

## **R&D INVESTMENT OF JAPANESE MULTINATIONAL CORPORATIONS IN VIETNAM THROUGH GREEN SUPPLY CHAIN: THE CASE OF AJINOMOTO**

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**Abstract:** Environmental condition is deteriorating day by day and the main cause for it is the irresponsibility of enterprises, which selfishly strive for business profits and totally ignore their bad impacts on the environment. The governments and international organizations all over the world are urging those enterprises to adopt new green business strategies to protect the environment. Due to that reason, Japanese Multinational Corporations decided to invest in R&D through green supply chain (GSC) in Vietnam to gain market and reputation. By using the GSC framework, this paper will analyze the case study of Ajinomoto GSCM in Vietnam. This paper will point out how Ajinomoto achieve their business success in Vietnam by taking advance R&D to create an advantageous green supply chain.

**Keywords:** Green supply chain management; Ajinomoto Vietnam; Japanese Multinational Corporation, R&D in Vietnam, FDI in Vietnam, Vietnam R&D investment.

JEL: L21, M11, M14

### **Introduction**

In the last few decades, environment has always been the most discussed topic. Environmental problems such as global warming, air pollution or deteriorating ecosystem appear on the front-page of the newspapers everyday. Environmental protection now is not the responsibility of only an individual, a country or an organization. It is the job that can only be done if the world unites. From the corporation's viewpoint, applying green supply chain management (GSCM) is one of the best ways to contribute to the environmental sustainability of the world.

Vietnam is an emerging market, which attracts a big number of multinational corporations all over the world. However, empirical evidences show that these companies only care about economic profit from Vietnamese cheap labor market and low-tech business environment, and totally ignore their bad impacts on the environment. Recently, due to the rising concerns of Vietnamese government about the environment, many

Multinational Corporations (TNCs) have been trying to find their ways to adapt to the new environmental rules and requirements. Among those, Ajinomoto, which is a Japanese TNC, stands out to be one of a few corporations that successfully apply GSCM by investing in Research and Development (R&D) field to protect the environment. Studying the case study of Ajinomoto not only helps us understand where the Ajinomoto's success comes from, but also encourages other corporations to apply GSCM or other green technologies to contribute to environmental sustainability in Vietnam.

With all the reasons above, this paper hopes to give readers a closer look into the factors affecting the Ajinomoto implementation of GSCM and helps readers understand more about the successful story of Ajinomoto in Vietnam.

### ***Japanese Investment in Vietnam***

Japan is one of the nations, which own the largest value of Foreign Direct Investment

(FDI) in Vietnam. For 7 years, the number of Japanese investment projects as well as the value of them has increased rapidly. According to Table 1, in 2013 Japanese Multinational corporation has invested as triple projects as it had done in 2008; 352 projects and 105 projects respectively.

What is R&D? OECD (1993 & 2002) defined that “*Research and development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge (including knowledge of man, culture and society) and the use of this knowledge to devise new applications*”. Japanese researchers classify R&D into two types: (1) innovative R&D is the activities using and taking the innovative knowledge of foreign which is unavailable in investor country and (2) adaptive R&D is R&D aiming at adaption of technology and available products in local context (Satoshi Shimizutani & Yasuyuki Todo, 2008). In Vietnam, R&D FDI usually is in the second type.

While manufacturing and assembling industry is highly considered by Japanese TNCs, in Vietnam, investing in R&D is not new, but it is not paid attention by Japanese investors. The industry invested the most is manufacturing and assembling industry including 84% of total projects and 51% value of FDI. On the other hand, 12% of projects are R&D occupying 0.01% of total FDI. This is caused by two main reasons (1) Vietnam contains a cheap and young labor market which

can supply for the labor intensive industries of Japan where labor force is inadequate because off its aging demographic (Shinozaki, 2005), and female employees interrupt or quit their job intendedly after wedding or giving birth (Zhou, 2015). (2) The business environment especially infrastructure, information technology and qualification of labor force in Vietnam is insufficient for Japanese TNCs to invest in R&D (Meyer & Nguyen, 2005).

**Green Supply Chain Management (GSCM)**

At the time when environmental problem was not a big issue, most researchers in the field of supply chain studied only about supply chain management (SCM). Hervani (2005) defines supply chain management as the coordination and management of a complex network of activities involved in delivering a finished product to end-user or customer. It is an essential business that covers all the stages of the product’s life: from resource extraction to disposal. However, with the rising environmental problems and the revolution of supply chain, researchers now have changed their attention to a new concept: “Green Supply Chain Management”. It is not surprising that GSCM defines itself as only a little alteration to the definition of “supply chain management”. By adding the “green” component, it means that GSCM involves the influence and relationships of supply chain management to the natural environment.

Table 1: Japanese FDI to Vietnam from 2008 to 2013

Year	Licensed FDI accumulated since 1988		Licensed FDI each year	
	Number of projects	Total Licensed FDI (mil. USD)	Number of projects	Total Licensed FDI (mil. USD)
2013	2186	35179.9	352	5875.5
2012	1834	29304.4	279	4922.7
2011	1555	24381.7	227	2622.0
2010	1425	20959.9	144	2399.0
2009	1247	17149.6	102	715.0
2008	1102	17362.2	105	n/a

Source: Vietnamese General Office of Statistics (2009-2014)

Table 2: Japanese FDI in Vietnam by industry (only available projects counted)

No.	Industry	Number of project	FDI (USD)	Licensed FDI (USD)
1	Manufacture and assemble	1344	31,318,014,020	9,497,183,258
2	Real Estate	42	1,668,692,694	582,226,042
3	Construction	67	1,171,162,235	252,175,915
4	Retailing	262	1,059,614,147	716,359,367
5	Information and communication	325	805,728,109	255,035,657
6	Logistics	70	433,392,075	141,100,037
7	R&D	322	283,115,610	113,111,676
8	Finance, banking and insurance	9	176,789,474	167,809,474
9	Agriculture, foresting,	36	147,005,660	74,718,084
10	Hotel and restaurant	40	126,905,862	67,257,586
11	Mining	6	100,171,626	99,621,626
12	Education and training	24	96,988,815	8,215,000
13	Water supply, waste treatment	10	76,531,295	31,862,811
14	Other services	18	52,199,500	12,278,335
15	Arts and entertaining	10	34,579,914	11,969,832
16	Electronic products	9	21,097,061	15,408,761
17	Administrative and support services	16	10,223,134	6,433,134
18	Health care and social support	9	9,837,796	5,037,796
<b>Total</b>		<b>2,619</b>	<b>37,592,049,027</b>	<b>12,057,804,391</b>

Source: Ministry of Planning and Investment, 2015

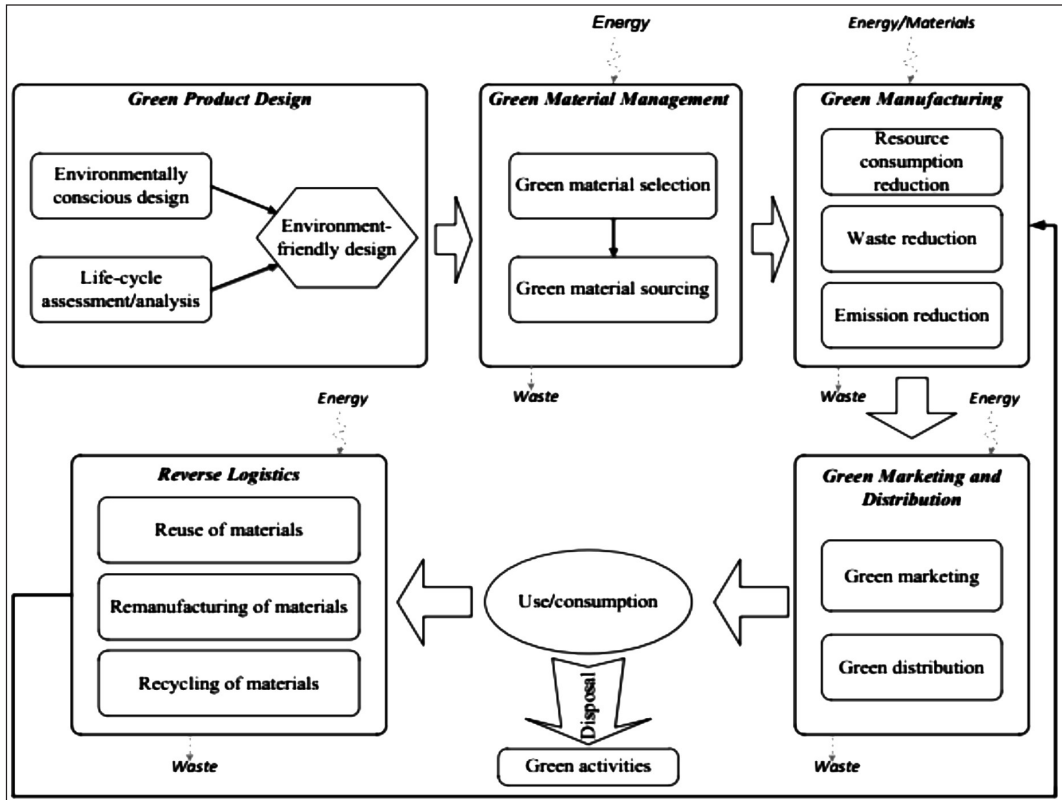
Representative articles on the definition of GSCM are Hervani (2005), Ninlawan (2010) and Ghobakhloo (2013). While Hervani (2005) and Ninlawan (2010) state that GSCM is the combination of 4 main activities namely, Green Purchasing/Procurement, Green Manufacturing, Green Distribution and Reverse Logistics, Ghobakhloo (2013) uses 5 activities include Green Product Design, Green Material Management, Green Manufacturing Process, Green Distribution and Marketing and Reverse logistics to define GSCM.

In general, according to Ghobakhloo (2013),

GSCM = Green Product Design + Green Material Management + Green Manufacturing process + Green Distribution and Marketing + Reverse Logistics

Figure 1 shows us clearly all the activities of GSCM according to Ghobakhloo (2013).

As we can see from Figure 1, GSCM is the closed loop supply chain with the Reverse Logistics closing the loop. Green Product Design consists of Life Circle Analysis (LCA) method and the Environmentally conscious design (ECD). While LCA is used to assess and evaluate the environmental impact of the product, ECD is used to design a product with some environmental consideration. Green Material Management is the activities that replace the environmentally harmful materials with the less problematic one. Green manufacturing mainly concerns about how to reduce the amount of waste and emission during manufacturing process. Green distribution and marketing is the next activity in the chain, which pays attention mainly to green advertising and green transportation. The final activity is the Reverse Logistic (RL). This is the unique one that makes GSCM different from normal supply chain. In this stage, the



Source: Ghobakhloo (2013)

Figure 1: GSCM activities

materials will be reused, remanufactured and recycled, which perfectly close the loop of the supply chain.

**Factors Affecting Implementation of GSCM**

Hervani (2005) finds its own way to introduce the green supply chain performance measurement system (GSCM/PMS), which analyses all the factors affecting the implementation of GSCM. According to Hervani, those factors include the major boundaries associated with managing this system, which are external and internal pressure, the inputs of this system and the expected results of the system, as we can see in Figure 2.

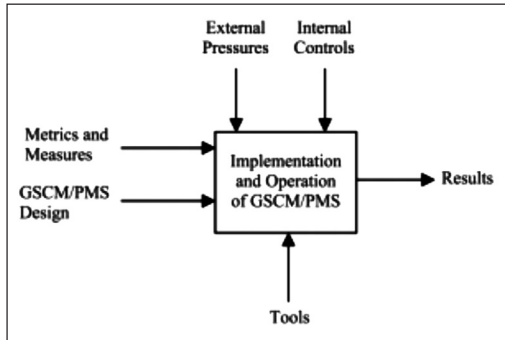
**The Green Development Model**

According to “The green supply chain DNA: How to retool your supply chain for the

sustainability driven, data rich future” by Deloitte, a model to evaluate the maturity of an organization in applying the green supply chain was presented. A framework, which interconnects with each other, will help to create a transparent and sustainable supply chain. The model depicts 4 levels of maturity an organization can achieve: Follower, Mature, Leading and Innovator. This model is useful for any organization in applying the green supply chain.

**Other Researches**

Studying about the GSCM, many researchers pay attention to other aspects beside its definition and affecting factors. Focusing on the current and potential suppliers’ environmental practices are Bowen et al. (2001), Handfield et al. (1997) and Johansson (1994). Besides, representatives who studied about the



Source: Hervani (2005)

Figure 2: The GSCM/PMS

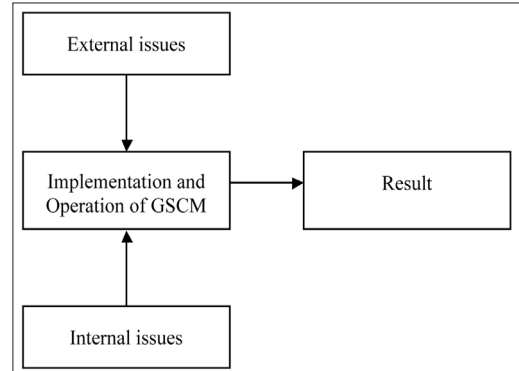


Figure 3: Theoretical framework

environmental risks, economic benefits and drawbacks of establishing a green supply chain are Allenby (1993), Min and Galle (1997), Narasimhan and Carter (1998) and Wu and Dunn (1994).

### Theoretical Framework

In this paper, because of some limitation of data, the framework in Figure 3, which is derived from the literature discussed earlier, is used to analyze the green supply chain of Ajinomoto.

In this framework, external issues are pressures associated with the stakeholders such as the host government, law and community. The internal issues are the organization capability based on the performance in 5 activities of GSCM and the internal pressure. This framework implies that, the implementation of GSCM will be affected both by issues coming from outside and inside system and the outcome of the GSCM implementation will depend on how the corporate reacts to those issues.

### Methodology

This study applies the framework in Figure 3 to analyze the case study of Ajinomoto in Vietnam. The data used in this paper is primary data collected through in-depth interview between the author and four managers (Truong

Phong) of Vietnam Ajinomoto; the secondary data derived from the website of Ajinomoto Vietnam and Vietnam Environment Inspection Agency.

## Results and Discussion

### *Ajinomoto in Vietnam*

In 1991, when Vietnam introduced its open – door policy to attract more foreign investment, the Ajinomoto group decided to enter this market. However, the group's products had already approached Vietnamese customers before this incident through distributors from Japan or other neighboring countries of Vietnam like China or Indonesia. After more than 20 years of adaptation and development, the group now has over 100 representative offices and warehouses spreading throughout Vietnam with more than 2,400 officers and staffs. Not only did the company set up two large factories in Vietnam, one in Bien Hoa City and one in Dong Nai province, but it also associated with a dense network of distributors. In 2013, Ajinomoto became one of the top 1,000 biggest enterprises in Vietnam and ranked 59<sup>th</sup> according to the amount of tax paid for the Vietnamese state. Understanding Vietnamese taste, Ajinomoto is widely known by the Vietnamese consumers with familiar products like Umami Spices, Aji-ngo, Aji-quick and Birdy Coffee.

## ***The GSCM of Ajinomoto in Vietnam***

### *External Issues*

The external issues affecting the implementation of GSCM of Ajinomoto in Vietnam created by the currently bad situation of the world natural environment and ecosystems, the consumers' awareness, pressure and support and Vietnamese rules and legislation.

The world is witnessing the deterioration of the natural condition and ecosystem. In order to solve these problems, international organizations all over the world have been trying to urge the members to cut down their amount of emission and toxic waste. These actions trigger a universal tendency among enterprises to establish the 'green' policy and apply this policy to their business strategies. Vietnam and Ajinomoto are not the exception. Since the *Doi Moi* in 1986, many MNCs have invested into Vietnam and taken advantage of Vietnamese rich and abundant resources like minerals, oil or timber and so on. On the one hand, these MNCs act like a motivation for the development of Vietnamese economy. On the other hand, they badly pollute the environment and damage the ecosystem of this country. This environmental condition of the world in general and of Vietnam in particular put a great pressure on these enterprises including Ajinomoto and force them to reconsider their business strategy if they want to reserve this planet.

With the development of technology and information, Vietnamese people clearly understand the importance of reserving and protecting the environment. With the GDP per capita and income rising, Vietnamese people now have more options and chances to protect the environment. They are gradually changing from buying a product considering only its functions to purchasing greener and more environment-friendly items or products from enterprises that care about the environment. It means that the awareness of Vietnamese consumers has changed, followed by a new trend of shopping: green purchasing. This

'green' trend forces the enterprises to pay more attention to their environmental protecting policy.

In order to deal with the environmental damages, Vietnamese government has introduced new rules and legislations to control the business activities, manufacturing operations and the goods consumptions of enterprises. These laws include the Business Law in 2005 which governs the establishment, operation and management of a company; the Vietnam Commercial Law and the Vietnam Investment Law in 2005 which govern the trade and investment issues; the Environmental Protection Law in 2005, the Consumer Protection Law in 2010 and the Environmental Protection Tax Law in 2011 which govern the management of waste from enterprises. Beside these laws, Vietnamese government has also introduced a new green labeling program to encourage more green production and consumption. More than that, Vietnamese government has a plan to complete the application of green purchasing policies and the promotion of green consumption trend in all provinces by the end of 2020. These laws and programs strongly affect how an enterprise designs their product. With the products being considered green and environment-friendly, Ajinomoto seems to adapt and work well in Vietnamese business environment.

### *Internal Issues*

The internal issues that affect the implementation of GSCM of Ajinomoto are its capabilities based on the performance in 5 activities of GSCM and the internal pressure.

In the history of its development, Ajinomoto has shown the world its strength of maintaining business operations, powerful R&D, large amount of capital investment with the aim of protecting the environment and community. In Vietnam, this group has used all those strength in implementing the GSCM. This will be shown in an analysis of five activities of Ajinomoto GSCM:

- *In the Green Product Design activity*, Ajinomoto successfully applies the Life-Cycle Assessment method with the scope of Cradle to Gate in designing a product.

Figure 4 illustrates the whole manufacturing process of Ajinomoto Vietnam. The scope, “Cradle to Gate” means that only a part of the products’ life cycle, from the preparation of inputs to the time the products get out of the factory, will be assessed. As we can easily see, the inputs (cassava and sugar-cane) are cultivated with the organic fertilizer before being sent to the sugar and starch factory. In these factories, the inputs will undergo a long process using green technology and green energy, and become sugar and flour. The special point in this process is that the waste from these two factories is reused, not disposed. With this Life-Cycle Assessment model, Ajinomoto can easily design its products towards environmental sustainability.

- *In Green Material Management activity*, Ajinomoto uses inputs, which are

derived from nature. These inputs are agricultural products like cassava or sugar cane. These products are purchased from the agricultural product companies or produced by Ajinomoto. With these strategies, Ajinomoto has done well in selecting and sourcing the green material.

- *In Green Manufacturing activity*, Ajinomoto successfully applies the Ami bioorganic fertilizer, which is considered environment-friendly in producing inputs. More than that, the entire infrastructure is built based on the Japanese criteria to make the impact on the environment as small as possible. Ajinomoto also applies the ISO 14001:2004 standard in the environmental managing system. With all of these actions, Ajinomoto is able to reduce the resource consumption, the waste and the emission.

- *In Green Marketing activity*, Ajinomoto tries to build its image in Vietnamese consumers’ eyes as a “green” food enterprise coming from Japan. This image is transferred to the customers through the means of advertisement on TV, packaging

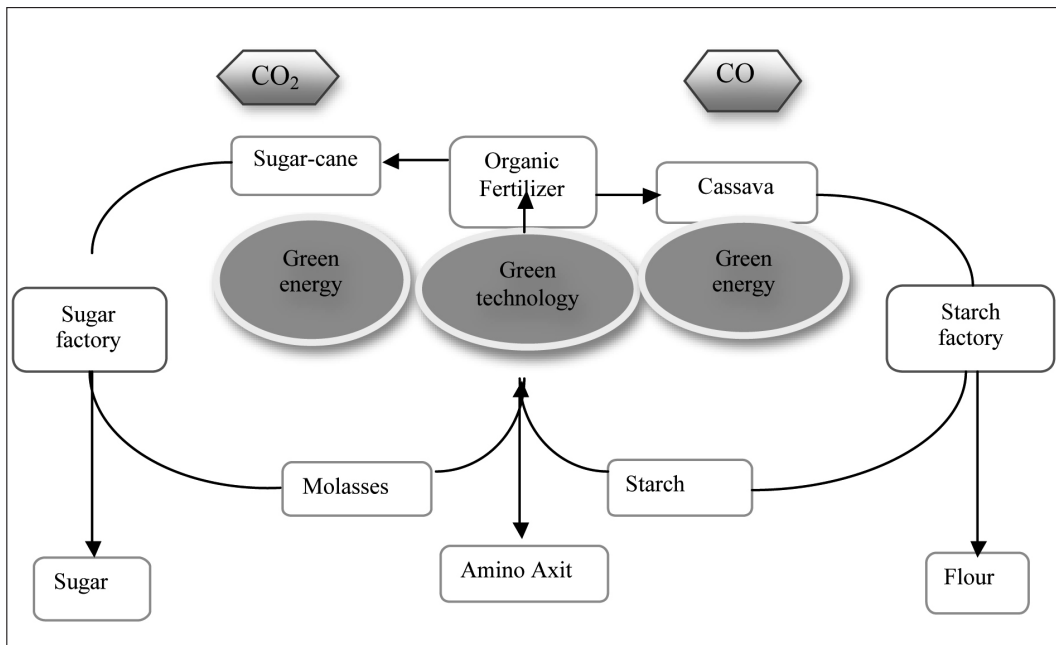


Figure 4: The enclosed manufacturing process LCA of Ajinomoto

and social activities. Ajinomoto has successfully carried out the “Clean Up the Earth Together Day” in 2014, which is a part of the group’s program called “Smile Earth”, which has been run since 2007. In this program, Ajinomoto calls up its staffs and people to collect clothes, books and other in order to reuse and donate to social center. The aim of this campaign is to enhance the awareness about the environmental protection in individuals and society.

- *In Green Distribution activity*, Ajinomoto Vietnam associates with a large number of distributors across the country to bring their products to the consumer’s hands. This group also builds a warehouse in Dong Nai province to distribute products nationwide. Furthermore, Ajinomoto builds a good relationship with important partners who consume large quantities of their products such as hotels, restaurants or resorts.
- *In Reverse Logistics*, 100% reusable waste is applied directly during the operation of the Ajinomoto plant.

To perform all the activities above, Ajinomoto must be consistent with its goal of protecting the environment and the community. These activities have together created the Ajinomoto’s successful closed – loop green supply chain, which contributes greatly to the sustainability of natural environment in Vietnam.

The Ajinomoto group always tries to bring its image of green enterprises to the consumers. That is why Ajinomoto Vietnam is always under an internal pressure to maintain that image. This pressure forces Ajinomoto Vietnam to develop its technology, invest more to produce green products in Vietnam. This is also a factor that leads to the implementation of the GSCM. Another form of internal pressure is the Corporate Social Responsibility (CSR). The green CSR policy functions as a self-

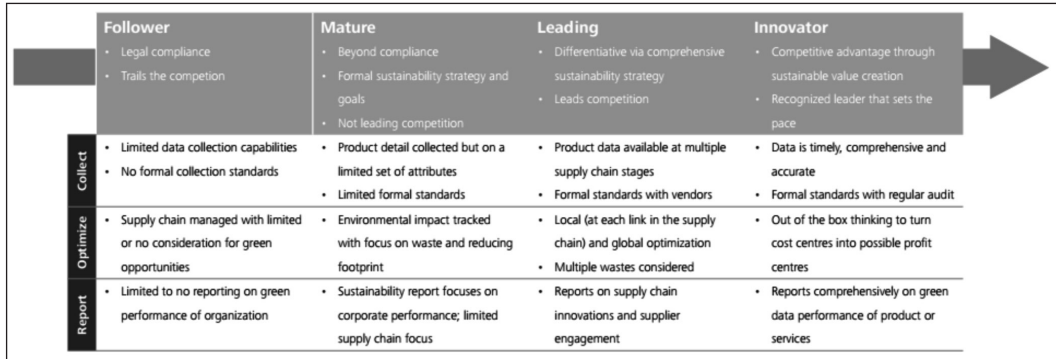
regulatory mechanism whereby a business monitors and ensures its active compliance with the law of environment. Sometimes, CSR shows the willingness of an enterprise to make good impacts on the society in general and on the natural environment in particular. This factor can be clearly seen in the case of Ajinomoto. This group has a wide range of activities, which associate with the society. Carrying out international campaigns about the environment, changing the business model from B2C to B2S and B2E, producing green products, Ajinomoto has supported a better life and a better environment for the people all over the world.

## Results

By applying the GSCM, Ajinomoto has achieved a great success. With the green image, Ajinomoto has now become an important part of people’s life in Dong Nai province. Ajinomoto encourages people to produce agricultural products and purchases from them. More than that, Ajinomoto creates jobs and provides a wide range of green products for people here. Ajinomoto also plays a positive role in social activities and becomes a partner of the media and local government. The Vietnam Union of Science and Technology Association (VUSTA) award Sustainable Green Brand Ajinomoto Vietnam.

Applying GSCM helps Ajinomoto achieve a lot of benefits. First, with the green technology and products, the group is able to meet the requirement of the law. Second, by using green energy and organic fertilizer as well as reuse the waste, the group can save costs, reduce the waste and the emission to the minimum. Thirdly, according to the Environmental Protection Law in 2005, Ajinomoto can receive tax incentives due to producing green products with clean manufacturing process, which means Ajinomoto can save a large amount of money. In addition, with the rising environmental problems, a green enterprise can easily introduce itself to the public and attract more customers.





Source: The Green Supply Chain DNA: How to Retool your Supply Chain for the Sustainability Driven, Data Rich Future (2012)

Figure 5: Green development model

In 4 levels of applying the green supply chain management (GSCM), according to the Green development model proposed by Deloitte, Ajinomoto can be classified as an Innovator one. In Vietnamese context, Ajinomoto does not focus on taking advantage of cheap labor but invest huge money to apply its innovative technology for manufacture and waste treatment. By this way, Ajinomoto has created its competitive advantages of sustainability comparing with other Multinational Corporations in the same business field such as Vedan.

**Conclusion**

Vietnam is always a potential destination for Japanese TNCs to invest in. However, it is hard for Vietnam to attract the high-value FDI especially R&D FDI. By analyzing the case of Ajinomoto, we can easily see how Ajinomoto gains its competitive advantages through the implementation of GSCM. Both internal and external factors of an organization will affect this process. In order to benefit from GSCM, an enterprise must understand about the business environment in which it operates, including law and legislations and the consumer’s taste. Moreover, enterprises must improve their capabilities in every activities of GSCM. They may apply new green technology and introduce new green business strategies. The implementation of GSCM can be affected by

how they want their image to be in the eye of the consumers or the CSR policy of those enterprises. Finally, protecting the environment and living sustainably are the responsibility of all people in the world, and enterprises are not the exception. Applying GSCM is one of a few business strategies that enterprises can adopt to achieve success and contribute to the sustainability of the world.

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