

A Study of Incentives and its Policies for Sustainability in Supply Chain

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Abstract

With the growing influence of global warming and environmental impacts, sustainability is essential and vital for the supply chains, so as its members. Customers or clients tend to put more emphasis on friendly environment. Striking a balance in green and running the supply chain well requires great deals of efforts. Motivation is always a key. This research investigates several enterprises' green policies and their promotion incentive systems. The connection between policies and incentives can be sorted into different types, such as: enterprise image, profits increasing, social responsibility and others. To each incentive type, the corresponding policies are presenting in a further way. For instance, the carbon reduction and foot print is a common way in evaluating and reducing the air pollution. Implementing a policy effectively among all the members in the supply chain is an important issue. The strength of promotion effects from observed incentives in this research will be analyzed.

Keywords

Sustainability, Incentives, Supply chain

1. Introduction

Being green and enhancing the sustainability are getting more and more important within supply chains (Park et al., 2010). Academic and corporate interest in sustainable supply chain management has risen considerably in recent years. Sustainability brings about some benefits such as enterprise reputations and financial performance (Sisodia et al., 2007). Business management researchers are focusing on different environmental and pollution prevention policies including supply chain management (Seuring and Muller, 2008).

2. Literature review

Research related to sustainability is first reviewed. Research in green supply chain management is then discussed.

● Sustainability

Sustainability refers to minimizing the impact on the environment and increasing the rate of recycled materials (Vinodh, 2010). Also, it combines with the 6R concepts (Recover, Reuse, Recycle, Redesign, Reduce, and Remanufacture). (Joshi et al., 2006). Take the Electrical and electronic waste (e-waste) as instance, evaluating the overall sustainability of e-waste enterprises is critical to both nations and cities (Qingbin Song et al., 2013).

● Green supply chain management

Awareness of the environment has been increasing recently. More and more business are conscious of the world's environmental problems such as global warming, toxic substance usage, and a decrease of non-renewable resources

(S.M.J. Mirzapour Al-e-hashem et al., 2007). The green concepts have been implemented to many different aspects, including supply chains. Green Supply Chain Management (GSCM) has been emerging in the last few years (Markovitz-Somogyi et al., 2009). Adding the 'green' concept to the 'supply chain' concept creates a new paradigm where the supply chain will have a direct relation to the environment (S.M.J. Mirzapour Al-e-hashem et al., 2007).

3. Data collection and analysis

After the data collection of different green policies implemented in the supply chains or business, we classifies all the in incentives into ten types: increasing the profits, enhancing the future competitiveness, increasing the reputations, Dow Jones Sustainability Indexes , green economy, avoiding the protest by groups, corporate social responsibilities, potential market, decreasing the costs and law regulations.

● Increasing the profits

China Steel Corporation has reduced by 5.6 million kiloliters of oil equivalent, equivalent to 223,000 tons the amount, saving of money ups to 10 billion NT dollars. They developed a unique recycling and conveyor systems focusing on waste heat. The system transformed the waste heat into steam, and then driven the fan blades to generate electricity. In addition to self-sufficiency, they even further provided the electricity to the same supply chain members in same industrial zone. The performance of system is shown in Figure 1.

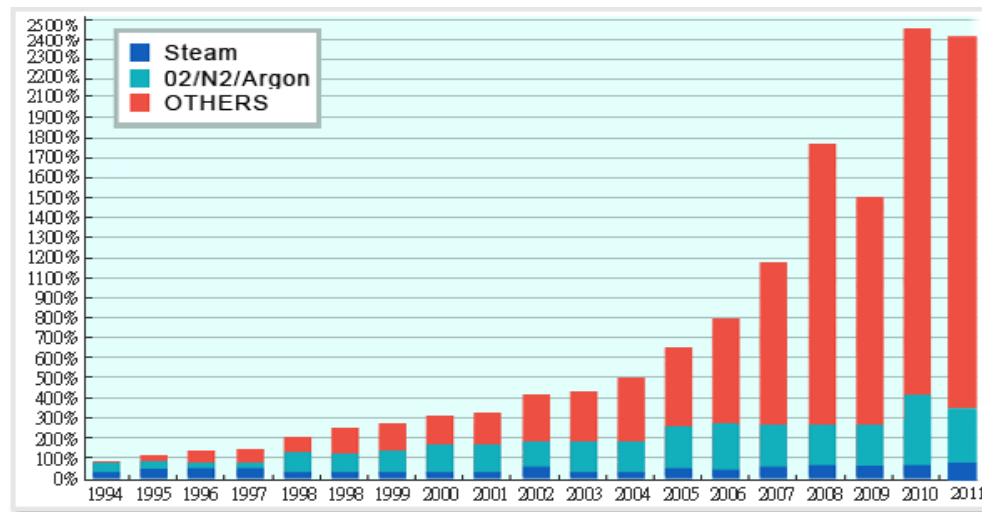


Figure 1: Performance of steam selling
(Official website of China Steel Corporation)

The related policies in this case are integration of regional energy resources and the technique of transforming the thermal energy into electrical energy.

● Enhancing the future competitiveness

IDC survey shows that currently up to 50% of the purchasers will take the environmental protection as a condition for selecting suppliers. The largest U.S. retailer Walmart is also demanding its partners must comply with ISO14001 specifications and environmental regulations. According to the Global e-Sustainability Initiative (GeSI) surveys, it says that for next 12 years, the global environmental protection IT will save 800 billion US dollars in costs for enterprises. The related IT policies in this case are best power management, paperless office and video conferencing .

● Increasing the reputations

Green concepts raise in customers gradually, therefore the reputations of a business are of great importance. To take the Timberland as instance, it was founded in 1978, the English name means "forest land", a tree erected on the land pattern of the brand, emphasizing the product were came back to nature, to promote its environmental protection. Their products use of organic materials, recycled rubber or water-soluble glue. Plus, it even add a green index labels, through ingredient labels, consumers can clearly know the products or materials's impacts on the environment.

These procedures effectively catch the attentions of green customers. The related policies in this case are application of environmentally friendly materials and environmental image promotion.

- **Dow Jones Sustainability Indexes**

Dow Jones Sustainability Indexes (Dow Jones Sustainability Indexes, DJSI) was founded in 1999 by the U.S. Dow Jones, Europe STOXX Company and Zurich, Switzerland, asset management companies. It is the world's first assessment important benchmark which corporates social and environmental responsibility. Also, it is the most credible international corporate social responsibility rating tools. The index picks out the elite for more than 50 countries from all the global 2,500 companies. It has become the solid standard for corporate investments. Many famous enterprises had been selected: BMW, TSMC and others. The related policies in this case are sustainable management, green process and carbon reduction footprint.

- **Green Economy**

Every year on June 5 is the World Earth Day, this year has entered the 41st. This activity is based on the annual world's most important environmental issues. This year's World Environment Days' theme is "Green Economy: Do you participate in it?", points out the green economy is gradually changing the global business model.

- **Avoiding the protest by groups**

Greenpeace in 2009 held the protest against the HP at the headquarters in United States, China and the Netherlands. According to their announcement, HP secretly changed the deadline from 2009 to 2011 that it fully remove products of PVC and BFRs. HP right now has developde many products which are friendly to environment. Even ZARA has been complained that its production process in supply chain is toxic to environment. Despite the fact or not, this kind of news still strike the business. Greenpeace gives green degree appraisal to the electronics industry, which can offer customers an indicator while buying products. The result is shown in Figure 2.

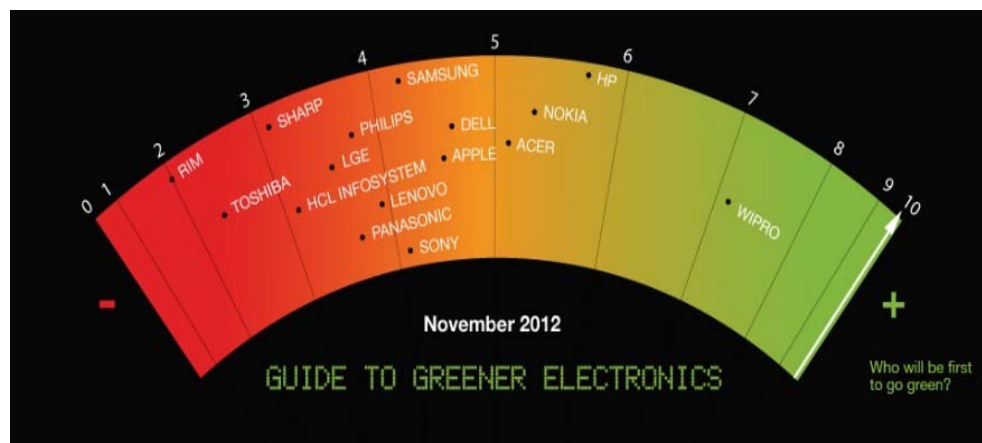


Figure 2: Greener electronics
(Official website of Green Peace)

- **Corporate social responsibilities**

Corporate social responsibilities (CSR) refers to the enterprises' responsibilities based on the commercial operations which must conform to the idea of sustainable development. The enterprise not only consider their own financial and operating conditions but also join their social and natural environment impacts. CSR is the golden guideline for many enterprises and so as its supply chain members.

- **Potential market**

Take a look of aviation industry, Boeing 787 aircraft can be profitable for customers, but also to make money for Boeing. Due to their surveys, customers put more and more emphasis on the green level of planes. John Burtz-Delta, airlines general manager of the purchasing department said, "The world, especially in aviation areas are seeking better operation models with more economical, more profits . Saving fuel by 20 % can only say that is a basic

requirement, is not the ultimate goal. "Being a pioneer in the potential market is always a good start for success. The related policies in this case are development of green products and some energy saving technology.

● **Decreasing the costs**

Taiwan Semiconductor Manufacturing Company (TSMC) had built the Green plant, compared with TSMC original plant, the 2% annual savings in energy costs has been achieved. The wafer 14 plant 3 saved approximately NT \$ 26 million. The world's leading enterprise in technology industry has began to import green thinking in the past few years. In addition, Texas Instruments, Intel, Philips, Toyota Motor America, American Honda Motor and other major companies are flocking into the green plant and process principles. The related policies in this case are green building, optimization of transportation strategy and purchasing management.

● **Law regulations**

Many countries have legislated relevant laws to cope with environmental issues. That would become the most powerful incentive to enterprises and its supply chain members. For entering the market, some certain products must be certificated. Plus, some laws were made to trigger the green trend. Take the electric cars for instance, many countries provides the benefits for buyers and manufacturers. The corresponding incentives and policies are listed as follows.

Table 1: Incentives and policies

Incentives	Policies
Increasing the profits	Integration of regional energy resources
Decreasing the costs, Increasing the reputations	Green packaging
Decreasing the costs	Water management, procure management
Law regulations	Subsidy, related standards
Enhancing the competitiveness	Video conferencing
Corporate social responsibilities, Increasing the reputations , Potential market	Carbon footprint
Dow Jones Sustainability	Supplier standards, ISO standards

4. Conclusion and recommendation

Some environmental strategies are too high to bear. For small and medium size enterprises, even it enhances the competitiveness, the costs are sometimes too high. Therefore, this study proposes a recommendation in the expectation of effectively achieving the diffusion effects. First, build a platform for same industry to share information, the rest of the small-scale companies which also want to get into the field of being green, they can have a model to follow. Moreover, the platform provides practical case for reference. This research sorts the incentives into ten types, sincerely hopes to integrate the information well and easy to understand.

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Biography

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