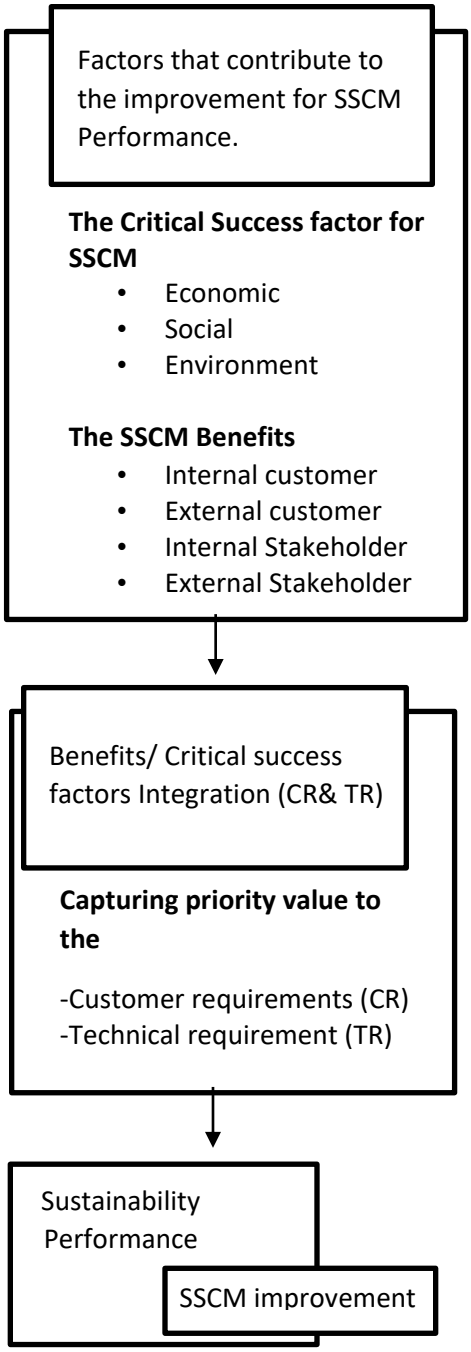
Sustainability in SSCM performance can be emphasized as it can help the industry to improve and solve shortcomings and weaknesses which are in practice. Optimizing SSCM sustainability is also the best strategy to tackle the challenge of increasing the potential for improvement of any organization's environmental efficiency [94]. The basis of measuring sustainable performance in the SSCM is to focus on environmental and social concerns and economic priorities rather than traditional supply chains. The goal of traditional supply chains is only to balance advantages among multi-stakeholders, increase operational efficiency in all the facilities and optimize the productivity of processes and operations without considering the environmental and social impact. Therefore, since SSCM has been adopted and enacted; environmental and social impact are taken into account.

3.0 RESEARCH FRAMEWORK

3.1 Theoretical Framework

It is inevitable to introduce the SSCM in order to improve performance of the company. In addition, research into the performance measurement variable should be updated with industry priorities. This study aims to build a decision-making process to give priority to green initiatives based on the outcome of the literature review, while taking SSCM drivers of customer requirements as well as action plans for strategic decision making factors into consideration. Through the integration process, customer requirements are reflected in the action plans of the technical requirements. In consequence, the aforementioned discussions lead to the next theoretical framework in Figure below

PROCESS, INPUT AND OUTCOME



4.0 Discussion and Conclusion

The study seeks to examine the SSCM practices on organisation and suggests improvement. Two main factors were chosen from the literature review, which are the benefits and the critical success factor for SSCM. In the case of SSCM improvements, both key measures will be considered. It was developed by combining different issues and taking into account the differences of internal and external pressures. The objective is to develop types of measurements, potential GSCM designs, and GSCM tools and results. The above theoretical framework is hoped to be useful in providing an effective approach for organisation to effectively execute SSCM practices leading to sustainable results. To boot, it merges sustainable development with the business and take its three dimensions into account (i.e., economic, environmental and social) which derived from customer and stakeholder requirements and would be a potential source of competitive differentiation for firms [55]. Therefore, as shown in Figure 1, the first part of the theoretical framework considered the internal and external factor in the critical success factors and the advantages to the SSCM for selection.

In conclusion, the critically discussed success factors focus on implementing the SSCM. To boot, this study strongly depends on the internal and external requirements of the consumer and stakeholder known as Voice of Customer "VoC". Hence, a technique analysis will be used in future study to establish and validate the model. Basically, customer satisfaction assesses the quality of a product or service. Benchmarking customer satisfaction can help policymakers identify areas for improvement, make strategic decisions and set targets to achieve desired satisfaction. It is very important to listen to and incorporate the customer's voices in the design and development of supply chains [105]. In addition, this study also examined the elements and components of SSCM for sustainable results on the basis of the theoretical framework.

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