The effect of globally environmental trends on environmental strategies

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Abstract

Based on a case study by interviewing three industrial firms, this paper attempts to examine the factors to affect the large firm's choices of environmental strategies, to analyze the ingredients of the environmental strategies, to characterize the principal types of environmental strategies, and to assess their strengths and weaknesses of each type of environmental strategies as approaches for achieving sustainability. We suggest that an environmental strategy compromises two elements: social responsibility and environmental performance. Based on the two elements, environmental strategies are categorized into proactive strategies, reactive strategies and escaping strategies. The findings suggest that (1) the external factors such as globally environmental trends play a very important role in affecting the choice of

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environmental strategies for large firms in developing countries, (2) external pressures play as the major role in determining the choice of environmental strategies, and (3) social responsibility is adopted as a major force to form environmental strategies only when the firm can survive.

Keywords: environmental trends, environmental strategies, environmental performance, green purchasing.

1. Introduction

The industrial revolution has changed the relationship between humanity and nature and resulted in an enormous and irreversible environmental deterioration. The rapid growth of production and consumption of food, fiber, biological and industrial products were substantially increasing the use of production resources to increase output and creating undesirable environmental side effects (Jordan, 1995; Miller, Jr. 1999; Chen and Chen, 1998). Many authors argue that the high throughput of ecosystem has lead to destroy the ecosystem and exhaust largely natural resource (Miller, Jr., 1999). Therefore, a great number of environmental problems such as

resources exhaustion, ozone layer depletion, transboundary acid deposition, warming effects and the rapid extinction of plant and animal species[1] have attracted attention (Hoffman, 2000), but we have not developed really effective method to cure it. The environmental problems have awaked the public to concern about the recovery of the ecological system and human's survival (Hoffman, 2000). Many international agreements were signed to prevent the aggravation of environmental deterioration and to pressure the governments to accept and perform. For example, the high gas emission beyond the earth's carrying capacity has altered the global climate. An increase in the average temperature of the earth's surface and the change of worldwide weather patterns would generate a risk to our future life. Kyoto Protocol is the common agreements among countries through a series of negotiation and consideration to resolve the problem of warming effects, but we still cannot expect an optimistic result. Its objective is to prevent the increase in greenhouse gases emissions and reduce greenhouse gas concentrations in the atmosphere at an allowable level that are not dangerous to the climate system.

Researchers suggest using clean technology to develop new processes or

[1] The major environmental trends include (1) global energy consumption has increased 70% since 1971 and is projected to increase at more than 2% annually over the next 15 years, (2) depletion of ozone layer requires another 50 years to return back to normal levels even though the consumption of ozone-depleting substance has been under controlled, (3) Acid rain is on the decline in many developed countries but it is on the rise in many developing countries, (4) almost 20% of tropical forests in the world has been cleared since 1960 and deforestation shows no sign of abating, and (5) some statistics indicates that about 20% of all endangered species are threatened due to reduction in habitats (World Resource Institute, 1998).

re-design new products to substitute the old one as an effective way to solve these problems since it prevents the pollution generation at source. Currently, many international firms have started encouraging, guiding or even forcing their suppliers to form a green supply chain with the adoption of clean production. However, clean production may affect the corporate performance and its competitiveness in the world market. A substantial number of literature focus on the connection between the financial performance and environmental performance (Klassen and McLaughin, 1996; Hart and Ahuja, 1996; Cordiero and Sarkis, 1997; Klassen and Whybark, 1999; Hanna *et al*., 2000) and recognize the positive relationships by empirical studies (see, for example, Klassen and McLaughlin, 1996; Russo and Fouts, 1997), or study the environmental problem in service operations management (Hasek, 1997; Godfrey, 1998; Sarkis, 1999; Foster et al., 2000), or examine the effects of environmental purchasing on environmental performance (Min and Galle, 1997; Carter and Carter, 1998; Carter and Ellram, 1998; Carter, et al., 1998; Carter, 2000; Carter et al., 2000), or investigate the impact of environmental management on the competitive strategies (e.g. Gupta and Sharma, 1996; Klassen and Angell, 1998). Many researchers believe that the environmental sustainability and ecological performance of a company may depend on financial performance and competitive advantages and suggest that a firm's social responsibility plays an important factor to support

sustainability of an ecological system (Hawken, 1993; Hart, 1995; Shrivastava, 1995b; Stanwick and Stanwick, 1998; Nash, 2000).

In practice, environmental issues have been considered as an important factor to affect a firm's global business strategies as well as environmental strategies that may offer both environmental and manufacturing performance benefits. As a member of the global village, the firms need to conform their environmental strategies to the challenges of global trends to satisfy the need for a modern, competitive, efficient, responsive and socially responsible firm. In Taiwan, some few large firms are serving as members of the international supply chain or keep close contact with global markets while most firms are small-to-medium size and exert their efforts to domestic markets. In this case, the globally environmental trends may become an important focus to affect the large firms' environmental strategies. In this paper, we attempt to find out (1) how environmental strategies are formulated for large firms in development countries, (2) what pressures affect these firms to formulate their environmental strategies, (3)how environmental trends affect the formulation of environmental strategies, and (4) what type of environmental strategies they adopt.

2. Methodology

We select three firms as the target objects for comparison: the first is a shoe

supplier (called F Corp.) in an international supply chain, the second is a public enterprise of wine production (called G Corp.) and the third is a pickled food producer (called A Corp.). The results of the case study are intended to provide a practical example of analysis on environmental strategies under a practical influence of environmental trends. Therefore, there are two criteria for sampling:

(1) Firm size: large firms care more about globally environmental trend and keep close linking with international business.

(2) Headquarters must be in Taiwan so that we can make a face-to-face interview with the interviewee who takes responsibilities for formulations of environmental strategies.

Table 1 describes the history and profile of the three companies for study. F Corp. is licensed to manufacture sports shoes and supervised by world-class firms, mainly contracted with Nike. Through standardization of global products to reduce operation cost, it successfully finds out a survival strategy with these international contractors to make a win-win strategy, and becomes a steadily continuous supplier to these firms. G Corp. is a public enterprise and has been monopolized to produce wines for over 40 years. The monopoly status will be terminated within two years due to privatization policy. We interview one of its factories for production of rice winery. A Corp. is a declining firm and suffering from two sides: (1) the taste changes

on pickled food of new-generation consumers lead to the continuous decline in sales, and (2) the more stringent requirements from the society on environmental regulations and implementations. In order to avoid the cost increase in complying environmental regulations, the most polluted process in pickled food production was moved to Vietnam in 1995.

Table 1 Basic data of the three firms

Firms	F corp.	G Corp.		A Corp.
Headquarter	Taiwan	Taiwan		Taiwan
Ownership	Private	Public		Private
Products	Shoes	Wines		Pickled foods
Number of factory	16	20		3
Local:	2	20		1
Overseas:	14	0		2
Capital (billion NTD)	3.4*	47.0		3.3
Founded in	1971	1945	1987#	1971
Turnover (billion NTD)	17.0	60	3.5#	3.2
Local:	8.4	60		3.2
Overseas	8.6	0		Not available
Employee	1715*	8600	436#	1200

* The indicated amount excludes overseas factories.
# represents the interviewed factory of G Corp.

All of these three firms are to some extent in facing new challenges with the entry of WTO, especially G Corp. and A Corp. who must face the competition of imported winery and pickled food. During interviewing, these firms allowed the researchers to observe their operations on environmental treatment system and also provided appropriate documentation as supporting evidence of environmental strategies. The

purpose of the interviews was to gather data from respondents representing the manufacturers in developing countries in formulating environmental strategies as basis to identify (and compare) how these firms formulated their environmental strategies and the ingredients of the environmental strategies. A series of semi-structured interviews were conducted with representatives of each firm who are responsible for the implementation of environmental management system. The main issues covered during the interviews includes: (1) the implemented environmental management system; (2) the difficulty in implementing environmental management system; (3) the formulation process of environmental strategies; (4) the factors (the source of pressure) to formulate the environmental strategies; (5) benefits and limitations of implementing environmental management systems, and (6) the effects of operation management on environmental strategies.

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3. Results and discussions

The formulation process of environmental strategy covers a large set of management decisions, technologies and conflicting resolution among departments in each firm. These firms need to take a trade-off from the consideration of business profit seeking and environmental performance improvements. The in-depth survey finds that the preliminary environmental strategies are presented by the

middle-manager who implements environmental management system and takes responsibilities for environmental performance, and then approved by top-management. In a traditional management system, the top-down approach to formulate strategies among different levels in a firm is adopted (Skinner, 1985; Garvin, 1993). The choice of environmental policies in F Corp. depends on the total interaction across different departments. This implies that the objective to formulate environmental strategies in F Corp. depends not only the environmental concerns but also business survival and this process requires the skills and judgments to review the environmental threats and opportunities. In contrast, the environmental strategies of both G Corp. and A. Corp. are determined by top managements only without detailed discussions.

The statements of corporate objectives and environmental policies claimed in the provided documents are summarized in Table 2. F Corp. attempts to balance the objectives of business profit and ecological sustainability. However, if the two objectives contradict, the basic goal of business must remain economic growth (Schmidheiny, 1992). The other two firms care about the increasing cost of abatements and reduce the overall performance[2]. Thus, they place their environmental

[2] Some literature has investigated the relationship between business performance end environmental performance (Klassen and McLaughin, 1996; Hart and Ahuja, 1996; Cordiero and Sarkis, 1997), but the results are conflicting (Klassen and McLaughin, 1996; Cordiero and Sarkis, 1997).

strategies at the minimum standards to comply with statutory regulations.

Table 2 statements of corporate objectives and environmental policies

Firms	Corporate objectives	Environmental polices
F Corp.	For reasonable profit For comfortable living For everlasting	To minimize environmental impacts by the strategies of reduction, reuse and recycling. Not only to comply with environmental regulations, but also to adopt clean production technology.
G Corp.	To maximize profit and increase customer satisfaction	To comply with environmental regulations To reduce pollution emissions To increase energy efficiency
A. Corp.	To develop and market excellent products To grow	To meet environmental regulations

Environmental strategy is seen as a secondary objective according to our survey with these firms and cannot be considered independently from the other operations objectives. Environmental strategies and operations objectives are mutually dependent and supportive of each other. The integration can build up a means of environmentally and competitively continuing improvements so that it may lead to synergies. The survey finds that social responsibility is employed only when it can improve corporate image and enhance green marketing.

3.1 Source of pressure and environmental strategies

Many factors such as legislation, stakeholder pressure, economic opportunities and ethical motives have led to firms applying environmental strategies (Bansal and

Roth, 2000). Through our in-depth interview, we conclude that the source of pressure to improve environmental management stems from (1) self-regulations (social responsibility), (2) the buyer's products regulations, (3) the customer's requests (the pressures from environmental groups), and (4) international trends and statutory regulations.

(1) F Corp. claims in his statement of corporate objectives and environmental policies that sustainable development is a way to survive and grow. The management believes the investments on improving environment can be returned in a long term. Many authors emphasize the goal of sustainability requires the total participation of all stakeholders with a shared value of environmental responsibility (Schmidheiny, 1992; Klassen, 1993; Shrivastava, 1995b) in which the corporate role in improving environmental degradation is particularly important (Hawken, 1993; Shrivastava, 1995b) since firms can allocate their resources in a efficient way to find ecological solutions for environmental problems (Schmidheiny, 1992). The other two firms face a more stringent challenge than ever before after Taiwan's entry of WTO so that survival is their utmost objective and care about more on financial performance and less on environmental performance.

(2) In the meantime, F Corp. must perform its environmental strategies in conform with the buyer's standard in addition to compliance with statutory regulations. It

needs to discuss and negotiate with international buyers about the generally accepted principles of environmental standards in linking with trade within the world trade systems. Thus, the focus of globally environmental trends becomes a general principle that open domestic markets and open global trading systems. As their loose contact with international markets in the past, the other two firms almost neglect the impacts of environmental trends within the global village.

(3) An environmental institution, in general, plays as a warning system to educate the public, to supervise the producer's production, to lobby the government for a cleaner policy formulation and to force the firms to improve environmental performance (Chen, 2000). In fact, an environmental institution should be actively engaged in partnerships with the neighboring community, interest groups, and other external constituents (Chen, 2000; Dean & Bowen, 1994; Flynn et al., 1994; Hackman & Wageman, 1995; Saraph et al., 1989). Through the continuously environmental education, the consumers commit to exert their efforts to reduce environmental deterioration and enhance natural conservation by giving an effective pressure on the large firms to take the lead in developing clean technology and improving environmental management to reduce the adverse impacts of industrial production. All the three firms acknowledged that they sensitively pay attention to the environmental programs provided by environmental institutions.

(4) When global environmental problems are widely recognized as serious and high risky issues and focused by the public, governmental regulations have become a basis and minimum requirement to resolve these problems and to motivate the producer to alleviate these problems. All the three firms have complied the governmental regulations even though A Corp. claims the complying cost had reduced their competitiveness in the markets.

4. Social responsibility and environmental strategies

Many authors highlights that social responsibilities should be seen as an important corporate duty (e.g. Arlow and Gannon 1982; McGuire et al., 1988) and has become a major factor to affect environmental strategies and emerges as a process of addressing environmental issues. Corporate managers need to take responsibility to all their stakeholders that is defined as those groups that can affect or are affected by organizations (Freeman, 1984; Bowie, 1991; Banerjee, 2001) and to accept sustainability as the top objective and integrate their operations activities with environmental requirements (Schmidheiny, 1992; Porter and van der Linde, 1995). Environmental responsibility is, in general, to be considered as an important criterion to develop a clear environmental strategy. In the previous sections, we have examined the environmental policies adopted by these firms and analyzed the source of pressure

for environmental improvements. In this paper we employ the corporate objectives and written environmental policies, the source of pressures and level of environmental department in implementing environmental strategies as a measure to evaluate corporate social responsibility that is depicted in Fig. 1.

Indicator of social responsibility
1. Corporate objectives and environmental policies 2. Sources of pressures to improve environmental performance 3. Level of environmental department in implementing environmental strategies

Fig. 1 the ingredients of social responsibility

The level of environmental department involving with environmental implementations within the firm is an indicator to show the efforts that the firm adopts social responsibility as a criterion to formulate environmental strategies. Our survey finds that the environmental departments of the three firms are supervised by their presidents and should be responsible for the operations of environmental management, workers safety and health, and environmental sanitization. The survey finds that F Corp. employs 4 engineers (1 master plus 3 bachelors) to be in charge of environmental implementation end working securities. G Corp. employs 3 engineers for engineering improvements and environmental management under supervision of

the factory manager. One staff in A Corp. takes care of everything to support the operations of environmental management, working securities, quality control, and production control. All the three firms attempt to integrate environmental strategies with operation managements to reduce operating costs, to increase employee morale and involvement, to improve company image and customer satisfaction (Guimaraes and Liska, 1995; Shrivastava, 1995a).

5. Environmental performance and environmental strategies

Practically, environmental performance is difficult to measure and understood to minimize the negative impacts on the natural environment that is accompanied from production process or stemmed from consumptive behaviors (Chen and Chen, 1998). Some authors suggest waste generation as a measure to compare the environmental performance among firms (James, 1994), or to employ ecoefficiency, total quality or risk analysis as effective tools to measure improvements of environmental performance (Roome, 1997). The evaluation of environmental performance can link with the daily operation in a firm with the measurement of the impact on the environment as a result of the activities. In this paper, we suggest that environmental performance indicators include implementation of environmental management system, practice of green purchasing, development of clean production technology, corporate

report to the public, waste emissions and treatments, and operations of environmental strategies. The responded data about daily operation activities to judge environmental performance among the three firms are summarized in Table 2.

(1) ISO 14000 is a series of guidelines or process to help the firm to assure the process of environmental management. The certification of ISO 14001 does not assure the fulfillment of environmental obligaiton. However, it is believed to increase assurance regarding compliance with environmental regulations and to enhance competitive advantage in the local and international markets (Casicio et al., 1996; Sayre, 1996; Lamprecht, 1997; Lord, 1997). In general, the certification of ISO 14000 can be seen as a partial indicator of environmental performance. F Corp. and G Corp. have got the certification of ISO 14000 since 2001 while A Corp. still neglected the important trend to exert environmental management systems.

(2) Green purchasing has already attracted the public's attention for mitigating environmental impacts and improving environmental performance, and thus purchasing behaviors are seen as an effective measure for environmental performance (Apaiwongse, 1991, 1994; Drumwright, 1992, 1994; Langrehr et al., 1992). F. Corp. is pressured by its buyers to engage in green purchasing while the other two firms never consider using their power of purchasing policies to influence their suppliers to become greener without the regulatory pressures or customer's pressures. According

to Sarkis (1999), the supply chain system integrating with daily operations enables organizations to move towards waste minimization and improving environmental performance. A firm like F Corp. has complied with the buyer's environmental standards and adjusted itself to meet the environmental trend of more stringent requirements in the future through improving operation managements.

(3) Ehrlich et. al., (1999, p. 270) propose that technology level and human's affluence account for the major environmental impact at a given population size. Montague argues (quoted from Miller, 1999, p. 69) "To deal with these [environmental] problems, industrial societies must abandon their reliance upon waste treatment and disposal and upon the regulatory system of numerical standards created to manage the damage that results from relying on waste disposal instead of waste prevention. We must – relatively quickly – move the industrialized and industrializing countries to new technical approaches accompanied by new industrial goals –namely, "clean production" or zero discharge systems". Clean production can lead to progress in reducing production waste and resource consumption per capita and increasing efficiency, and is seen as a measure of environmental performance. F Corp. and G Corp. integrate their products designs and process improvements with environmental technology improvements. F Corp. joined the team that comprises the buyer and the material suppliers to develop new substitutes with a target time

schedule. The gains are shared by all the partners and serve as a driving force to push the three actors to cooperate closely. Through the appropriate management, a synergy is developed in the supply chain and the so-called win-win-win situation has arisen, where there is an improvement in environmental performance, business performance and the 'family-sense' of the supply chain (Elkington, 1994; Florida, 1996; Maslennikova and Foley, 2000). In fact, the development of environmental improvement activities and programmers can bring about the operations and product quality improvements (Godfrey, 1998; Sarkis, 1995, 1999; Inman, 1999).

In contrast, the factory itself in G Corp. implements the technology development on either products quality or environmental improvements without integrating with its suppliers so that the motivation of clean technology on G Corp is not so strong as F Corp from our survey. The success in clean production development in F Corp. implies that it is an effective way to develop clean technology by integrating with productive operations (Shrivastava, 1995a). In fact, product and process technologies can improve both financial performance and environmental performance. It involves with the environment-related issues and workers' health and safety, ecological risk, materials efficiency, waste generated and disposal treatment (Sarkis, 1995).

Without information about globally environmental trend, A Corp expressed little concerns and interest in improving environmental performance, and thus it did not

attempt to develop newly green substitutes for food packaging without appropriate incentives from governments even green packaging is seen as key to resource sustainability and avoiding using up new resources. (Kassaye, 2001, p. 444).

(4) The environmental reports attempt to make sense of the environmental information release to the public inducing the interest groups about emission, waste and recycling activity. Many international firms have started to issue an environmental report annually to the public in which the major events or investment involving environmental decision are listed. Through our survey, the three firms have not yet presented their environmental report to the public.

(5) Theoretically, waste generation is determined by the process and operations management. Even though many authors emphasize that waste treatment is only a way ‘end of pipe’ treatment and thus preventive methods should be adopted, the modes of waste treatment is still used as a measure to judge environmental performance. F Corp and G Corp. completely meet the environmental regulations to treat the waste emissions. In contrast, A Corp. re-considers the production process of pickled food and divides the process into ‘less polluted’ and ‘seriously polluted’ one. To reduce abatement costs, the production of ‘seriously polluted’ process was moved to Vietnam. The bottling of pickled food was handled in Taiwan.

Table 2 Results of in-depth survey

	F Corp.	G Corp.	A Corp.
Certification of ISO 14000	F Corp. already got the certification in 2001 under the buyer's request.	G Corp. got the certification in 2001.	No
Green purchasing	Yes. However, the material specifications, material restriction lists and vendor lists were provided by the buyer.	No.	No
Clean production technology	Directed and guided by the buyer, the firm successfully developed newly substitutes for high polluted solvents with chemical and material suppliers.	The engineers in the environmental department have tried to develop new process for energy-saving without support from top management, but outcome is not satisfactory.	No
Corporate report to the public	No.	No.	No
Waste treatments	The scraps are recycled with extra cost. All wastes are handled by its own facilities to meet environmental regulations.	Used PET bottles are recycled due to governmental regulations and all pollution emissions meet environmental regulations.	No recycling. All wastes are treated by contractors.
Operations of environmental strategies	It integrates with working safety and environmental sanitization.	It integrates with engineering design and working safety.	It integrates with working safety, quality control and environmental sanitization.

(6) The role of environmental strategies in linking with manufacturers' operations and the factor to affect the choice of strategies must be analyzed (Vickery *et al.*, 1993). The effects of production technologies on environmental strategies and performance are necessary to reveal the factor of the firm's motives to perform environmental strategies. Operations management is an effective way to accomplish environmental sustainability through the implementation of targeted value of environmental performance. Firms are challenged by the integration of environmental considerations into their production and marketing plans due to international regulations and competitive pressures (Hawken, 1993) and need to revise their traditional strategies in the industrialized countries in response to these pressures (Stigson, 1998). The integration between environmental strategies and operations managements can obtain several benefits associated with the reduction of the firm's impact on the environment.

6. Proactive strategies and Reactive strategies

Strategy is a set of decision-making rules to allocate resources efficiently, "concerned with identifying opportunities for successful and effective activities. These come either from the capabilities and expertise of the organization, from the actuarial and potential market demand, or form a combination of both" (Cramer 2000, p. 39). Environmental strategy must cover the decision making process and the

planning to allocate the scarce resources in order to reach the targets and achieve greater good when it extends its perspective beyond the objective of particular objectives and takes into account the effects of the strategy on the development and future trend of nature. Hart (1995) has identified three environmental strategies including pollution prevention, product stewardship and sustainable development. He points out that the choice of environmental strategic is ordinal and logic. Without pollution prevention, a product stewardship strategy can hardly be adopted. Eventually, sustainable development cannot be achieved without prior proof of product stewardship competence.

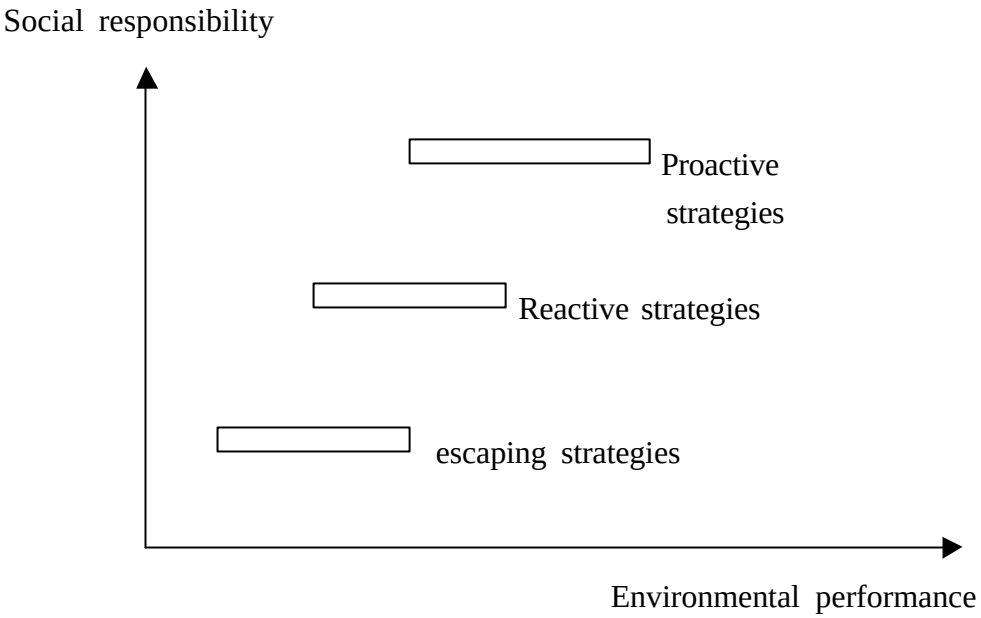

Fig. 2 the classification of environmental strategies based on social responsibilities and environmental performance.

In this article, we propose that the social responsibility and environmental

performance forms a framework to describe the core values of environmental strategies. We classify environmental strategies into three types based on social responsibility and environmental performance and depict it in Fig. 2.

Proactive strategy: Environmental performance is believed to be more important than business performance or at least the same. Social responsibility drives the firms to take the measure of environmental management practice beyond environmental regulations. The top management devotes sufficient resources on environmental management as well as its employee across all levels by providing information to aware their environmental concerns. Top managements commit to invest resources on environmental protection and improve environmental performance through technology innovation to develop new process or new products in an environmentally sound and safe manner to avoid potential accidents. The diversity of business increases so that environmental management strategy becomes more divergent and active. In Fig. 2, environmental performance is not a sufficient condition but a necessary condition to be categorized as proactive strategy.

Reactive strategy: Environmental performance is not so important as business performance. Social responsibility is mentioned only when the firm can survive and be profitable. The firm’s policy is to comply with all applicable laws. Compliance with governmental regulation is enough and any investments on environmental

improvements without economic returns will be given up. The firm believes that resources allocated to environmental protection will yield cost increase and harm business performance.

Escaping strategies: Social responsibilities cannot affect the firm's decision on environmental investment and yields no pressures on the improvements of environmental performance. Economic return is the only basis for the firm to choose environmental strategies. Any specific proposal within the firms to improve efficiencies in production or abatement will be decided based on cost-effectiveness analysis to find out a solution in facing environmental challenges. The concept of social responsibility is lay aside and only works for reference.

According to the category developed in this paper, F Corp. is relatively more proactive, while G Corp. chooses reactive strategies and A Corp. employs escaping strategies. As a member of supply chain, F Corp. received up-to-dated information about environmental trends, pressured by the international buyer to comply with buyer's standard and supported to undertake environmental certification, to develop cleaner technology and engage in product design for environment and process innovation. Both G Corp. and A Corp. focused on domestic markets and neglected the importance of the effects of environmental trends on competitiveness in the past. What they can do currently is to be responsive quickly to the changing markets

quickly to survive. Although A Corp. expressed less interest in improvements of environmental performance, it still cannot escape from the liability of providing non-green consumer products in the market. Therefore, A Corp. moves its production facilities with high-polluted units to abroad to reduce environmental costs.

6. Conclusions

In the proposed model in Fig. 1 two core elements of environmental strategies: social responsibility and environmental performance forms the core values of environmental strategies. Through our analysis, keeping contact with globally environmental trends can keep the firm going proactively. The interaction between the firm and global markets is major force to affect the management on the choice of environmental strategies. The impacts of environmental trends serve as a major source to result pressure for corporate change to initiate a number of responses ranging from voluntary action to complying with regulations.

High environmental performance may be an indicator of proactive strategies, but does not assure proactivism. The driving force of environmental implementations is the major criterion to judge the types of environmental strategies. A firm with self-regulation to perform environmental strategies is more environmentally responsible. In Taiwan, most firms still prefer to adopt reactive environmental

strategies by promoting industrial waste minimization with aims of cost-down. Environmental activities involving with proactive strategies in Taiwan are still dimming, and are taking place slowly. In sum, the results of this study indicate that the level of involvement with global environmental trends affects the firms to support the implementation of a proactive environmental strategy. While previous studies in this area have often focused on the influence of external factors on the choice of environmental strategies, this study suggests that the survival is more important than environmental responsibility to affect the firm's decision. In brief, the firms may choose higher-level strategies only when it can survive. The external pressures still plays a very important role in affecting the choice of environmental strategies for large firms in developing countries in developing countries.

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全球環境趨勢對公司環境策略的影響

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本文以訪談三家廠商為個案研究基礎，企圖去瞭解當大型企業在面臨環境衝擊時，何種因素會影響其選擇適當之環境策略；並分析環境策略的組成及其主要型式，同時針對三家廠商不同的環境策略型式，評估這些環境策略對企業本身達成永續發展的貢獻情形。本文假設，環境策略包含兩個要素：社會責任以及環境績效，而基於此二要素，可以將環境策略分成前瞻型策略（proactive strategies**）、反應型策略（**reactive strategies**）以及逃避型的策略（**escaping strategies**）。本文的研究發現（1）對開發中國家的大廠商而言，像是全球環境趨勢等外部因素，對其環境策略而言，扮演著非常重要的角色與影響，（2）外部壓力對公司環境策略而言，扮演著決定性的角色，（3）只有當廠商可以生存下去時，社會責任才會被採用，並成為形成環境策略的主要力量。**

關鍵字：環境趨勢、環境策略、環境績效、綠色採購