

The Impact of Green Supply Chain Integration on Environmental Performance of Vietnamese Agribusinesses: Qualitative Research

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Abstract

In the current context, trade between countries is becoming easier and easier, so international trade has also become indispensable. At that time, countries with developing economies are those that are directly affected by both positive and negative factors that the world economy brings. Along with world integration, businesses in addition to financial issues also have to consider environmental issues to gain a competitive advantage in the market that is extremely exciting as at the moment. To gain a competitive advantage in the market and achieve high environmental performance, the integration of green supply chains (GSCI) inside and outside the enterprise is imperative.

1. INTRODUCTION

In the current context, trade between countries is becoming easier and easier, so international trade has also become indispensable. At that time, countries with developing economies are those that are directly affected by both positive and negative factors that the world economy brings. Along with world integration, businesses in addition to financial issues also have to consider environmental issues to gain a competitive advantage in the market that is extremely exciting as at the moment. To gain a competitive advantage in the market and

achieve high environmental performance, the integration of green supply chains (GSCI) inside and outside the enterprise is imperative. Towards green agriculture, ecological agriculture by synchronous application of processes and technologies; rational and economical use of input materials for agricultural production, efficient use of natural resources, without affecting the environment and human health. As a result, agricultural enterprises can save investment costs, make full use of input materials, and create "green" relationships with their suppliers and

customers. However, solving the problem of the relationship between GSCI and the environmental performance of enterprises is always a difficult thing and always needs to be studied to find a reasonable answer.

Today, organizations and businesses are constantly striving to achieve rapid growth, continuous improvement, preparation for the future and global integration. Businesses are increasingly having to rethink their supply chains to face environmental challenges such as global environmental regulations, green consumerism and climate change. Changing to match global trends is an urgent issue that consumes a lot of time and money of businesses. Therefore, from the beginning, understanding and applying GSCI is extremely important for businesses to achieve the best environmental performance in the future. Current studies have shown that good adoption of GSCI is becoming indispensable for achieving environmental sustainability within organizational networks (Vachon and Klassen, 2006). At the present time, there is a lot of research on the relationship between GSCI and the environmental performance of businesses. Adding "green" ideas to manufacturing supply chains involves adopting a different worldview where both environmental and supply chain operations are simultaneously taken care of to make the world greener. Christmann (2000) reports that organizations are increasingly considering the natural environment as the primary source of competitive advantage. Scholars also argue that companies can create added value through the efficient as well as efficient use of their resources (Bansal 2005; Darnall and Edwards 2006). Based on a meta-analysis of studies focusing on the relationship between environmental responsiveness and corporate financial performance, Orlitzky (2003) also concluded that environmental

responsiveness tends to be associated with better financial performance.

Vietnam is a socialist-oriented country with an emerging economy in Asia. With relentless efforts along with the right policies of the State, Vietnam is gradually asserting its role and economic strength on the world economic map. Vietnam is also known as a country with a good record of export surplus. Many Vietnamese products continuously penetrate major markets in the world with large export turnover and are positively received. Especially it is impossible not to mention agricultural products. In recent years, agriculture has increasingly asserted its position as a pillar of the economy, strategically positioned in the cause of industrialization and modernization of the country.

2. Literature review

2.1. Studies on green supply chain integration

Green Supply Chain Integration (GSCI) can be defined as the degree to which a manufacturer builds strategic relationships with its supply chain partners and collaboratively integrates environmental concerns into internal and inter-organizational processes (Lo et al., 2018; Sarkis et al., 2011; Wu, 2013). It is an issue that is attracting the attention of many scholars around the world. These studies demonstrate the importance of applying the philosophy of supply chain integration (SCI) to green supply chain management (GSCM) (Dai et al., 2015; Wong et al., 2015). However, scholars need a lot more time to reach a consensus on how GSCI should be based on SCI and how this integrated approach to GSCM affects efficiency, leaving opportunities for further studies. The main problem of existing studies on GSCI is the incomplete concept of GSCI. Although scholars often base definitions and dimensions of GSCI on SCI (Song et al., 2017; Wong et al., 2015), they categorize GSCI into

green supplier integration (GSI), green customer integration (GCI) and green internal integration (GII), yet the way they conceptualize GSI, GCI and GII is quite different. Some studies view each dimension of GSCI as a unidimensional structure (Dai et al., 2015; Lo et al., 2018; Song et al., 2017; Wu, 2013; Yu et al., 2014), others operate GSI, GCI, and GII as second-line structures (Wong et al., 2015, 2018). Some studies limit supplier participation in upstream green activities and limit customer participation in downstream green activities (Wu, 2013; Yu et al., 2014), several other studies emphasize the importance of involving supply chain partners in all green processes (Wong et al., 2015, 2018). In fact, SCI uses three components to highlight strategic collaboration between supply chain partners at multiple levels: information sharing, process coordination, and strategic alignment (Flynn et al., 2010; Wong et al., 2011; Xenophon et al., 2005). Wong et al. (2015, 2018) were the first attempts to attempt to grasp the essence of SCI. However, they ignore the most important component: strategic alignment.

The resource-dependent perspective proposes that competitiveness can only be achieved by the cooperation of inter-organizational activities. To compete in global markets, relying solely on internal sources is not enough because the level of risk faced by companies has increased (Pfeffer and Salancik, 2003). A concerted effort by all members present in the supply chain is that hours are required to develop environmentally friendly products, services, and processes (Vasileiou and Morris, 2006). Many environmental problems are not caused by a manufacturer's internal operations, but involve its upstream and downstream supply chains (Zhu and Sarkis, 2007; Lai, 2013). To minimize environmental pollution and establish an environmental image,

manufacturers must actively cooperate with their suppliers and customers to implement GSCI.

2.2. Studies on the environmental performance and the direct impact of GSCI on the environmental performance of enterprises

The performance of the enterprise is the goal that most tasks in management focus on. Business performance is also understood as summarizing the achievements of an enterprise or departmental unit (Amin, 2017). These achievements are achieved due to the efforts of the business towards the goals that the business sets in a certain time. Corporate performance is also described as the degree to which an employee accomplishes the goals and aspirations of the business (Cascio, 2006). This concept is also associated with the growth and development of a business (Ahmed and Shafiq, 2014).

Environmental efficiency is one of the aspects of Business Performance. Environmental efficiency refers to pollution reduction and energy savings (Geng et al., 2017; Zhu et al., 2005). More and more studies are documenting a positive relationship between internal environmental management and environmental performance (Geng et al., 2017; Yang et al., 2013). Several studies have reported that supplier and customer environmental cooperation affects environmental performance (Fang and Zhang, 2018). Some companies have changed their management behavior towards greener supply chains by introducing environmental audit and certification programs (ISO 14001 and SA 8000[1]), as well as providing their suppliers with environmental support (Wu et al., 2012) and promoting environmental cooperation (Caniato et al., 2012; Vachon and Klassen, 2006). Past research has also addressed the potential

relationship between a company's friendly environment and its internal capabilities; this implies that basic competencies must be in place before organizations can develop any superior green management capabilities that can significantly impact their environmental performance (Christmann, 2000). However, if a company lacks any basic competencies, it is bound to fail, as its environmental effects will only be costly.

In fact, businesses may face many environmental risks associated with their supply chains (Handfield et al., 2005). Environmental issues are also considered a major threat to a company's bottom line because environmental management requires huge investments in technology. Hillman and Keim (2001) argue that investing in socially and environmentally responsible initiatives will not create any additional value for the company. However, there are researchers who view pollution control initiatives as a drain on resources. And others still argue that companies are often forced to adopt environmental practices, even though such practices may have an uncertain or even negative impact on their performance (Hahn et al. 2010; Winn, 2012). These conflicting results may be the result of an increased focus on end-of-pipeline pollution control, rather than adopting proactive sustainability initiatives focused on pollution prevention. And as analyzed above, passive environmental strategies are not enough, organizations must take proactive environmental perspectives across the supply chain to achieve high efficiency in all aspects of sustainable development.

2.3. Studies on the indirect relationship between green supply chain integration (GSCI) and environmental performance of enterprises through mediate and moderate variables

Not only does GSCI have a direct impact, it also indirectly impacts the environmental performance of businesses through mediate and moderate variables. Specifically, those mediate variables can be: investment circularity, green process innovation, green product innovation, green procurement, and green cooperation with customers. Besides, there are also moderate variables such as export characteristics of enterprises and enterprise size.

Managers are increasingly interested in recovering capital and profiting from the efficient disposal of scrap, leftover, obsolete materials, waste and assets generated within the company (Vijayvargy, 2017). In recent years, the issue of disposal has become more complex and important as companies face increasingly stringent environmental laws and increasingly high processing costs. The focus on the entire supply chain means managers must look for return loops to recoup their initial material investment through remanufacturing, repair, reconfiguration and recycling. Circular investment requires attention to environmental issues and regulations and the ability to identify opportunities to recover revenues or reduce costs. Such investment circular-related activities are likely to improve manufacturers' revenues (Zhu et al., 2008a, 2008b). Resource use and waste reduction are strongly impacted by the influential positive role of integration organized among all stakeholders (Salem, 2018). A similar conclusion was made by Green et al. (2012) that investment circulation is positively associated with economic activity results. Therefore, the author will extend the previous study of Chiou et al. (2011) to clarify the link between green practices within the organization and corporate performance through investment circularity – a factor that enhances the competitive advantage of the business.

Green product innovation uses cleaner raw materials and product technology to redesign products and packaging (Huang and Li, 2017). Green process innovation (Green manufacturing) uses green sourcing, manufacturing, and logistics technologies without changing product design (Christmann, 2000). Early evidence suggests that both process innovation and green products can promote competitive advantage (Chen, Lai, and Wen, 2006), but a recent study shows the inefficiencies of green process innovation (Chang, 2011). Therefore, the performance of green products and process innovation may be different. Both green products and process innovation have been shown to have a positive association with business operations and the environment (Huang and Li, 2017; Liu et al., 2018). Wu (2013) argues that GSCI is an important capability for process and green product innovation, and points out that three aspects of GSCI (GII, GSI, GCI) are positively associated with both product and process innovation.

Preuss (2002) commented that purchasing is the starting point of material flow within an organization. Therefore, purchasing can be used as a screening factor for incoming material flows to promote green products and activities for the sustainability of a company. Green purchasing mainly involves controlling the environmental performance of suppliers (Eltayeb et al., 2011). Quayle (2002) argues that proactive commitment among suppliers on a long-term basis creates a win-win philosophy for continuous improvement. Solving the common problem of improving the environmental image makes manufacturers and suppliers more familiar with each other, which helps manufacturers coordinate purchasing processes. Therefore, green integration with suppliers can motivate producers to collaborate with suppliers to improve green purchasing

practices (Klassen and Vachon, 2003; Zhu and Sarkis, 2007). Suppliers will be selected using environmental criteria, such as ISO 14001 certification, and manufacturers will become more active to perform environmental audits of suppliers' internal operations and evaluate secondary suppliers' environmental management practices (Blome et al., 2014). For example, maintaining close contact with customers helps manufacturers better understand and meet customer requirements for green management and thus manufacturers can design better green purchasing processes (Flynn et al., 2010). Through a synchronous planning process with customers in production and delivery, the green purchasing process is more likely to be implemented as it must fully take into account customer requirements. In addition, in order to better meet customer requirements, the manufacturer will also actively seek the support of suppliers, thus promoting cooperation between manufacturers and suppliers to establish consistent environmental goals (Yang et al., 2010). By integrating sustainability goals into procurement activities, green procurement plays an important role in the success of manufacturers' environmental strategies (Chiou et al., 2011; Blome et al., 2014). With increasing environmental awareness, the demand for environmentally friendly products is increasing (Klassen and Vachon, 2003; Chiou et al., 2011). Thus, green procurement can not only enhance the value of products but also help manufacturers establish a good image of the environment (Zhu and Sarkis, 2007). Green integration with customers can help manufacturers use fewer hazardous materials and optimize production processes, facilitating the implementation of green purchases (Klassen and Vachon, 2003; Vachon and Klassen, 2007). Customer integration is conducive to collaborative implementation of

cleaner production, green packaging, and product recycling in upstream supply chains (Vachon and Klassen, 2006; Zhu and Sarkis, 2007). For example, maintaining close contact with customers helps manufacturers better understand and meet customer requirements for green management and thus manufacturers can design better green purchasing processes (Flynn et al., 2010).

Green purchasing and green cooperation with customers have been considered as the two main GSCM practices (Zhu and Sarkis, 2004; Hwang, Wen, and Chen, 2010). Green integration with suppliers can effectively ensure that suppliers provide environmentally friendly products with high quality and consistency, which can significantly improve customer satisfaction, allowing them to collaborate more actively with manufacturers in achieving environmental goals (Zhu et al., 2005). Manufacturers are also willing to increase investments in preventing pollution in downstream supply chains, thus strengthening green cooperation with customers (Vachon and Klassen, 2007). As a result, supplier quality integration encourages manufacturers to formulate detailed and written environmental policies and plans in supply chain management (e.g., recycling content of packaging and solvent emissions), facilitating green collaboration of customers (Vachon and Klassen, 2006; Blome et al., 2014). Therefore, green integration with suppliers forms the basis for achieving collaborative solutions that reduce the environmental impact of material flows with customers (Yang et al., 2010). Manufacturers are willing to share their own knowledge and co-develop green management strategies with customers (Zhu and Sarkis, 2004; Flynn et al., 2010). Getting customers involved in quality improvement projects also promotes common problem solving, such as

recycling products and reducing energy consumption during transportation and distribution, facilitating green cooperation with customers (Zhu et al., 2005; Vachon and Klassen, 2006). Furthermore, green integration with customers motivates manufacturers to increase investment in pollution control technologies and adopt an "external" environmental management program, improving customers' green cooperation (Vachon and Klassen, 2007; Wu, 2013). Green cooperation with customers allows manufacturers to implement environmental improvement projects to reduce pollution in downstream supply chains (Vachon and Klassen, 2006). Green cooperation with customers also allows manufacturers to comply with different environmental regulations in different markets, improving operational efficiency and competitiveness (Yang et al., 2013). By collaborating with customers to align environmental goals, manufacturers can incorporate green philosophy in the design of distribution and transportation processes, reducing carbon emissions, wastewater, solid waste, and the consumption of hazardous materials in the downstream supply chain (Zhu and Sarkis, 2004; Green et al., 2012). Cooperation with customers on ecological design, cleaner production and green packaging allows manufacturers to optimize production and operational processes to reduce pollution and energy consumption, improve environmental efficiency (Yu et al. 2019).

In addition to the above mediate variables, there are many moderate variables that affect the relationship between GSCI and the environmental performance of businesses. Previous studies have identified various factors influencing GSC integration within organizations. These factors include the size of the organization, the type of business sector, the

level of investment, the level of equipment/machinery, the size of the supply network and the customer base (Vijayvargy, 2017). Environmental issues relate to all aspects of a business's operations and force all businesses to manage the environment in new ways. Not all companies are "green" or equally proactive in responding to environmental issues. The challenges and difficulties faced by organizations of different sizes also vary (Vijayvargy, 2017). Organizational size is an important factor often used in the literature on environmental management and operational strategy (Grant et al., 2002). Using enterprise scale along with other control variables including factory equipment age, industrial and advanced operations and manufacturing management, Benito et al. (2005) experimentally analyzed the relationship between enterprise environmental performance initiative and environmental performance to conclude that environmental practices are relevant related to logistics process transformation, affecting the operational efficiency of enterprises. Enterprise size is defined as having a positive relationship to the environmental performance of the enterprise. Large organizations have sufficient financial and human resources to allocate to green supply chain management practices and have sufficient capacity to procure, implement environmental systems such as pollution prevention systems as well as reverse logistics programs and this will positively improve the performance of their business. This is advocated by Vijayvargy et al. (2017), moreover, large-scale organizations, such as Toyota and Sony, can spread "green" practices to their partners such as suppliers and customers. In contrast to medium and large organizations, it is common for smaller organizations to invest less in environmentally friendly technologies and be more responsive

to green issues (Grant et al., 2002). Besides, there is also research that shows that businesses of different sizes that implement green supply chain management practices can improve product quality, reduce sales time and enhance their chances of selling their products in international markets. according to the theory of Melnyk et al. (2003) and Zhu et al. (2008). All previous studies of enterprise size have prompted the investigation of the fundamental relationship between GSCI and an organization's environmental performance through the moderate variable of organizational size.

In addition to the size, the export characteristics of the enterprise also regulate the relationship between GSCI and the environmental performance of the enterprise. Through testing, Fang, Zhang (2018) came to the conclusion that whether or not an enterprise exports has a moderate impact on the impact of GSCI on the performance of enterprises. Christmann and Taylor (2001) argue that exports and sales to foreign customers are the two main drivers for improving the environmental performance of businesses in China. When exporting, businesses will encounter technical barriers to clean technology. Therefore, if relevant international environmental standards are not met, the benefits of joining bilateral and multilateral trade organizations will be diminished. The inclusion of environmental issues in all processes of production, through the reduction of energy consumption and hazardous raw materials, the improvement of the environmental image, the improvement of waste disposal and the reduction of emissions, will help to increase the environmental efficiency of the enterprise, thereby improving the efficiency of international business (Christmann and Taylor, 2001). Better environmental performance brings better brand image, enhances prestige and meets

international ecological criteria, helping exporters to expand exports in existing markets and penetrate into new markets. However, Ural (2009) argues that exports are part of the company's marketing program. Exports cause costs such as the cost of applying EMS, the cost of polluted air, and the cost of operating a business (Darnall and Edwards, 2006). In terms of long-term business, it can be seen that these costs are short-term costs, which can be offset by benefits such as energy savings, reduced waste of resources, and an improved company image that also brings higher profits in the long term. These benefits will enhance the environmental performance of the business in the market and meet environmental criteria (Shi et al., 2012). In general, there are studies using moderate variables as export characteristics of enterprises, there are studies using moderate variables as enterprise size,.. But the research results are contradictory, not yet agreed.

2.4. Research gaps

The above studies do not use theory throughout the model, but only a few discrete elements. Two of the intermediaries between GSCI and corporate environmental performance, investment circularity and competitiveness, have been discovered, but other mediate variables have not been addressed (e.g. Jawaad and Zafar (2020)). There are also studies that have identified three aspects of GSCI: GII, GSI, GCI; at the same time, mediate variables such as green process innovation and green product innovation are also identified, but not to mention green circulation, green procurement, green cooperation with customers and moderate variables (e.g. research by Wong, Wong and Boon-iit (2020)).

Recognizing the above research gaps, the author uses two main theories, resource-based theory and organizational information

processing theory throughout. The study considers GSCI as an exceptional resource for creating a competitive advantage for businesses. From that competitive advantage, that innovation will be the foundation to create business performance, thereby helping businesses increasingly improve their environmental performance.

As a developing country in Asia's emerging economies, Vietnam was forced to build on the GSCI and work hard to achieve its vision of becoming an environmentally friendly economy. However, Vietnam's research on GSCI is still very limited and has not fully exploited the impact of GSCI on the environmental performance of enterprises. At the same time, studies around the world, despite exploiting aspects that GSCI impacts on the environmental performance of the organization, the agricultural sector has not been exploited much.

Therefore, filling the above research gaps is extremely urgent for Vietnam to apply GSCI more effectively in its supply chain. At the same time, the study will explore aspects that previous studies have not been implemented, helping Vietnamese enterprises, especially agricultural enterprises, have a proper and general awareness of GSCI and its impact on their environmental performance.

3. Research methodology

Qualitative method: used to detect, correct, supplement scales, variables and questionnaires. Learn and refine the concept of independent variables, dependent variables, check the appropriateness of the scale, consult ideas to refine words and sentence structure.

Search and synthesize and collate documents to select models and hypotheses

Use in-depth interviews and group interviews to standardize scales, agree on words, search for potential factors and standardize questionnaires to fit the context of Vietnam's economy in general and Vietnamese agricultural enterprises in particular.

Use in-depth, focus group interviews to assess Vietnamese agribusinesses' perceptions of green supply chain integration and environmental performance.

Participants in the interview include: 66 leaders from grassroots, middle to senior levels of Vietnamese agricultural enterprises.

Study period: The interview period lasted for 3 months from September to December 2022.

4. Research results

Qualitative research results include: (1) Awareness of green supply chain integration, (2) Awareness of the benefits of green supply chain integration, and (3) Awareness of the impact of green supply chain integration on the environmental performance of enterprises.

4.1. Awareness of green supply chain and green supply chain integration of enterprises.

The research results show that the integration of green supply chains of agribusinesses will create a foundation for sustainable agriculture.

Through the process of qualitative research on the awareness of the concept of green supply chain and the implementation of green supply chain integration within enterprises, it has been shown that large, medium and medium-scale agricultural product producers are aware of the concept of green supply chain. However, businesses have not fully invested in applying green supply chains internally, and there is a huge gap between depending on the size of the business.

For leaders from large enterprises, awareness of green supply chain integration is generally more complete. In some enterprises, there has been integration of green supply chains in production at the macro level such as: converting to a greener, more environmentally friendly production process; using green packaging, green logistics; ... And there have also been businesses (mostly large-scale) with many investment activities showing an appreciation of the importance of green supply chains internally.

For example, Vien Phu Organic Agricultural Products Joint Stock Company has the first rice cultivation model in Vietnam and Southeast Asia to receive organic rice certificates. Vien Phu is also the first and only agricultural enterprise in our country to receive an organic production certificate issued by the US and EU. To achieve this, Vien Phu Company's rice production activities have followed a strictly controlled process, from seed selection, care to harvesting and processing, packing and sending.

"Our company has been switching to a greener and more environmentally friendly production model for more than 5 years, leaders always want to invest in more advanced technologies and techniques to be able to greenen all stages of production and conduct integrated use of green supply chains instead of traditional supply chains. Or as in production, the hydroponic system will be used intertwined to grow some vegetables and tubers in combination with the priority of using organic fertilizers, biofertilizers, limiting the use of chemical fertilizers as much as possible. We also integrate the use of containers, ships and aircraft to transport products," said the director of an agricultural enterprise in the South.

Large companies have a broader awareness of business process innovation with strong competence in the ability to grasp comprehensive long-term strategies and orientations in areas of promoting competitive advantage, improving production capacity and product quality to building relationships with customers, corn keeps up with the rapid development of science and technology and access to more potential markets...

The head of procurement of a northern enterprise replied: "Our company has applied green supply chain integration through the green procurement process. The procurement department always tries to find materials that have little impact on the living environment and human health. When evaluating options for the same purpose, we also consider additional criteria: energy efficient, recyclable and not too harmful to the environment. Our company is trying to use as few disposable products as possible."

For medium enterprises, although there has been interest and investment in the green supply chain, the interviewees are not completely directly to this concept, but through specific phrases such as "green logistics", "organic agriculture", "green agriculture", etc "green procurement". Overall, the implementation of green supply chain integration has been validated in forms such as avoiding the use of chemical fertilizers; incorporating hydroponic systems; farming in season and in moderation; crop rotation; greening transportation services; agriculture, organic food... Implementation on a wider scale is still limited and facing many difficulties due to capital, technology and technical issues.

In addition, Vietnam's agricultural sector has many business households that are not fully aware of green supply chains and have not seen

the benefits and impacts of integrating green supply chains into production processes. And Vietnam is an agricultural country with 75% of the workforce living in rural areas, so for farmers, the application of green supply chain integration forms is still quite new and difficult to adapt to the change in production structure. Mainly, farmers only mentioned simple solutions such as recycling; limit chemical fertilizers, herbicides, use self-composting fertilizers ... is a manifestation of green production processes, not to mention more macro solutions. Many farmers said: "Currently, I see that continuing to produce according to the same method as my father is very good, I have not thought too much about applying green or organic agriculture to my production because it is very complicated, costs more money."

4.2. Awareness of the benefits of green supply chain integration.

According to qualitative research findings, most large enterprises and some medium-sized enterprises are aware that internal green supply chain integration is associated with tangible and intangible benefits of businesses.

The first is the financial benefits, for large and medium-sized enterprises, they believe that greening the supply chain has helped them reduce operating costs, increase profits, and increase sustainability for businesses. "First, when we start applying greening methods, the transportation process, the cost that we have to spend will increase, for example, the cost of organic fertilizer is higher than chemical fertilizer but then the cost savings will be more, Costs for transportation are reduced, production by reducing the energy and natural resources that businesses consume to produce its products and services, and reusing materials will also reduce the costs needed."

"In the current situation, the outbreak of the Covid-19 epidemic is very complicated, greatly affecting the production and consumption of products, creating many challenges for businesses, there are many businesses that have gone bankrupt because they cannot find supply or there are businesses that have to pay a lot of money for transporting goods due to the shortage of containers, Rates increased. And your business has used integrated ways of transporting goods before, so when the outbreak occurred, we still secured the contract, kept the reputation with customers and saved more costs, it can be said that our business has continued in this epidemic season thanks to the costs saved from supply chain integration green" – A director of a medium-sized agricultural production enterprise in the North.

The costs are saved from integrating the green supply chain, businesses can also use it to invest in factories, improve old products, develop new products, expand the scale of their businesses to earn more profits. Moreover, some businesses believe that integrating green supply chains will contribute to environmental protection, create a better working environment for their workers and can motivate workers to produce and improve efficiency.

Considering the intangible benefits, according to enterprises' reports, they are already aware that green supply chain integration helps increase the competitiveness of enterprises, they will significantly improve their image and reputation in the market by strengthening social responsibility actions. By creating "green" products and disposing of them with "green" means of transportation, businesses will engage consumers and partner with other green businesses and suppliers that are environmentally conscious and worried. Worldwide, environmental issues are a hot issue that receives great attention, especially

with some fastidious markets such as the US, Japan, Europe, customers here always want to use food products, food meets quality standards of origin, production and transportation processes. Recognizing this, businesses believe that greening the production process will help them increase their ranking higher in consumer preferences, export more agricultural products, and show the image of environmentally responsible enterprises and the community. A positive public image and marketing benefits are invaluable assets to any business and a great help to maintain sustainability. For rice, coffee and rubber exporters, as their image is enhanced, they will also have the opportunity to bring more of their agricultural products to international markets and be able to reach more consumers from various markets. In conclusion, adopting innovative management policies that are less harmful to the environment can bring significant economic benefits, through building a good reputation and improving their overall image in the market.

Most small and medium-sized agribusinesses, although they are partially aware of the benefits that green supply chain integration brings, but for these enterprises, they still focus on economic benefits - the profits that business brings and these businesses do not have the ability to innovate, improvement of the entire production process; They have also only deployed on a small scale, a small area. With new businesses with little capital, not yet thriving, trying to maintain their businesses, they said that "The popularity of organic agriculture in our country is not high, there is not too much difference between products, consumers are still more interested in prices, so the production of green food to sell in the domestic market will be difficult to digest So we decided not to invest in greening production."

For agribusiness households or farmers, they are not fully aware of the benefits of using green supply chains. Farmers are mostly becoming aware of the benefits to the environment such as trying to use self-composting fertilizers to make the soil more fertile, helping them get more crops or they planting crops in rotation to preserve the soil. However, for these subjects, the money they earn from the crop is the top priority, biological products are more expensive, last longer than chemical fertilizers, and for self-composting fertilizers, it will take longer, so often farmers still use the fastest method is to buy chemical fertilizers and most farmers small-scale production. Awareness of green supply chains and benefits of using this measure among small and retail households is still low and needs the State to have support policies for further development.

4.3. Be aware of the impact of green supply chain integration on the environmental performance of enterprises.

As mentioned above, businesses that clearly see the benefits of integrating green supply chains, will also clearly see the positive environmental effects; create opportunities for sustainable agricultural development, improve the environmental efficiency of enterprises. Here, for companies (mostly large ones), sustainability is not limited to profitability (economic efficiency), but also includes the company's impact on society and the environment.

According to a senior manager of a large agricultural enterprise in the North, "The integration of green supply chains in enterprises such as structural shift to organic agriculture, combining many modes of transportation of goods to reduce CO₂ emissions while helping us create green

products, Clean, high quality, environmentally friendly production process, both help us earn a lot of profit and improve our reputation for investors and customers. In addition, our business has also cut a lot of costs in the process of implementing green supply chains in the enterprise."

Today's businesses not only need to maintain their business organization, but also increase product competitiveness because major competitors are gradually increasing. Competition is now between supply chains, rather than between businesses. Therefore, businesses must focus on developing their entire supply chain, not just developing each product. Especially for a society that increasingly focuses on environmental protection and building a green economy, the green supply chain is also the development direction of enterprises, not only helping businesses create new competitive advantages in the world but also bringing ecological environmental benefits and environmentally friendly brands.

"When we start to apply gradual shifts to integrating green supply chains in enterprises in stages such as green procurement, green production, ... We recognize that our business has reduced harmful gas emissions; solid wastes; hazardous and toxic materials to the environment. This makes the environment around the business area improve, the working environment of employees is also better. Moreover, we also spend less effort, energy and materials in dealing with the wastes before integrating the green supply chain." – The head of a coffee factory in the South said.

Through the analysis of interview data, it is also shown that large and medium-sized enterprises are also aware that the environmental efficiency of their businesses is also enhanced

thanks to the integration of green supply chains in production and business. Protecting the environment and minimizing the impact caused by human activities are issues that more and more businesses worldwide are trying to solve.

For example, a common signal of both large and medium-sized enterprises is that they have used green logistics, businesses have used a combination of road and water transport, for some businesses they also use aircraft to transport goods and products. Businesses find that this is an optimal transportation option, especially in the time of epidemic, containers are rare and difficult to move. Business owners are aware that the use of green logistics is a sustainable development plan, while pursuing the quality, efficiency and services of logistics: helping to minimize costs for customers, increasing connectivity in forwarding – transportation activities; While limiting the impact of logistics on the environment by reducing the number of roads in the city, reducing traffic congestion and environmental harm from the use of this environmentally friendly transport, green supply chains are also developed as a competitive advantage in market expansion. This is a good sign in awareness of green supply chain integration internally for agricultural enterprises in Vietnam.

For small businesses and households, they have realized the environmental effect thanks to greening some simple steps such as limiting the use of chemical fertilizers, using self-composting fertilizers, rotating crops to protect the land. A farmer in Central Vietnam: "Using such self-composting fertilizer helps me protect the soil, as well as the surrounding water environment, from the death of the shrimp and fish we farm. And our house, also rotating crops, both yields more crops, increases the

amount of money earned, and protects the soil and prevents erosion."

Applying simple methods to greenen the production and cultivation process helps people have a better living environment, less harmful to their surroundings. Therefore, their health is also improved, the working environment is also less toxic.

Through qualitative research methods, the study explored the relationship between green supply chain integration and the environmental performance of enterprises, particularly for enterprises in Vietnam's agricultural sector.

From there, it shows that in the current era of technology and environmental conditions, green supply chain is an important factor determining business efficiency.

5. Conclusions

Theo Zhang et al. (2011), companies of different sizes can be transferred to different scopes by customers and suppliers due to different applicability, measurable ability to identify, evaluate, assimilate and use external information and knowledge. It has also been argued that larger companies have more flexibility in allocating resources to external green integration activities. As a result, companies of different sizes may have different efforts and skills to integrate green supply chains and achieve different levels of efficiency. In addition, many external methods of green integration are widely supported because they have been successfully applied by relatively large companies. This explains the efficiency of business activities, especially farms in Vietnam. According to the forecast of the General Statistics Office, the growth rate of production value of agricultural products of the agricultural sector in 2020 will reach 2.68%, double that of 2019. 01% and this industry is

expected to have an export surplus for the economy.

Therefore, GSCI is the driving force of agricultural companies in Vietnam, the development of GSCI is an important and strategic task for companies to improve environmental efficiency and sustainable development.

GSCI is expected to enhance the company's competitive advantage through investment circularity. Circular investment (IR) refers to a method to close the supply chain loop and is conceptualized as the ability of manufacturing businesses to sell excess inventory, used materials and scrap as well as obsolete machinery (Zhu et al., 2008a, 2008b). It is an approach whereby businesses can become more proficient in the ecological aspect through reuse, recycling and reducing the amount of materials used (Zhu et al., 2008a, 2008b). Reverse logistics addresses the handling of returned materials, out-of-date supplies, production scraps, and defective products. Such IR-related activities have the potential to improve manufacturers' revenues (Zhu et al., 2008a, 2008b). IR not only limits reuse and recycling but also generates additional income through the sale of surplus products and assets that are no longer utilitarian. A similar conclusion was reached by Green et al. (2012) on whether IR has a positive association with economic activity results; however, they report that IR does not affect environmental performance

Green product innovation (GPDI) occurs when green concepts are integrated into product (re)product design and packaging (Huang and Li 2017) to improve product quality and product differentiation (Chen, Lai, and Wen 2006). GPDI can help consumers reduce waste and energy consumption when using products,

but the need for a radical product redesign means that green product innovation can be more difficult to save manufacturers and achieve differentiation. These arguments explain why GPDI can lead to both positive and negative cost impacts while reducing the environmental impact of Chinese manufacturing companies (Zhu and Sarkis 2004)

Green purchasing (GPC) is the implementation of green rules during the purchasing process. By integrating sustainability goals into procurement activities, GPC plays an important role in the success of manufacturers' environmental strategies (Chiou et al., 2011; Blome et al., 2014). With increasing environmental awareness, the demand for environmentally friendly products is increasing (Klassen & Vachon, 2003; Chiou et al., 2011). Thus, GPC can not only enhance the value of products but also help manufacturers establish a good image of the environment (Zhu & Sarkis, 2007). GPC also enables manufacturers to collaborate with suppliers to design upstream supply chain processes and address environmental issues, thus improving environmental performance (Zhu & Sarkis, 2004).

Partnering with green customers allows manufacturers to implement environmental improvement projects to reduce pollution in downstream supply chains (Vachon & Klassen, 2006). CGC also allows manufacturers to comply with different environmental regulations in different markets, improving operational efficiency and competitiveness (Yang et al., 2013). By partnering with customers to align environmental goals, manufacturers can incorporate green philosophy in the design of distribution and transportation processes, reducing carbon emissions, wastewater, solid waste, and the

consumption of hazardous materials in the downstream supply chain (Zhu & Sarkis, 2004; Green et al., 2012).

From this, it can be concluded that GSCI plays an important role in the competitive advantage of companies in the agricultural sector in Vietnam, therefore, in the face of continuous innovation in domestic and foreign markets, GSCI's development strategy is increasingly valued in companies.

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