AN ANALYSIS OF THE INSTITUTIONAL PRESSURE AND COMPETITIVE VALUE IN THE ADOPTION OF GREEN LOGISTICS PRACTICE AND HOW ENVIRONMENTAL AND INFORMATION SHARING FACILITATE ENVIRONMENTAL SUSTAINABILITY: A THEORETICAL FRAMEWORK

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Introduction

The globalization of business has a significant impact on the way businesses operate. More than 90 percent of the trade volume is dominated by marine transportation. Ports play a part role in logistics chains and the location and efficiency of ports correspond significnatly to economic competitiveness, resulted in promoting the economic cohesion of different countries (UNCTAD, 2016). Although, container shipping acts as a key factor in the global supply chain which critics to the transportation networks and facilitating the economic development and international trade (Notteboom and Rodrigue, 2008), based on Eurostat, the transportation sector is responsible for 24% of CO2 emission in Europe (Oberhofer and Dieplinger, 2014). Generally, logistics system is claimed as one of the major contributors to overall greenhouse gas (GHG) emission and energy consumption in the world (Kim and Han, 2011; Oberhofer and Dieplinger, 2014; Murphy and Poist, 2003; He et al., 2017). According to Commission of the European Communities, by 2030, the goal for transport will be to mitigate GHG emissions to around 20% below their 2008 level. Given the substantial increase in transport emissions over the past two decades, this would still put them 8% above the 1990 level".

Environmental issues have attracted the significant attention of governments, nongovernment organizations (NGOs), business communities, and masses across the globe. These pressures led to the adoption of environmentally responsible behavior among nations to act pro-environmentally (Saeed et. al, 2018). Meeting such targets will only be possible by making intense efforts on balancing economic growth and reducing the ecological impact of shipping activity. As such, many organizations have to face with multiple competing pressures alongside the challenges to implement and optimize the green supply chain management integrating in their logistics solutions. Other than an intensive cut-throat competition, in this respect, many companies tend to survive and take a competitive advantage as they compete with their competitors by giving more attention to environmental awareness and adapting green practices into the supply chain process to secure their future existence of their resources and business. In fact, green supply chain strategy has become one of the most important initiatives for many organizations to achieve competitive advantages and corporate sustainable development (Cai et. al, 2008). The fundamental concept of green logistics is to integrate the environment thinking into supply chain activities, as such it required governments, policy makers, stakeholders along with firms and their supply chain partners involvement to reduce environmental risks and increase community goodwill (Darnall, 2006).

Sarkris (2003) illustrated further studies that a majority of firms engaged in adopting collaboration of environmental practice into their strategic plans and process. In general, focal company and supplier collaboration is the significant element of green logistics in facilitating supply chain activities and socially responsible activities which contributed to achieve sustainability's goal. Collaborative process toward sustainability have been attracted an increase interest among scholars, policy makers, business practitioners, and other environmental constituents (Hartman et al., 1999). The sustainability is no longer to be approached at the general firm's level, but rather, its attainment requires the involvement of supply chain participants. In this regard, several studies have indicated that the availability of a wide range of timely and relevant information also play a part role in environmental integration. The information has increasingly become the key determinants of supply chain sustainability in term of increasing interorganizational coordination and product quality to flow along the supply chain (Cheng, 2008). Generally speaking, information sharing is frequently considered as being the key

element in reducing supply chain cost, this exchange of information not only increase the service level but also reduces the cycle times in supply chain (Khan et. al, 2016). Yet few, if any, firms are able to respond definitively to the questions, “Which of your products, processes, services, and facilities are really sustainable? Is it a sustainable organization?” Answering these questions is requiring the ability to assess sustainability of economic and non-economic factors in a quantitative or at least qualitative method. The simple word sustainability, however, implies no presumption of economic development. In other word, sustainability refers to being "environmentally friendly. Therefore, measuring sustainability holistically differs from measuring other dimensions of business performance in several important respects. Sustainability performance can be regarded as the performance of a firm in all dimensions and for all drivers of corporate sustainability. It extends beyond the boundaries of a single company and typically addresses the performance of both upstream suppliers and downstream customers in the value chain (Sebhatu, 2008).

Specifically, this study provides a green logistics-oriented framework to explore what are the promoting factors influence LSPs to engage in green logistics practice and how green logistics practices can facilitate the environmental sustainability through environmental collaboration and information sharing among shippers and logistics service providers. The key motivation for the research is to examine the relationships between GSCM practices and sustainability performance (Eltayeb et al., 2011; Sang et al, 2012), there is a dearth of studies that have considered these relationships within the context of sustainability in term of logistics context. Besides, this article will be of an explorative nature. The paper subsequently demonstrates concepts of institutional theory and competitive advantages aspect, green supply chain management practice, environmental collaboration, information sharing and sustainability performance. Also, this study draws together a theoretical framework based on intensive review of the previous studies to portray relationship of each constructs with hypothesis and included with some managerial implications and suggestions for future research.

Institutional Pressure and Competitive Value

Several studies on GSCM have indicated a broad range of factors, convincing firms to take environmental management into account and practices to its supply chain partners. As such, it could be influenced by company’s stakeholder requirement leading to have full compliance with environmental regulation, or even promoted a good reputation as a green image, which is related to the opportunity to gain competitive advantage in the market. Institutional theory plays a part role in effecting companies to adopt GSCM, most companies embedded in social network perceive strong pressure in response to institutional requirements to attain social legitimacy and access to important and rare natural resources since violations may jeopardize company performance and long-term development (Dimaggio and Powell, 1983). Over last decades, Laari (2016) suggested that customer satisfication and environmental performance portrayed both of direct and indirect impact relationship on GSCM. Many researches adopt stakeholder and institutional theory to GSCM, for example, Sarkis (2011) said that both of stakeholder theory indicates a great environmental of institutional pressures and increase many organizations to implement GSCM practices concept (Bjorklund, 2011; Mohanty and Prakash, 2014) and customer demand is one of the most significant factors for many firms when it comes to implementing GSCM practices (Mohanty and Prakash, 2014). Moreover, many organizations take a proactive environment action as a significant weapon that influencing to gain competitive advantages, environment strategies can encourage firm’s performance with cost mitigating, reputation and legitimacy as well as future positioning in the global market (Porter, 2006).

Green Supply Chain Management Practice (GSCM)

As consumers become more aware of environmental issues and global warming issue, exporters and shippers will request logistics service providers for more environmentally-friendly shipping transportation. Container shipping companies can also anticipate to be questioned as to how green are their transportation processes and supply chains value chain. Green Supply Chain Management (GSCM) is gaining potentially importance in the container shipping industry owing to coercive pressure from international organizations and governments, normative pressures from professional groups, and mimetic pressures from competing organizations. Green supply chain management decreases the

ecological consequence of industrial activity, promotes energy utilization efficiency and synergy among business partners, and strengthens corporations. It also helps to enhance environmental performance, corporate green image, and minimize waste (Zhu and Sarkis, 2004). With a rising concern in environment and in order to achieving a competitive advantage, GSCM as a new innovative managerial strategy can be implemented as a strategic weapon to gain competitiveness and to promote the organization environmental and financial performance (Hajikhani, 2012).

Environmental Collaboration

Today it is widely accepted that sustainability cannot be achieved by firms in isolation but requires the collaboration of all supply chain players. Relationship is an essential element for achieving collaboration and one of the major notions of SCM is to manage raw materials and components flow smoothly from distant suppliers to manufacturing companies for the purposes of converting raw materials into finished goods and satisfying the value expectation of consumers. Roa (2006) stated that GSCM must involve collaboration with suppliers in designing green product, providing awareness seminars, and helping suppliers to create their own environmental program. Sarkis (2003) provided further evidence that an increasing number of firms are adopting collaboration of environmental practices into their strategic plans and processes. Collaboration in terms of environmental is a method that helps companies to develop and support the environmental process of their supply partners. According to Paulraj (2011), environmental collaboration includes cooperating with suppliers to achieve environmental objectives and improve waste reduction initiatives, providing suppliers with design specification that include environmental requirements for purchased items, encouraging suppliers to develop new source reduction strategies, working with suppliers for cleaner production and helping suppliers to provide materials, equipment, parts and services that support organizational target. Moreover, top management plays a significant role in influencing the scope of an organizational sustainability practices.

Information Sharing

In order to achieve a successful business performance, each partner have to not only be willing cooperate their activities and agree on an appropriate way of reconsidering their profit, but also sharing their information to mitigate uncertainty and smooth production along the supply chain (Huang et. al, 2017). Information exchanging is progressively seen as a significant contributing parameter to the success of business and can increase supply chain efficiency by resourcing inventories and smoothing production. In addition, the information sharing accounted for a basic to effective coordination in supply chain, many studies revealed that information sharing has a positive effect on business performance, especially in mitigating the bullwhip effect (Lotfi et al., 2013). Whilst information sharing is frequently cited as being the key to reducing cost, there has been little research to investigate its value in a sustainable supply chain although sustainability is acknowledged as a major competitive priority. Managers are always keen to identify ways to successfully meet social and environmental targets and develop relevant tools that are economically viable – Winter and Knemeyer (2013).The relationship with suppliers tends to encompass the concern for social and environmental issues and exchange of information related to day-to-day tactics and policies related to material flow – Vachon and Klassen (2006). Though Lee et al. (2000) clearly mentioned that information sharing has a great value for supply chains but their significance has yet to be explored for a sustainable supply chain.

Environmental Sustainability

GSCM should not only focus on environmental concerns, but at the same time it should concern on reaching and maintaining operational efficiency in a sustainable way, and focus on the economic, logistics, operational, and marketing objective. GSCM performance can be evaluated by both quantitative and qualitative approaches. Some organizations use financial measurements, such as increasing profitability, market share, and revenue, return on investment; others concentrate on operational measurements, such as customer service level and performance of the inventory management. The evaluation of performance may be specific to the firm, or the unit within a company, depending on the main aims and the environment

In 2015, the United Nations Climate Change Conference indicated that efforts must be taken to save Earth, and preventive measures certainly should not be restricted to manufacturing aspect alone, but rather should incorporate social, economic and organizational aspects as well (United Nations Framework Convention on Climate Change, 2015). At a broader level, organizational sustainability is compost of three components which are the economic performance, environmental performance, and social performance (Ahi & Searcy, 2013; Carter & Rogers, 2008; Seth, Shrivastava, & Shrivastava, 2016).

Theoretical Framework

The objective of this study is to develop research model and formulate the hypothesis based on the construct defined in pervious sections, conceptual framework has been established relating the relationship between GSCM practice, environment collaboration, information sharing and environmental sustainability. To understand the role of Green supply chain management practice on the provision of environmental collaboration, information sharing and environmental sustainability (Fig.1) as following.

A. Green supply chain management practice and environment collaboration

Firms in logistics sectors have been started to implement GSCM in response to governmental regulations of environmental and customer demand for products and services that are environmentally sustainability (Murry, 2000). Collaboration effort between focal company and supplier play a part role in facilitating supply-side environmentally and socially responsible activities along supply chain. Collaboration in terms of environmental is an approach that helps firms to develop and support the environmental prowess of their supply partners. Dangelico and Pontrandolfo (2013) concluded that the benefit of green collaboration includes improving market performance (by accessing new markets and strengthening competitive advantage), enhancing corporate image performance (in its reputation and regulatory compliance), increasing manufacturing performance (by increasing its efficiency of materials and energy usage), boosting financial performance (by increasing margins or market share due to customers' willingness to pay a premium price for products) and containing supply chain cost. Based on above discussion, we posit:

H1: Green supply chain management practice affects environmental collaboration positively

B. **Green supply chain management practice and information sharing**

A green supply chain management is a network made up of providers, producers, storage facilities and distributors who work together to turn their plans, activities and raw material into a finished goods. This supply chain must also include an environmental awareness across all chains (Marinagi, 2014). When it comes to adopting a green supply chain, the use of information sharing is important to try and improve the sustainability of the company's communication, provisioning and transport systems, all of which allows for customer and logistics service provider involvement. This coordination via exchanging information means that manufactures, products and communication through the network can be better integrated, whilst also reducing the cost and environmental impact. A successful implementation of ecological information also leads to the correct implementation of the green supply chain. Costs are decreased, relationships between members are increased, the flow of materials increases, deliveries are faster, consumer satisfaction improves and, what is most important, an environmentally-friendly image is reinforced across the entire supply chain (Mishra, 2017). We suggest the next hypothesis:

H2: Green supply chain management practice affects information sharing positively

C. **Environment collaboration and information sharing**

The main concern of supply chain management is how to link the independent partners, so that they work together as a unit, in the pursuit of the common target in a rapid change in market conditions. Thus, firms are often implementing green strategies for coordination (i.e. collaboration), between the players of their supply chain to make more efficient use of limited resources and to capture the

knowledge of suppliers and consumers, in an attempt to integrate and coordinate production and information flows through the whole supply chain (Caridi, Cigolini, & De Marco, 2005; Lejeune & Yakova, 2005; Verwaal & Hesselmans, 2004). The causal direction "information sharing results in collaboration" or collaboration results in information sharing" is subject to argument. It has been said that strong collaborative process relationships enhance the likelihood that firms will sharing more critical information required to further increase more collaborative supply chain strategies. In contrast to this, an intensive information sharing could encourage the firms involved to specify their collaboration in terms of a process in order to be able to more efficiently use the information exchanged (Derocher and Kilpatrick, 2000; Mentzeret al., 2000; Sandberg, 2007). We therefore postulate the following hypothesis:

H3: There is a positive correlation between environmental collaboration and information sharing

D. **Environment collaboration and environmental sustainability**

The benefits that can be acquired from environmental collaboration have been considered in the GSCM. Researchers have emphasized the direct relationship between GSCM practices and performance. Holt and Ghobadian (1991) used external GSCM to see the effect of environmental collaboration on firm performance. Paulraj (2011) stated about a relationship between sustainable supply management and sustainability performance. In contrast to these researches, environmental collaboration is illustrated as a moderator of the network between the GSCM practices and sustainability in term of the presence of the environmental collaboration could facilitate GSCM practices and firms which form collaborative relationships with suppliers would be easy to adopt GSCM practices. In this regard, environmental collaboration as a key relational capability could be advantageously positioned to facilitate the environmental sustainability and execution. Therefore, the following hypothesis is proposed:

H4: Environmental collaboration has a positive impact on environmental sustainability

E. **Information sharing and environmental sustainability**

Sharing of information between firms has long been recognized as a competitive weapon that enhances firm performance (Closs et al., 1997; Daugherty et al., 2005; Whipple and Russell, 2007). The type of information shared generally involve production planning, inventory levels or turns(e.g. in VMIs), fill rate, forecast accuracy, promotion performance, price levels and pricing, sales data, and on-time delivery (Sandberg, 2007; Whipple and Russell, 2007).Such information exchange increases operational efficiency in business performance and provides better supply chain visibility, which can in turn contribute to cut cost , improved in-stock performance, increased sales, and improved customer satisfaction of the returns turn around process. Information sharing has also been recognized as a significant prerequisite for effective collaboration (Yu et al.,2001; Sandberg, 2007). In line with above arguments, we develop the following proprosition that:

H5: There is a positive correlation between information sharing and environmental sustainability

F. **Green supply chain management practice and environmental sustainability**

Considering that sustainable consumption habits are growing, environmental responsibility will be required not only from companies, but from various tiers of productive chains, consequently, GSCM practices emerge as an opportunity to improve competitiveness and the environmental performance of organizations. GSCM is a strategy that manages the flow of materials along the value chain through different stages such as acquisition, production and distribution with the purpose of protecting the environment by safeguarding natural resources and reducing global warming and carbon emissions (Ageron, Gunasekaran, & Spalanzani, 2012). The GSCM interacts with each other and can hold an organization together for sustainability performance, where the interaction has found to lead significantly to firm performance (Green, 2012). Surprisingly, Laosirihongthong (2013) found that the pro-active (reverse logistics) practices do not have significant impact on GSCM performance. Thus, it is of interest

for this study to explicitly examine the differences of green logistics findings in greater details. The above discussions develop the basis of the following hypothesis:

H6: Green supply chain management practice affects environmental sustainability positive

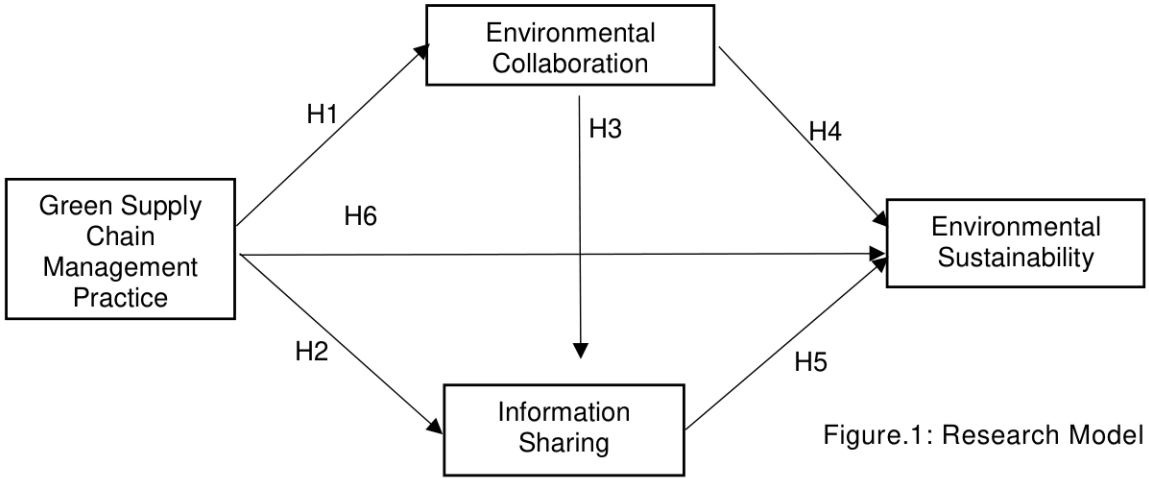

Figure.1: Research Model

Discussion and conclusion

In this paper aims to propose a theoretical framework among factors of green supply chain management practice, environmental collaboration, information sharing and environmental sustainability. As we could conclude from the extensive review carried out in this study, we then provide the set of testable propositions, derived from previous studies and conceptual articles to understand the significant role of green supply chain management practice in increasing environmental sustainability with mediation effect from environmental collaboration and information sharing. The research extends the framework in the earlier section based on variables identified from literature review are based on the conceptual framework, the derived hypotheses and have not been empirically measured. This study is a part of ongoing research, so this proposed conceptual framework will be empirically validated to prove this framework into accepted and validated model. In addition, the future research should be directed toward investigating the interrelations among these constructs.

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