Building Sustainable Resilient Supply Chains in Emerging Economies: Review of Motivations and Holistic Framework

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Abstract. In recent times, globalized supply chains have been disrupted with the venue of the pandemic crisis Covid-19. All countries are working together to deal with this crisis and be sustainable-resilient at the same time especially emerging economies. Supply chains plays a capital role in maintaining the stability of the economy and society. Through this review, we aim to provide an overview about literature of sustainability and resilience of Supply Chains. To take a fresh look of patterns and practices deployed by emerging countries, such as morocco, to build Resilient and Sustainable Supply Chain around a holistic framework. A focus on the existing issues, methodologies used, research gaps that need to be developed is outlined.

1. Introduction
Globalization has definitely changed companies’ habits. Today many of them maintain regular relationships with suppliers based in four corners of the world. While this helps to reduce purchasing and production costs, it increases also risks that they need to be prepared to face. The Covid-19 health crisis has emphasized the extreme fragility of globalized supply chains. Therefore post-crisis thinking will have to focus on new priorities: how to make our supply chain more resilient and sustainable at the same time? For emerging economies it is harder to performant it terms of supply chain, sustainable and resilient at the time. What practices emerging economies need to implement to moderate the damage of the pandemic and support a quick and durable recovery?

Through this paper we aim to give an overview about the literature of the supply chain related to sustainability and resilience for emerging economies and provide and idea about future research directions in this sens.

2. Literature toward Sustainability and Resilience of Supply Chains in Emerging Economies

2.1. Sustainability of Supply Chains
During the last decades, a huge interest is focused on sustainability, it is prominently becoming a popular word in the area of research. It is a concept long used to describe the maximum population size that the environment can support on a continuing basis, following Mitcham [1] sustainability has to mean continued growth. Sustainable supply chains are a three-pronged challenge. The combination of the green side and the social side by integrating the economic dimension represents the sustainability part of the Supply Chain Management. From the environmental viewpoint, the first definition of the green supply was set by Green, Morton & New in 1996 [2], [3] as a way where green supplies refers to supply chain innovation management considering environmental side. Stefan Seuring & Müller in 2008 [4]
defined the concept SSCM as the management of capital, information and material flows along end to end supply chain considering the three dimensions of sustainable development. (Ahi and Searcy) [5] provide definition around GrSCM, mostly, they focus on the economic dimension that impacts the environmental part [6]. The majority of research emphasize the Green aspect and does not include necessarily the social side of sustainability [4], [7], [8]. Even though, the social aspect remains really important and keeps balance of the triple-bottom-line (TBL) of the sustainable development [9]. In this context, Eltantawy, Fox & Giumpero [10] focused on the social part of sustainability as ethical responsibility and highlighted the importance of selection the suitable supplier that respects societal norms.

2.2. Resilience of Supply Chains

Originally, resilience is a concept of physics that defines the ability of a body or material to resist to a shock or deformation. The semantic field of resilience was then extended to other field such as, economics, psychology, sociology, ecology ... Ecologically, Holling defined [11], [12] defined it as the persistence between system through the ability to absorb charges of variables state and driving ones. On the other hand, Pimm [12], [13] in his research on the complexity and stability of ecosystems defines resilience as the ability of a system to return fastly to equilibrium after a disturbance.

In the organizational and business world, resilience has arised as a new concept that integrates insights of contingency and adaptation theories following Gitteli [14]. In the actual agile context where prediction of disruptive situations is hardly managed. Modeling agility of supply chain, Supply chain resilience are recent fields that attracts researchers and practitioners. It is defined as the supply chain capability to anticipate unexpected situations, to recover from disruptions by maintaining the continuity of flow management at all levels [15], [16]. A resilient supply chain must be adjustable, because in many cases the expected and wanted state is different from the original one. Christopher, in this work of Managing Risk in the Supply Chain [17], argues that resilient processes are agile, flexible and has the ability to evolve rapidly. This vulnerability of supply chains facing disruptive events, has led to many researches look at drivers of supply chain vulnerability [18]. Carvalho et al. [19] defines supply chain resilience as supply chain ability to face and cope with unpredictable turbulences.

2.3. Sustainable Resilient Supply Chains

The Literature of both concepts sustainability and resilience, shows that they have been considered separately. Whereas, the concept of resilience is directly linked to important concerns such as ecological, social vulnerability, disaster recovery, and risk management and contribute to sustainability of economies [16], [20], [21]. An increasing interest of designing sustainable supply chains under resilience is observed from the recent reviews [22]–[24] that explored both concepts their intersections in the area of supply chain. However, a sustainable-resilient supply chain still need an integrated study and can define the future of the research field, by looking for compromises between both principles and practices.

2.4. Emerging Economies

Following the International Monetary Fund, an emerging economy or market is the economy of a developing country that is growing and more involved with global markets. Countries among emerging economies has some of the characteristics of a developed country. Some of them are transitioning from a low income, less developed, often pre-industrial economy toward a modern, industrial economy with a higher standard of living. Examples of emerging markets include many countries in Africa such as morocco. For more than a few reasons companies choose to set their businesses in other countries. Cost advantage, proximity to other markets, access to resources, or incentives provided by local governments [25]–[27]. Many firms have invested through several forms of operations in these emerging countries by setting up industrial plants, acquiring and developing existing companies or by outsourcing [28]. What is the part of sustainability and resilience in this emerging countries?

The emerging countries has shown an unexpected resilience facing the global economic crisis of 2008. However, following Antoniades and Andreas [29], the resilience of emerging countries fluctuates
according to national economic policies and the evolution of the international economy, it can also increase or decrease due to changes in the international distribution of power and wealth.

On the other hand, sustainability issues in emerging countries are still in the primary stages [30], mostly due to a limited understanding of the concept [31]. The incorporation of sustainability in supply chain is rising [32] but not enough to achieve performance as similar as developing countries.

3. Methodology and Delimitation of the Search Scoop

The purpose of the present literature review is to bring an overview about the research subject area, to summarize current reviews, to identify issues and patterns, and finally to define the conceptual framework of the field [33].

Our methodological approach for this review is based on:

- The collection of data from several studies done on the field in question by determining inclusive criteria such as the work of the last 10 years from 2010 to 2020 and choice of data bases such as SCOPUS. The key words used are "Resilience" and "sustainability" and "Supply Chain" and "Emerging economies" or "Emerging markets".
- Documentary analysis (books, articles, review, conferences, reports)
- Proposal of a holistic framework of how build a sustainable resilient supply chain in emerging economies.

4. Research Result Analysis

4.1. Research Results

Figure 1 shows the evolution of SRSC research papers during the period ranged from 2010 to 2020. Number of publications is constantly increasing to reach 37 during the first semester of 2020. Visibly, the area of sustainable resilient supply chains is developing and growing.

![Figure 1](image.png)

**Figure 1.** Evolution of Supply Chain Sustainability and Resilience research papers for the period ranged from 2010 to 2020 first semester.

4.2. Holistic Framework

Considering supply chain resilience and sustainability, to draw a conceptual framework is a milestone of this literature review [34]. Based on the conceptual framework of Saidi d. [6] Figure 2 illustrates a holistic framework of sustainable resilient supply chains in emerging economies.
Today’s globalized supply chains are becoming more complex, more dispersed geographically, covering a wide variety of products and services [35]. Customer awareness takes on a new form, his requirements are increasing, a great need in terms of customization emerged, and consumer’s behavior has evolved [6], [36]. Markets more uncertain and volatile which impact supply chain configurations [37] and increases vulnerability of it. Over the last years, emerging economies have become present in the world economy and a major driver of the global growth. Supply chains plays a massive role in keeping the balance of an emerging economy as far as it is the nerve of war of the economic system of many countries. It is crucial for them to arm their selves in this agile ecosystem and rethink their Supply Chain configurations and networks, to absorb disruptions, and minimize time of reactivity. Following Ali et al. [38] resilience five capabilities are identified as follows, prevention that allows to identify and anticipate the venue of disruptive situations by strengthening activities with higher risks. Resistance, where an organization is able to resist to effects of disturbances and maintaining the control. Response, is the ability to respond to a disruptive event efficiently and at the same time reducing consequences. Recovery and continuity of the activity of supply chains by analyzing the market after the disruptive situation. Finally, learning and continuous improvement to avoid or limit the risk of a new occurrence of disruptive event.

For an emergent economy, it starts with the public policies that orientate the country and prioritize certain patterns. Governance mode also, that takes into account the complex risks in the future and adapts resilience according to them. In the same direction, organizations adaption to agility inevitably goes through investment in NTIC digitalize supply chains. With the advent of robotization and new technologies [39], it has been possible to achieve significant progress in terms of productivity and efficiency. A suitable infrastructure is crucial to support a disruptive event and keep supply chains stable. What is the place of sustainability in such context? Emerging economies have a great potential to integrate sustainability. They need to build an ecosystem based on the three dimensions of sustainable development. As much as these countries get developed, as much as it becomes more complicated to implement sustainability with its three dimensions. The Covid-19 crisis has only accelerated this trend. Emerging economies [40] will improve their sustainability and resilience of supply chains through:

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**Figure 2.** The holistic framework of sustainable resilient supply chains in emerging country.
Optimising the use of resources by reducing the carbon footprint, the rational use of water and energy.

Maximising the use of products by using the circular economy and eco-design.

Reverse logistics through the recovery, management and recycling of waste.

The development of human capital through awareness of CSR impacts, respect for human rights at work, well-being at work and ergonomics.

5. Conclusions and Orientations for Upcoming Researches

In this paper we provide a fresh look on sustainability and resilience related to supply chains and how they could be implemented in emerging economies. We have studied many articles ad reviews, many of them has used frameworks to go further with literature in both filed. However, research articles dealing with holistic frameworks are few. Moreover, when research outlook is focused on emerging economies. Hence, this research considers all perspectives, sustainability, resilience, supply chain and emerging economies. This will add insights and potential research perspectives to the existing literature.

Currently, there is a growing interest of researchers and practitioners to both concepts sustainability and resilience in the area of supply chain. However, a closer look at the relationship between resilience and sustainability still need to be studied. Is sustainability a component of resilience, or vice-versa? Or are they considered as a single component?

With regard to supply chain practices, circular economy is a perspective for emerging countries by strengthening the sustainability and resilience and reducing the impact of disruptive events. The digitalization supports supply chains and reinforces the decision support system and allows real-time reactivity and agility [40].

Many other questions still need to be answered. But to sum up, resilience and sustainability of supply chains are treated separately. This research area still need to be developed takin into consideration both concepts jointly.

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