An Extended Model of Sustainable Development from Sustainable Sourcing to Sustainable Reverse Logistics: A Supply Chain Perspective

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***Abstract* - Supply chain management is a holistic corporate strategy which involves decisions concerning sourcing, manufacturing, transporting, consumption, and reverse logistics. These processes influence competitive advantage and organizational performance. However, they could cause sustainability issues if not manage competently. These could also put serious burden on the environment with theatrical economic and social costs. The consequences of lack of being sustainable include depletion of the natural resources, endangered environment, negative societal norms, and unemployment. Despite these difficulties, literature fail to capture the whole process of sustainable supply chain. A break down in one process will affect the performance of others and thus the whole sustainability issue. This study is a literature review where data was taken from previous studies. The finding of this study is an extension of the popular supply chain sustainability framework. It is shown that stakeholder pressure and the pillars of supply chain management such as sustainable practices include sustainable sourcing, sustainable design, sustainable production, sustainable packaging, sustainable transportation, sustainable consumption, and sustainable reverse logistics could be used to improve the theory of sustainable supply chain management. The study concludes with contributions to theory and practice.**

Keywords: Sustainability, supply chain, environment, social, economic

1. Introduction

The concept of sustainable development was popularized in 1987. Then, its proponents thought it was a macro-economic issue. Within the first 10 years of conceptualization, the role of the corporation was ignored [1]. However, in 2002, WECD realized that macro-economic tools are not sufficient to protect the people, planet, and profit [2]. Since then the concept was taken out of the "macro-economic and environmental box" and extended into micro-economic analysis to take account of economic and social issues. Stakeholders have realized that within the micro-economic level, the supply chain function is key toward sustainable development [3][4][5][6].

Supply chain management is a holistic corporate strategy which involves decision concerning sourcing, manufacturing, transporting, consumption, and reverse logistics. Stakeholders understand that environmental and planet degradation largely occur due to these supply chain activities [7]. Therefore, adverse supply chain activities put serious burden on the environment with theatrical economic and social costs [8]. Despite the negative impact of not being sustainable, literature have ignored the impact of holistic supply chain cycle toward protecting the people, planet, and profit. Moreover, if the damaging trends are not curtailed, firm competitive advantage, performance and shareholder value could be threatened. To overcome these challenges, supply chain must balance the need for environment, society, and the company.

2. LITERATURE REVIEW

Literature agrees that SSCM is concerned with the triple bottom line (TBL): Environmental, social, and economic impacts [9][7]. Definitions of SSCM are summarized in Table 1.

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Table 1
Definitions of SSCM

Sources	Definition
[1]	Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Christine et al., 2014). This definition look at sustainability from a macro perspective.
[10]	Sustainable supply chain management (SSCM) as reformist SCM which is concern with "the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social, into account which are derived from customer and stakeholder requirements".
[11]	The potential for reducing long-term risks associated with resource depletion, fluctuations in energy costs, product liabilities, and pollution and waste management.
[5]	The "[. . .] strategic, transparent integration and achievement of an organization's social, environmental and economic goals in the systemic coordination of key interorganizational business practices for improving the long-term economic performance of the individual company and its supply chains"

In this study, sustainable supply chain management is define as a collaborative initiative among supply chain partners to adopt, design, and implement business strategies and practices that improve the triple bottom line tool (ecological, social, and economic) OR the 3 pillars (3Ps) of sustainability (planet, people, and profit). The importance of SSCM emanates from the need to protect the environment from dilapidation, manage climate change, resources diminution, treat workers fairly, so as to safeguard continuity of supplies and supply chain performance [3]. From the environmental perspective, sustainability helps to green the planet; reduces resource depletion, waste and pollution; moderates global warming; and protects the ozone layers [12].

From the societal standpoint, sustainability helps improves employees' health and safety, guard against child labour, reduce turnover and recruitment costs; lessen absenteeism; and enhances motivation and productivity of employees [13]. Economically, sustainable supply chain practices increases resource availability, reduces cost of energy, packaging; reduces labour costs; shorten lead-times; improves product quality; lower disposal costs; encourage the implementation of ISO 14000 standards and the use of design for disassembly and reuse. It subsequently enhances organizational reputation, and therefore makes the supply chain more attractive to its stakeholders [5].

Today, companies' commitment toward transparent SSCM is increasing and thus commendable. Statistics indicate that about 200 out of 250 largest companies in the world disclosed their sustainability performance in 2013 against 125 in 2005 [14]. The micro-economic impact of SSCM is widespread. SSCM influences eco-friendly production and consumption patterns [15]. It fosters sustainable collaboration and the development of integrated sourcing, product design, production, distribution, forward and reverse logistics, and waste management strategies [16]. It enhances corporate goodwill and reputation [17]. Companies are aware that sustainable practices strongly correlate with supply chain and organizational performance [18]. Ref. [5] suggests that sustainable practices helps organization respond to question of "What is it that we need to do, not just to survive, but to thrive, and not just one year, three years, or five years from now, but in ten years, 20 years, and beyond?" However, despite these benefits, theoretical development of SSCM is still maturing at micro-level analysis.

2.1 Theoretical Framework of SSCM

The concept of SSCM started with Ref. [19] who operationalized sustainable development from macro to micro level based on the TBL tool. As a paradigm shift from green or environmental management, TBL demands the supply chain management to simultaneously pursue economic, social, and environmental goals. These are explained below:

2.1.1 Environmental sustainability: This refers to "consuming natural resources at a rate below the natural regeneration or to consuming a substitute, generating limited emissions and not being engaged in activities that can degrade the ecosystem" [20]. Several environmental issues occur due to adverse effect of business operations. These effects include emission and pollution of the ozone layers due manufacturing activities, heat to due to energy utilization, emission from vehicles, disposal of plastics materials and scraps, and recycling of materials from post-consumption [7]. Therefore, firms are required to develop proactive measures toward environmental sustainability above legal requirement and enforcement. Typical environmental orientation includes recyclability, fuel efficiency, toxic content and emission reduction [21].

The core principle of environmental sustainability is the efficiency of the production processes by using less materials, machines and energy. Operational costs reduction, improved product quality could result in less production defects, rework, and scrap. These could improve the environment. Literature shows that eco-friendly companies influence worker engagement [22], innovation orientation [23], productivity [24] and subsequently enhance supply chain and financial performance [25].

Environmental commitment is usually made by accepting ISO certification or green initiatives [18].

2.1.2 Social sustainability: Social sustainability is defined as "the management and creation of skills as well as the capabilities of future generations, promoting health and supporting equal and democratic treatments that allow for good quality of life both inside and outside of the company context" [26][27]. Social sustainability orientation includes being socially responsible with issues such as employees' welfare and safety, and community development. It involves respect for labour laws, implementation of socially responsible practices, and designing feasible code of conduct and policies [4]. Although, social responsibility is a holistic concept on its own, it must be implemented and integrated with economic and environmental accountabilities [18]. Social sustainability practices is achieved by doing business with sustainability-compliant partners, designing and implementing codes of conduct based on trust and socio-economic considerations, and legal prosecution of violators [4]. The importance of social sustainability include goodwill, customer attraction and retention, qualified and committed workforce, reduced training costs, and productivity and profits growth [4]. There are four measure firms could take to improve social sustainability. These are safe and conducive working conditions, fair compensation policy, diversity and non-discriminatory issues such as non-racism and non-nepotism, and friendly industrial relationship [28].

2.1.3 Economic sustainability: The economic performance of supply chain includes cost efficiency, improved quality, marker performance, and shareholder value. These metrics are measured by ability to improve time-to-market, cycle time, and inventory management [29]. Company must therefore produce safe, quality, and environmentally friendly products and distribute them accordingly [28]. According to Ref. [30] efficiency is measured in terms of manufacturing and inventory costs. Effectiveness involves customer satisfaction, on-time delivery; and flexibility. Flexibility deals with how the supply chain responds to uncertainties. The financial indicators of SSCM include returns on investment, assets, market share, sales growth, production and inventory costs.

Costs is one of the major drivers of SSCM. It helps partners understand total expenses associated with supply chain and thus design strategies for achieving optimum economic sustainability. Sustainability would be difficult to be achieved if partners do not appreciate the cost of transactions and relationship. Without accurate costs estimates, inaccurate perceptions and uncertainties may occur among partners and this might weaken collaboration. Effectiveness is simply the ability of supply chain to be responsive, agile and flexible to changes in the markets, [32]. A responsive supply chain manage sales without overstocking and employ competences and react to market demands [33].

Although [19]set the pace for micro analysis of SSCM, Ref. [5] suggests that what is lacking in the framework is the non-inclusion of supporting facets such as risk management, transparency, strategy, and culture. These supporting facets are the fundamentals in implementing SSCM practices. The [5] framework is represented in Figure 1.

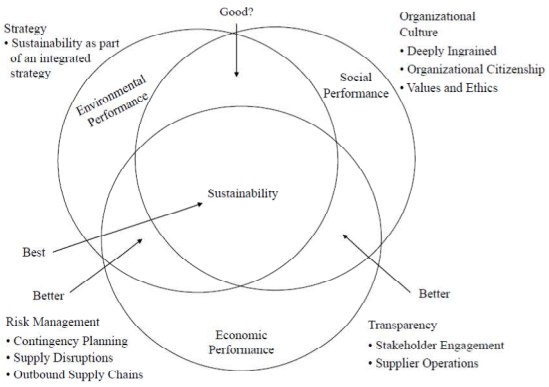

Figure 1: Sustainable Supply Chain Management
Sources: Adapted from Ref. [5].

2.1.4 Risk management: Supply chain risk management as "the ability of a firm to understand and manage its economic, environmental, and social risks in the supply chain" [5]. Supply chain risks occur owing to fluctuation in the prices of key raw materials and energy, poor environmental and social performance [24], natural disasters such as hurricanes [34]. Legal liabilities due to harmful product [35], poor demand forecasting and failure to coordinate demand requirements across the supply chain lead to supply chain risks. [36]. Risks could be managed through contingency planning and by designing resilient and responsive supply chain. Risk proactiveness involves planning for environmental waste, worker and public safety, child labour, scarcity in natural resources and raw material. Risk management requires swift response to efficiently and effectively recall and recover damage and faulty products as well as ability to notice likely problems before they occur [37].

2.1.5 Transparency: Transparency means having traceability and visibility into upstream and downstream supply chain operations [5]. Transparency involves engaging stakeholders in sustainability decisions and using

their suggestions as input to improve sustainable practices. Transparency could be achieved through planned collaboration and communication with key stakeholders. Transparent partners are willing to discuss and allow stakeholders to scrutinize their sustainable practices. Transparency preserves company's reputation and goodwill. Companies are aware that information technology have made it difficult and too risky to cover corporate scandals. Therefore, it is cheaper and effective to be transparent regarding TBL [38].

2.1.6 Strategy: This includes vision and plan about sustainable development. Strategies are design with the help of structured environmental assessment tool (SEAT), or life-cycle assessment (LCA). SEAT evaluates action regarding investments in waste, energy, emission, and pollution management. It also appraises publication of corporate social responsibility reports and global development initiatives. LCA evaluates the impact of supply chain activities on green designs, product life cycles, and process innovation. Organizations that implements sustainability initiatives must integrate it with corporate strategies. IBM integrates its TBL strategy with its core strategy. Hewlett Packard (HP) demonstrates that it "connects corporate commitment to global citizenship with the day-to-day conduct of the HP business". Similarly, Nike's sustainability is "integrated into its core business strategies. Thus, there is need for companies to align their sustainable commitments with business and corporate strategy.

2.1.7 Culture: Culture serves as internal drive and passion which propel change and innovation. Organization usually design culture which considers the welfare of others and which is fair and supportive. Successful organizations are not only driven by profit maximization but also by core values, cultures and a sense of purpose. According to Ref. [39], there is a significant and positive relationship between TBL tools in purchasing activities and organizational culture. An organizational culture is a building block for SSCM if it is deeply ingrained, with ethical standards, respect the society and the natural environment [5].

3. Methodology

The study is a systematic literature review. 77 articles were review. The review process provided more insights into the pillars and processes for sustainable supply chain management. Similarly, an improvement was suggestion on how to conceptualize SSCM. The framework argues for the inclusion of stakeholder pressure and the pillars of SSCM in Ref. [5]. The justifications have been discussed and argued in the sections below.

4. Discussion

Although Ref. [5] extended the SSCM framework of [19][40], there is need to further foster the model with more innovative variables. A critical observation reveals that the four facets of SSCM are internal forces. Supply chain however requires an interplay of internal and external forces. Therefore, external forces are largely absent in Ref. [5] model of SSCM.. Through an intensive literature review from top journals of purchasing and supply chain management, this paper has identified other facilitators of SSCM which could be added to improve the model of SSCM. Therefore, this paper argues for the inclusion of stakeholder pressure and pillars of SSCM for a robust theory of SSCM. Stakeholders' perceptions and actions are important drivers of sustainable supply chain. Stakeholder pressure creates awareness about the goals, adoption, and implementation of SSCM practices and ultimately, influence commitment and performance [18][7]. Pillars of SSCM are the major areas where sustainable activities occur in the supply chain. As such these areas must be continuously monitored in order to implement sustainable practices. Therefore, this paper extend framework of Ref. [5]. The extended framework is shown in Figure 2.

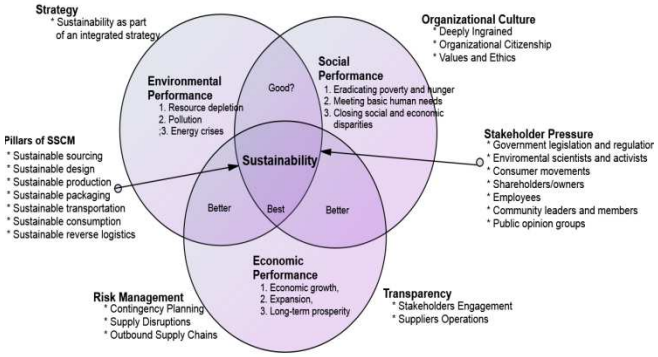

Figure 2: Research framework of SSCM

4.1 Stakeholder pressure

Stakeholders are "any individual or group that can affect or be affected by an organization" [41]. Stakeholder theory suggests a fit between the "values of the corporation and its managers, the expectations of stakeholders and the societal issues, determine the ability of the firm to sell its products" [41]. External stakeholders such as customers, owners, community leaders, and regulatory agencies could be more

active at mobilizing public opinion about sustainability while internal stakeholders such as top management and employee put pressure for implementation of environmental strategies [12]. Top management portrays positive corporate image to internal and external stakeholders [27]. Furthermore, stakeholder pressure from environmental scientists, government, and public opinion groups demand companies to show more commitment to sustainable practices [7][18].

The pressure to create awareness differ by types of stakeholders. Awareness is defined as "knowing about a sustainability issue or being informed a sustainability issue exists" [28]. Although, awareness is not adoption, it sets the stage for sustainable thinking. Awareness are usually raise by both news and social media. While the news media could raise awareness on the benefits of being eco-friendly, the social media send messages and shared information about sustainability. Both media instil fear by exposing companies that fail to uphold a high standards of sustainability.

Suppliers as stakeholders expect focal firms to demonstrate sustainable behaviours by using their machines or raw materials. There are two approaches to implement sustainable practices with suppliers. These are assessment and collaboration. In assessment, focal companies adopt questionnaire methods and company visits to investigate how suppliers implement sustainable practices. On the other hand, collaboration involves direct interaction with suppliers and customers to create awareness, provide training and supports for sustainability. Thus, weak collaboration of one partner affect the entire chain. if a partner fails to be eco-friendly, the sustainability chain could be negatively relegated [14]. As such capability and performance of all stakeholders such as consumers, government, environmental activists, and employees are important to pressurize business firms to uphold higher commitment and standards of sustainability [28][12].

4.2 Pillars of sustainable supply chain

The four pillars of sustainable supply chain are sustainable sourcing, sustainable manufacturing processes, sustainable product design, and sustainable reverse logistics operations and coordination [21]. Based on these, they developed a framework of SSCM that comprises of sustainable strategy and policy; sustainable product design; sustainable sourcing; and end-of-life management. In this paper, the pillars of sustainable practices include sustainable sourcing, sustainable design, sustainable production, sustainable packaging, sustainable transportation, sustainable consumption, and sustainable reverse logistics. These are discussed in the succeeding sections.

4.2.1 Sustainable sourcing: Sustainable sourcing (SS) is defined as ''managing all aspects of the upstream component of the supply chain to maximize triple bottom line performance" [42]. It is a long-term supplier relationship characterized by effective and efficient economic value, maximum environmental principles, and ethical considerations for social and economic values [43]. Sustainable sourcing practices involves supplier selection and development, and supplier management. Factors affecting sustainable supplier selection includes ethical behaviours, top management support, organizational incentive, code of conduct, and obedience to instituted authorities [44]. Top management behaviours, decisions, and actions must demonstrate acceptable sourcing standards. Purchasing managers usually act based on perception of top management about sustainable sourcing. Managers must prepare and distribute written code of conduct for sustainability to their supply chain partners. On the other hand, purchasing managers must read and understand the code of conduct. Sustainable sourcing are determined by internal and external drivers. Internal drivers consist of internal code of ethics, SSCM capabilities, and sustainable leadership while external drivers includes stakeholder pressure such as government, non-governmental organizations (NGO), and customers [44].

4.2.2 Sustainable product design: This aspect of SSCM is concerned with product conception, prototyping, production planning, and product end-of-life. A "world-class supply chain starts with product design" [45] shows that . The product design team uses technologies and tools to shorten development time, lessen prototypes, reduce costs, be responsive to customers, reconcile conflict in product development, reduce scrap and rework, and finally increase the market success and profitability of a product [46]. A principle of product design maintains that once engineering determines the design, at least 80 per cent of the product cost and quality are set [47], [48]. Most manufacturing firms acknowledge this statement and consider the product design process to determine manufacturing success. Design stage encourages companies to look outside their boundaries, bring new ideas from the market, do a better job of satisfying customers need, challenge conventional thinking, work in team, and integrate functions and partners [49].

4.2.3 Sustainable manufacturing or production: Sustainable manufacturing has been described as "the creation of manufactured products that use processes that are non-polluting, conserve energy and natural resources, and are economically sound and safe for employees,

communities, and consumers" [50]. Sustainable manufacturing includes re-use, remanufacturing, and recycling [15]. It also involves product life-cycle, return on investment, waste reduction, carbon footprint, energy conservation, clean environmental practices, health and safety measures, job opportunity, diversity management, legislation, and social capital [51]. Figure 3 shows the key performance indicators (KPIs) of sustainable manufacturing evaluation [52]. In this paper, the KPIs evaluation are integrated with enablers and barriers of sustainable manufacturing as suggested by [53]. Figure 3 provides the initial KPIs of sustainable manufacturing evaluation.

Although, previous findings on relationship between manufacturing practices and economic sustainability produced inconsistent findings, Ref [50] found internal manufacturing practices to influence economic sustainability while external manufacturing practices do not. Additionally, [52] point that sustainable manufacturing influences product quality, competitive advantage, market share, and profitability.

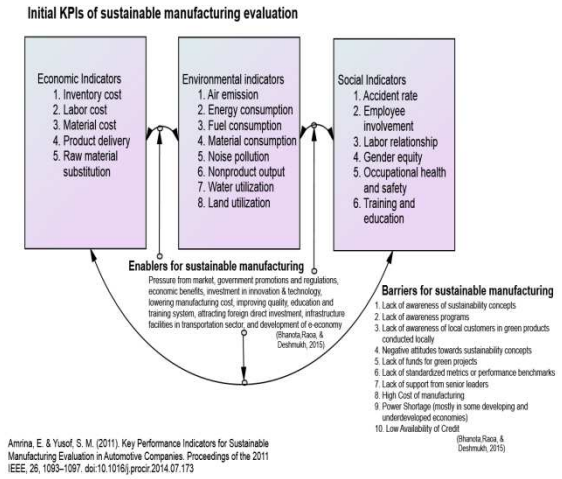

Figure 3: KPIs of sustainable manufacturing evaluation

4.2.4 Sustainable packaging: Packaging is an important process of SSCM. Without it the safety and quality of product would be compromised and supply chain itself will be affected. The function of packaging in the supply chain includes containment, protection, convenience and communication [54]. Products are wrapped in safe packages to prevent losses and spoilage. The contents are thus preserved and protected from environmental factors such as water, odours, dust, micro-organisms, and direct sunlight. Packaging makes it easier to store, transport and sell products. Labels on packaging communicates with consumers about weight, contents, expiry dates, consumption patterns, installation and disposals.

Sustainable packaging is defined as "packaging that: (1) is beneficial, safe and healthy for individuals and communities throughout its life cycle; (2) meets market criteria for performance and cost; (3) is sourced, manufactured, transported, and recycled using renewable energy; (4) maximizes the use of renewable or recycled source materials; (5) is manufactured using clean production technologies and best practices; (6) is made from healthy materials in all probable end-of-life scenarios; (7) is physically designed to optimize materials and energy; and (8) is effectively recovered and utilized in biological and/or industrial cradle-to-cradle cycles" [54]. Principles for sustainable packaging include effectiveness, efficiency, cyclical, and safety [55]. To be effective, packaging must have economic, environmental, and social benefits. To be efficient, the cost of materials and energy must be resourceful. To be cyclical, the materials must be recycled after its initial life cycle. To be safe, packaging components must be non-toxic and polluting.

4.2.5 Sustainable transportation: The transportation industry is the mainstay of logistic and supply chain performance [29]. It delivers inputs to manufacturing process and distributes finished products to consumption location [56]. However, traffic accidents, ozone depletion, depletion of non-renewable resources, acidification, photochemical oxidants, global warming, suburban sprawls, air and noise pollution, and consequently poor public health are its considerable costs [57][58][59]. A sustainable transportation system is "one that does not endanger public health or ecosystems and meets mobility needs consistent with (a) use of renewable resources at below their rates of regeneration and (b) use of non-renewable resources at below the rates of development of renewable substitutes" [60].

Carbon emission from land, water, and air transportation systems is projected to rise faster than the gross domestic product (GDP) of industrial economies [61]. As a major sources of greenhouse gas (GHG) emission, pollution, and energy consumption, the need for eco-friendly transportation systems cannot be over-stated [15]. The transportation industry is the second leading source of carbon dioxide (CO2) emissions [62]. This industry discharges 28 percent of the total greenhouse gas (GHG) emissions in the USA and 25 percent in the European Union [63]. Each year, GHG from transport systems accounted for deaths of half million people in developing countries [64]. As distribution of goods and services depends on transportation systems and technology, quality of life will continue to dropped due to congestion, noise, and emissions [65].

Thus, the transport industry is increasingly under pressure to reduce vehicular emission and cost of transportation. They need to respond through proactive logistics system planning, control and integration. A need for smart logistics system based on collaborative logistics, communication technology, and decentralized information sharing are crucial to designing transportation strategies for SSCM [66]. There is also need to ensure happiness and satisfaction of truck drivers. Truck drivers are motivated by the pleasure and opportunity of driving, decent income, and self-dependence; while they are discouraged by rising fuel costs, poor training, government pressures on loading and unloading, and being absent from family [67]. Therefore, stakeholders in the transport industry should provide psychological, mentor-mentee, technical knowledge, and behavioural dynamics training to truck drivers [29]. Proper awareness on sustainability issues should also be created. Strategies for sustainable transportation includes more sustainable fuel (biofuel, electricity, fuel cell, etc.), more sustainable vehicles (flex-fuel engine, light-weighting, catalytic converters, durability, etc.), more sustainable infrastructure (road, highway, bridges, etc.), and miscellaneous programs (to reduce use of vehicles) [63].

4.2.6 Sustainable consumption: Concepts such as acid rain, social conscience, and the greenhouse phenomenon have made consumers to become aware of the effects of their consumption behaviour and thus are at the fore front of campaigns to create green-house-gas awareness. In fact, consumers are now selective in patronizing products with green certification because they are interested on how supply chain sustainability could enhance their consumption. With regards to consumer preferences to sustainability, Ref. [21] found that consumers are more willing to pay for product with eco-labelled certification.

4.2.7 Reverse logistics: Reverse logistics is defined (1999) as "….. the process of planning, implementing and controlling efficient, cost-effective flow of raw materials, in-process inventory, finished goods and related information from point of consumption to the point of origin for the purpose of recapturing or creating value or for proper disposal [68]. It is also defined as "the process of planning, implementing and controlling efficiently and effectively the flows of return products by inspection, disposal and generation of information with the aim of recovering value" [69]. Despite little research, reverse logistics is an indispensable strategy for SSCM [70]. It is the flow of disposed items back to the production site after its end-of-life span. Product reuse reduces environmental hazards and degradation by reducing waste, and increasing availability of materials and components [71]. The negative effects arising from solid waste attracts biological vectors, such as rats, mice, fleas, flies, cockroaches and others; as well as, chemical factors like the metallic components of batteries, vehicle oil which affects human health and wellbeing [72]. As a business tool, reverse logistics mitigates environmental deterioration caused by waste [69]. Table 2 provides the processes of reverse logistics [73].

Table 2
Process of reverse logistics

Remanufacturing	This consists of collecting used products or their components, assessing their condition and replacing broken or obsolete parts with new or reconditioned ones. Remanufacturing gives used products standards of quality as rigorous as original products but at a lower cost.
Recycling	This is based on the separation, recovery, processing and reuse of obsolete products and materials or industrial by-products. Recycled materials should be able to compete with raw materials in price and quality.
Reuse	This is the process of collecting used materials, products or components and distributing or selling them as used after cleaning or minor repairs. Among the most well-known applications of reuse are unsold fashion clothing, boxes and containers, milk and soft drink bottles and used books in good condition.
Refurbishing	This involves the replacement of key modules or components if necessary. The quality and product life of restored products are still low compared to new products. Restoration gives the used product a lower quality level than an original product. Refurbishment is also known as reconditioning.
Repair	This is based on making the product work again by repairing or replacing deteriorated parts. The quality of repaired products is generally lower than that of new products. Examples of repair are numerous and include long-lasting products, domestic appliances, industrial machinery and electronic equipment.
Cannibalization	This consists of recovery of some parts of the used products, which can be used in other products or components. Cannibalization involves recovering from used products or components a limited series of reusable parts which can be used in the repair, refurbishment or remanufacturing of other products or components.

Source: Adapted from Ref. [72]

5. Conclusion

The study of sustainable development at the micro-economic level revolves around the top bottom line (TBL) tool of protecting the planet, people, and profit. SSCM is an approach for organization to reduce carbon footprints,

resource depletion, suburban sprawls, air and noise pollution, and consequently poor public health. From the environmental perspective, SSCM helps to green the environment; reduces resource depletion, waste and pollution; moderates global warming; and protects the ozone layers. From the societal standpoint, SSCM helps improves employees' health and safety, guard against child labour, reduce turnover and recruitment costs improved safety and working conditions; lessen absenteeism, and enhances motivation and productivity of employees. Economically, sustainable supply chain practices increases resource availability, reduces cost of energy, packaging, and labour, shorten lead-times; improves product quality. It also lower disposal costs resulting from the implementation of ISO 14000 standards, design for disassembly and reuse, and thus enhances organizational reputation. Through an intensive literature review from top journals of purchasing and supply chain management, this paper has identified stakeholder pressure and pillars of SSCM to improve the model of [5]. Stakeholder pressure creates awareness about the goals, adoption, and implementation of SSCM practices and ultimately, influences commitment and performance of SSCM. Pillars of SSCM are the major areas where sustainability activities occur. As such these areas must be continuously monitored in order to implement sustainable supply chain practices.

This paper has both theoretical and managerial development. It is one of the first attempt to improve the model of stakeholder pressure, sourcing, sustainable design, sustainable production, sustainable packaging, sustainable transportation, sustainable consumption, and sustainable reverse logistics to improve the model of Carter & Rogers (2008). Therefore, it is an attempt to improve the theory of SSCM. The paper also has practical implications to the industry. First, top managers and employees are provided with guidance and knowledge of how to improve their sustainable supply chain practices and strategies. Second, managers are made aware that being sustainable means success. Thirdly, stakeholders such as consumers, government, environmental activist, and news media are encouraged to actively participate in protecting the planet, people, and profits. The paper ends with recommendations for further studies. Future studies should operationalized and these the model through an empirical cross-sectional research.

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