The impact of environmental pressure on firms’ environmental marketing strategies and corporate performance: An investigation of Chinese firms

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Accepted 14 November, 2011

In 2009 in Copenhagen, the United Nations Conference on Environment and Development came to the consensus that environmental protection has become more important than ever. However, conservatives owning the view that there is contradiction between environmental protection and economic development still remain. Facing today’s environmental pressures, the way in which firms select the environmental marketing strategies and how these strategies affect the corporate performances have become a problem that corporate executives and scholars alike are eager to solve. This study, via a sample of Chinese firms, has established a relationship model of “environmental pressure, environmental marketing strategies and corporate performances” by employing the sustainable development theory and the corporate environmental responsibility theory. Through this empirical research, the following tentative conclusions are reached: (1) the environmental pressure can promote the use of environmental marketing strategies and directly impact corporate performances and (2) firms can employ the environmental marketing strategies to moderate the degree of influence of environmental pressure on corporate performances.

Key words: Sustainable development, environmental protection, environmental marketing strategy, corporate performance.

INTRODUCTION

The United Nations Conference on Environment and Development (UNCED) held in Copenhagen in 2009 reached a consensus that environmental protection has become more important than ever. However, conservatives still hold the view that there is contradiction between environmental protection and economic development. Although the conference failed to achieve the proposed goals, the participating member states all recognized that the progressive degradation of environment is a serious challenge to sustained economic development. Government, companies and consumers in different countries are currently undertaking an environmental transformation process to shift focus from simply the economic benefits to the commitment to environmental responsibility (Fraj-Andre et al., 2009). The harmony and development of society, economy and environment have become the basis of corporate social responsibility and environmental management (Korhonen, 2002; Welford, 2002). Through environmental research, many scholars are trying to provide different environmentally-friendly programs and policies for economists and policy-makers to reduce the influence of corporate and consumer behaviors on the natural environment. In the last two decades, not only have more and more firms in industrialized countries been required to increase their protection of environment and society, but developing countries are also strengthening their environmental protection activities (Vig and Kraft, 2006; Baron, 2005; González and González, 2005; O’Rourke, 2004).

The traditional viewpoints were that the environmental
Contemporary stance on sustainable development is that the heavy investment in environmental protection technology increased the business costs. Thus, the corporate objective of economic interest became a direct threat to environmental protection (Walley and Whitehead, 1994; Sharma et al., 2010). The more contemporary stance on sustainable development is that the goal of enterprise development and environmental protection are consistent (Barbier, 1987; WCED, 1987; Hawken et al., 1999; Holliday et al., 2002). As a matter of fact, over the past decade, more and more enterprises began to regard environmental friendliness and ecological protection as strategies to help enterprises gain competitive advantages and improve their economic performance (Engardio, 2007; Esty and Winston, 2006; Christmann, 2000; Hart, 1995). The recent failure at UNCED to achieve concerted action on the issue of balanced development between environment and economic development certainly cast a shadow over environmental protection.

The purpose of this study is to explore how enterprises choose environmental marketing strategies using the environmental protection background, and what kind of impact environmental protection pressure exerts on firms’ environmental marketing strategies and business performances. The sample of this research is from the food processing enterprises in Hubei Province, China. As China is the fastest-growing developing economy in the world, it also faces severe challenges in balancing the economic development and environmental protection. To this end, the research focuses on the scientific problem of whether environmental awareness and the environmental management concept at the micro (firm) level are consistent with the global-minded environmental view of sustainable development, and whether the application of environmental marketing strategy in Chinese companies is consistent with enterprise performance. This study has important policy implications for the government as it will help to solve the dilemma of environmental protection and economic development, and will also greatly contribute to the macro-environment management theory.

LITERATURE REVIEW

Environmental sustainability

The concept of sustainable development emerged as early as the late 19th century during the discussion of how to make the environmental policy in the U.S. - whether to develop the economy by deforestation or restrict on logging to protect the environment (Hays, 1959; Hooker, 1992; Miller, 1997). After that, the international community began to pay attention to the problem of tropical deforestation (Hooker, 1992). In 1986, the World Commission on Environment and Development defined sustainable development as “a pattern of resource use which meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). Since then, sustainable development has been widely recognized. At first, the concept was incorporated into the health values of people which led to sanitation and health campaigns at the turn of the century, and later it evolved into the environmental movement (Hays, 1959; Clarke, 2002). Sustainable development, as a value orientation, has gone deep into the perception of each person and organization. For instance, a survey conducted in the U.S. in 1995 found that, among the 1002 men and women over 18 years old in different industries, 66% of the people held the opinion that economic, social and environmental protection are indispensable in sustainable development, and 23% of them were consciously implementing the sustainable development principle.

Although, sustainable development is a widely accepted concept, differences exist in individual understanding. There are individualistic, radical and conservative points of view (Clarke, 2002). In Copenhagen, the limited progress made in sustainable development during the United Nations Conference on Environment and Development explained the existence of those conservative viewpoints. Those owning a conservative point-of-view lack confidence in the position that environmental protection does not conflict with economic development. However, the idea that healthy economic and social development must be based on a healthy environment has positive meaning in decision-making for both government and enterprise (UNCED, 1992). When sustainable development becomes of greater value to individuals and organizations, social responsibility of enterprises, especially their responsibility in environment, will be greatly promoted.

Corporate environmental responsibility

Corporate environmental responsibility regards companies as the environmental and social organizations which connect society and environment with business ethics. This point of view is based on the theory of sustainable development (Gauthier, 2005). In addition to explicit rules and regulations, rather than only using economic indicators, there are implicit consumers and the activities of non-profit organizations to demonstrate the sustainable development principle (Klein, 2000; European Commission, 2001; Waddock, 2004). Another source of corporate environmental responsibility is from companies’ social responsibility. This viewpoint was first introduced by Bowen (1953). He defines corporate social responsibility (CSR) as the responsibility of companies to make decisions and conduct activities based on their social values and objectives. Later, CSR was extended to include stakeholder responsibility (Clarkson, 1995; Jones, 1995; Donaldson and Preston, 1995; Henriques and
Sadorsky, 1999), moral-driven responsibility (Swanson, 1995; Jones, 1995) and business process management (Ackerman, 1975; Wartack and Cochran, 1985; Wood, 1991). In particular, scholars viewing business process management believe that problem management and environmental assessment are management methods for entrepreneurs to establish social responsibility. The field of marketing management initially considered social responsibility as only the subsidiary function of marketing (Kotler and Levy, 1969; Lazer, 1969). The subsequent emergence of social marketing began to examine the social behavior and contribution of companies’ marketing activities (Andreasen, 1994).

The research of corporate social responsibility in the marketing field is mainly manifested in cause-related marketing and environmental marketing (Menon and Menon, 1997; Barone et al., 2000; Maignan and Ferrel, 2004).

Environmental marketing

Currently, environmental marketing has become the bridge between corporate environmental protection and its stakeholders (Kärna and Juslin, 2003), which not only affects the operational and functional level of enterprises, but also influences their internal culture, value and beliefs (Banerjee, 2002).

Therefore, corporate environmental marketing strategy aims not only to meet customers' satisfaction and corporate economic performance, but also to effectively mediate the conflicts between the society and environment (Miles and Munilla, 1993). For society and government, environmental marketing is companies' social responsibility, but in terms of the enterprises themselves, it is an important issue of business ethics. Environmental marketing can improve firms' operational and managerial effectiveness, their economic interests and market reputation in society (Sisodia et al., 2007; Chamorro and Ban'egil, 2006; Miles et al., 2000; Menon and Menon, 1997; Shrivastava, 1995). Those economical, entrepreneurial, or marketing policies and principles can hardly be sustained in the future if a firm does not have the capacity of environmental sustainability (Hart, 1995; Shrivastava, 1995). Varadarajan (1992) describes environmental marketing as "enviropreneurial marketing". He puts forward that in the application of environmentally-friendly marketing practices, marketing strategies and tactics, the initial aim of an enterprise is to obtain the competitive advantage of differentiation from their competitors, and at the same time, ingrain a sense of responsibility in the company's internal staff.

Menon and Menon (1997) opined that the environmental marketing concept is formed during the global competition between corporations, and the essence of this concept is the coordination between the ecological standpoint and marketing strategy. For companies, environmental marketing is not just commitment and responsibility to the environment, but opportunities and risks as well (Baker and Sinkula, 2005). Enterprises' environmental marketing behavior is mainly reflected in their operational process when determining how to achieve effective protection of the environment.

Environmental protection

As shown literature, the studies on sustainable development, corporate environmental responsibility, and environmental marketing do not necessarily contradict each other. These studies merely show the different focuses that exist on behalf of environmental protection and an enterprise's development; and it provides a base for decision-makers to formulate environmental policies (Clarke, 2002; Van Eeten, 2001; Cronon, 1996). From a certain perspective, the core of environmental marketing is to protect the environment during the entire operational process, in order to achieve the objectives of sustainable development. Enterprise's environmental protection concept has gone from reactive to proactive. Coddington (1993) states that in the 1970s, the government and environmental organizations required businesses to reduce pollution and outside emissions in the production process through regulations, implementing the “end of pipe” managerial approach. In the 1980s, the government began to apply the “middle of pipe” management, working out environmental policies and regulations to monitor the design and production process of enterprises based on the control of environmental indicators. Hart (1997) argues that in the first half of the 1990s, the increase of environmental awareness in the international community and the complexity of environmental requirements in international trade demanded enterprises to promote companies in the upstream and downstream to reduce waste and save energy. The enterprises were facing environment-based competition in the market. In the latter half of the 1990s, the worldwide energy crisis and the signing of international environmental conventions prompted firms to establish green institutions and mechanisms, and carry out green marketing to fundamentally prevent environmental pollution. From the twenty-first century, the concept of social environmental protection was transformed from pollution prevention to sustainable development. The coordinated development of corporate economic activity and environment developed into the social responsibility of contemporary enterprises.

RESEARCH FRAMEWORK AND HYPOTHESIS

Throughout the 1990s, research on the corporate environment was quite intensive. Earlier studies were comparatively macroscopic and superficial. The in-depth empirical research began to appear in the late 1990s (Stanik et al., 2000). Traditional environmental marketing research uses environment as an external, uncontrollable
factor which requires enterprises to adapt to the external environment through the integration of internal, controllable factors to achieve "survival of the fittest", but ignores the direct interaction between environment and environmental marketing (Goldwin, et al., 1995; Hart, 1995). Scholars embracing the concept of environmental management believe that enterprises can affect the environment with their own interests in mind, and can utilize public relations so that it can be altered to their benefit. Both of these concepts state that the macro-external environment cannot directly affect the decisions of marketing strategies. It can be seen from the relevant literature that environmental policy was formerly taken simply as a reference for business decision-making. With the formulation of specific laws and regulations related to environment, and the signing of international conventions, environmental protection is no longer a macro issue, but a micro issue with measurable standards (such as the ISO14000 series). Therefore, environmental marketing and environmental issues may have a direct impact on companies (or exert pressure on them), and have growing importance (Drobny, 1994; Greeno and Robinson, 1992).

The environmental pressure and/or awareness of business organizations is not only related to the level of environmental regulations, but also has a close relationship with a firm's marketing concept (Banerjee, 2002). In the traditional concept, the pressure of environmental marketing is mainly caused by the internal cost and efficiency of the enterprise, while the modern marketing concept is based on the satisfaction of buyers. Customers have become the external pressure of environmental marketing. As a result, customer satisfaction, including their concerns over environmental protection, is introduced to marketing strategy, followed by the emergence of the social marketing concept in the face of corporate stakeholders' pressure on environmental protection. Consequently, enterprises have to include environmental protection standards into their marketing strategies. As the marketing concept evolved, it has shown that environmental protection has a direct impact on the marketing strategy. Piasecki (1995) argued that enterprises shall take economic benefits, legal compliance and (environmental) responsibility regulation into comprehensive consideration in the formulation of strategies. However, companies initially resisted the pressure of environmental protection. With the rising tide of environmental protection, enterprises were eventually forced to accept their environmental protection responsibility and formed the passive marketing strategy; whereas, there were also some far-sighted enterprises that actively developed the innovative marketing strategies to seize the market opportunities and form their competitive advantage (Steger, 1988). Goldwin et al. (1995) integrated the environmental protection idea into the philosophy of business operation, including the communication of environmental protection both inside and outside the enterprise, adjusting the organizational structure, and employing innovative management tools to perform environmental protection on a daily business. Steger (1993) further divides the environmental strategy into four categories: the same strategy, the reactive strategy, the active strategy, and the innovative strategy. Environmental strategy increases the cost of environmental protection, but at the same time, the adjustment based on environmental marketing strategy has also created business opportunities for enterprises to improve their competitiveness (Porter and Van der Linde, 1997; Maxwell et al., 1997) as well as their business performances.

Business performance is used to measure the efficiency of enterprises in their use of resources. As scholars have differing views when defining the meaning of performance, the dimensions for measurement are also different (Goodman and Penning, 1977). Before the 1980s, enterprises regarded environmental protection as the process of reducing and preventing pollution under the existing business structures and management models, which would come at additional costs to the enterprise. After the 1990s, the companies began to realize that environmental protection is an important means to achieve market satisfaction and to gain competitive advantage (Coddington, 1993; Hart, 1997). Corporate performance also needs to include the environmental interests of the stakeholders "As a kind of measurement, community interest is much higher than corporate profits" (Sheldon and O'Connor, 2004). This type of performance measurement, which is concerned with the interest of stakeholders, has obvious long-term benefits and can help to improve the companies' social reputation and their brand value. Hart (1997) holds that in the middle and late 1990s enterprises' environmental strategies actually improved their product design process, management process and enhanced their operational links, and thus, the efficiency of business operations has improved significantly.

A firm's environmental marketing strategies can have a very positive impact on the financial performance, operational performance and development performance of the organization (Sisodia et. al., 2007; Chamorro and Ban'egil, 2006; Miles et al., 2000; Menon and Menon, 1997; Shrivastava, 1995). Based on the above theoretical review, this paper proposes an empirical research framework of firms' environmental protection pressure, marketing strategy and corporate performance as shown in Figure 1.

Environmental protection pressure and environmental marketing strategies

Enterprises’ environmental protection pressure can be interpreted as their business stakeholders’ impact on the company’s environmental marketing strategies (Freedman,
1984). Stakeholders can influence the operation of a firm through the direct or indirect transmission of information as it relates to their own interests (Henriques and Sadorsky, 1999). Stakeholders can be divided into internal stakeholders such as shareholders, managers and employees, and external stakeholders including legislators, the public and the providers (Newman and Breeden, 1992). When developing marketing strategies, enterprises are often concerned about the interests of government, the public, competitors and internal staff. Accordingly, in this study we divide the environmental protection pressure into social pressure, competitive pressure and internal pressure. With regard to the classification of marketing strategies under the pressure of environmental protection, this study follows the Steger (1993) category: 1) the reactive strategy - which is based on the environmental marketing strategy of minimum cost and applies the end-of-pipe-method; the positive strategy - which is based on the environmental marketing strategy of competitive advantage using mainly the green marketing management method; and the innovative strategy, which is based on the environmental marketing strategy of organizational and technological innovation and attempts to find new market opportunities and lasting competitive advantage through the innovation of organization, production technology and management, etc.

The internal pressure of corporate environmental protection is mainly from the companies’ senior managers, middle managers and employees. The senior managers’ awareness of environmental protection will affect the environmental attitudes and behaviors of the middle managers and the employees. Epstein and Roy (1998) hold that, in dealing with environmental issues and behaviors, majority of firms begin with the environmental commitment from the top executives who have strong support for the environment-based marketing strategies. The attitude of middle managers can also deeply affect the implementation of marketing strategy, while the employees’ awareness and knowledge of environmental protection are the foundation to achieve a successful environmental marketing strategy. Hence, a firm’s environment-based marketing strategies require the full participation of its employees (Petts et al., 1998).

To some extent, corporate environmental pressure intensifies the competition among enterprises. Porter and Van der Linde (1997) believe that proper environmental pressure can enhance the competitiveness of enterprises. Companies need to develop appropriate marketing strategies to respond to the demands of the competitive environment (Dylick, 1999). When under pressure to protect the environment, systematic environmental marketing strategies, such as high-quality products, low-cost management, good social image and market opportunities can help companies gain certain competitive advantages (Maxwell et al., 1997).

Formerly, government and social organizations advocating pollution reduction and pollution control affected the external environment and management mainly through policy and regulations (Coddington, 1993). As a result, enterprises are often limited by the severe restrictions of government regulations to develop innovative means of environmental protection (Skea, 1994). If the government can apply appropriate environmental standards which lead enterprises to innovate, the enterprises can use their resources more effectively, reduce costs, increase product value and improve the competitiveness of the industry. After the 1990s, enterprises

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**Figure 1.** Research framework of environmental pressure, marketing strategies and corporate performances.
began to view environmental protection as corporate environmental responsibility. Developing marketing strategies in the face of environmental pressure has become part of a company’s every day activities.

Therefore, this study proposes the following research hypothesis:

\[ H_1: \text{The desire for environmental protection within the company, the pressure from competitors’ environmental decisions and pressure from society positively influence a firm’s choice of reactive strategy, active strategy and innovative environmental strategy.} \]

**Environmental marketing strategies and corporate performance**

The relationship between corporate marketing strategies and performance is a much sought after topic in academic research. The close relationship between the two has been widely recognized. However, the relationship between environmental marketing strategies and corporate performance remains a debated topic in academia due to a lack of solid conclusions. Studies in the 1980s fail to show any significant relationship between environmental marketing strategies and corporate financial performance (Freedman and Jaggi, 1982; Rockness et al., 1986). However, studies after 1990 did find a positive relationship between corporate environmental strategy and financial performance (Hart, 1995; Shrivastava, 1995; Russo and Fouts, 1997; Berry and Rondinelli, 1998; Judge and Douglas, 1998). For this study, we adopt Steger (1993)’s classification of passive strategy, active strategy and innovative strategy as environmental marketing strategy.

Past literature suggests that the impact of environmental marketing strategy on the performance of a company is reflected not only in short-term financial performance, but also in long-term innovation and development of the enterprise. Fraj-Andre et al. (2009) propose that environmental marketing strategies affect both operating performance and business performance, thereby affecting economic performance. The study of Sharma and Vredenburg (1998) finds that integrating environmental considerations into business management processes not only enables enterprises to perform better, but also helps them meet the aspirations and demands of stakeholders. Although, traditional corporate financial indicators help give a clear view of past trends, they fail to consider long-term development. Therefore, we need to not only assess financial performance, but also monitor progress as it relates to competitiveness and long-term business growth. Therefore, this study proposes the following research hypothesis:

\[ H_2: \text{The use of passive strategy, active strategy and innovative strategy of environmental protection will positively influence a firm’s economic performance, operating performance and development performance respectively.} \]

**Environmental protection pressure, environmental marketing strategies and corporate performance**

Environmental pressure reflects the needs of the broad range of stakeholder business interests. The impact of environmental pressure on business performance includes not only the financial performance required by stakeholders within the enterprise, but also the satisfaction of firm’s operational performance and strategic development of stakeholders outside the enterprises (Chakravarthy, 1986; Venkatraman and Ramanujam, 1986; Judge and Fowler, 1994).

Not only does environmental pressure have a direct impact on firm’s performance, but it also influences business performance through marketing strategies that are indirectly based on environmental pressure. On the one hand, legislative environmental laws and regulations or social organizations may directly influence market access and operating costs of the company. On the other hand, when faced with environmental pressure, enterprises can implement concrete marketing strategies to change the original business strategy in an attempt to influence business performance. Steger (1988) holds that with the maturity of environmental regulations and rising green awareness, firms have to either reactively or positively adopt environmental protection strategies to win market opportunities in order to gain maximum performance. Coddington (1993) points out that environmental laws and regulations directly affect the cost of doing business, forcing companies to prevent pollution and change the production process and product design to affect business performance. Thus, it is clear that environmental marketing strategy is the tool to deal with the relationship between environmental stress and corporate performance.

Therefore, this study proposes the following hypotheses.

\[ H_3: \text{Corporate environmental pressure will positively influence a firm’s business performance. The internal pressure, competitive pressure and social pressure for environmental protection within the enterprise will positively influence a firm’s economic performance, operational performance and developmental performance.} \]

\[ H_4: \text{Marketing strategies based on environmental pressure can improve the relationship between environmental pressure and business performance.} \]

**RESEARCH DESIGN AND METHODS**

**Samples**

This study drew its sample from the foodstuff enterprises in Hubei
Province, China. In total, 300 firms were randomly selected from the Hubei provincial tax system. The data was collected in 2009. Out of the 300 questionnaires sent, 292 valid responses were received, representing a return rate of 97%. The high rate of return is due to the administrative assistance from the government agency. Survey respondents were middle or senior executives of the enterprises. The sample characteristics are listed in Table 1. The majority of respondents are state-owned enterprises and private enterprises, while joint ventures and foreign wholly-owned subsidiaries do not differ much in proportion.

For the development stage, more than half of the firms are in the early development growth stage, indicating that the food processing industry in Hubei is still in the developing period. The sample distribution very much reflects the realities of the Hubei food processing industry.

### Variables and measurements

#### Environmental pressure

This variable refers to the driving force of environmental marketing activities (Dummett, 2006). The scales are based on those of Banerjee (2002), Dummett (2006) and Fraj-Andre et al. (2009), and adapted according to our pretest interviews of the enterprises. This study divides environmental pressure into three indicators: internal pressure, competitive pressure and social pressure, under which there are 19 items.

The internal pressure describes the degree of environmentally-driven desire and the urgency of senior managers to improve the value of the product, production technology, brand image, production processes, management processes and cost-efficiency, which accounts for a total of six questions.

Competitive pressure includes seven questions: environmental efficiency of competitors, product quality of competitors, environmental requirements of investors, the green requirements of supply chain, environmental protection measures of competitors and government policy as it relates to the environmental protection standard. Social pressure includes six questions: the influencing degree of environmental protection measures and behaviors of environmental organizations, government, industry associations, the media, the community and the public on business. A seven point Likert scale was used to measure the influencing degrees of pressure, where 1 indicates having no influence at all and 7 indicates having great influence.

#### Environmental marketing strategy

This variable refers to integrating environmental concepts into the corporate strategic planning process (Banerjee, 2002). This study adopts the measurements of Steger’s (1993) environmental marketing strategies, including the reactive, positive and innovative strategies. The reactive strategies include the environmental education and training of staff, keeping contact with the environmental protection agency, the participation in environmental protection and the promotion of environmental protection. The positive marketing strategies include seven items: complete awareness of environmental protection by all employees, the establishment of energy-saving measures to reduce emissions, improving accounting and auditing systems of environmental protection, the establishment of the green production management system, the environment-oriented ‘4P’ strategy, the environment-oriented product development and design, and the green supply chain management. The innovative marketing strategies include five questions: the environment-oriented business strategy formulation and adjustment, the development or acquisition of green environmental protection organizations, the integration of environmental protection standards into corporate operational standards, the improvement and strengthening of the environmental protection functions of departments and the establishment of green technology development team. A seven-point Likert scale was employed to measure the important degrees of pressures, where 1 indicates having no importance at all, and 7 indicates having great importance.

#### Corporate performance

This variable represents the performances of corporate marketing strategies in response to the pressure of environmental protection, including financial performance, operational performance and
development performance (Fraj-Andre et al., 2009). The financial performance includes profits, rate of return on investment of environmental protection and market share. The operational performance includes job satisfaction and motivation of internal employees, production process improvement, corporate operational efficiency and effectiveness to attract talents. The development performance includes capability of developing domestic and international market, innovation capability of product and technology, corporate social image and reputation and brand value of the company. Again, a seven-point Likert scale was used to measure the degree of satisfaction with corporate performance after the implementation of environmental management strategies, from 1, very dissatisfied to 7, very satisfied.

Control variable

In this study, control variable includes the company size, the corporate development stage, the establishment age of the firm, and the business nature of the enterprises. The company size is measured by the number of employees, a common standard used at home and abroad. We define companies with less than 600 employees as small/medium enterprises and companies with 600 or more employees as large enterprises. Introducing dummy variables, we assign the small/medium firms with the value of 0 and large firms with the value of 1. The corporate development stages are defined as the start-up stage with a value of 0 and as the mature or transitional stage with a value of 1. Establishment ages of the companies are based on the number of years a firm is in business. The natures of businesses are divided according to the ownership of the firms, where 0 represents domestically-owned firms and 1 represents foreign or joint-venture ownership.

Method of analysis

This study employed SPSS to create a regression analysis of the relationship between environmental pressure (the independent variable) and environment-oriented marketing strategies (the dependent variable), the relationship between environmental pressure (the independent variable) and corporate performances (the dependent variable), and the relationship between environmental marketing strategies (the independent variable) and corporate performances (the dependent variable). In addition, the moderating effect of environmental marketing strategies on the relationship between environmental pressure and corporate performances is also analyzed. As control variables do not exist before conducting the regression analysis, we employed hierarchical regression modeling (HRM) to control them and used data centralization with the dependent and independent variables to reduce the multi-collinearity of the variables.

ANALYSIS AND RESULTS

Reliability and validity test

Table 2 presents the results of the reliability and validity of the research instrument. The Cronbach's $\alpha$ of environmental pressure, environmental marketing strategies and corporate performances are 0.943, 0.955, and 0.917 respectively. The Cronbach's $\alpha$ of the overall dimensions of the model reaches 0.930, and the $\alpha$ coefficient of each dimension is over 0.80, showing that both the model and the dimensions have a high degree of internal consistency and the scale is highly reliable.

The exploratory factor shows that the cumulative variance explained reaches 64.29%. Except for the development performance which has a loading lower than 0.7, all rotated factor loadings are above 0.8. The KMO test value is 0.898, and the P-value is less than 0.001, achieving a high significance level. This shows that the data possesses a favorable goodness-of-fit, the scale has a good level of validity, and the results of the measurement are acceptable.

Table 3 presents the descriptive statistics of each variable and their relationship with each other. Except for the variable of financial performance which does not have a high mean (average level 4.985), all other variables have a mean greater than 5, indicating a high degree of positive influence or satisfaction. Both the standard deviations of the measurement indicators within each dimension and differences between indicators are small, showing that the convergence of the data is good. For the Pearson correlation coefficient, the variable correlation coefficients exceeding 0.8 are likely an indication of strong collinearity. As the variable correlation coefficient in this scale is less than 0.6, there is a weak multi-collinearity between the dependent variables and independent variables in this study. Therefore, it is proper to use the regression analysis.

The regression estimation of the relationship between environmental pressure and environmental marketing strategies

Table 4 shows that the competitive pressure and social pressure have a positive and significant relationship with reactive environmental marketing strategy (regression coefficients are 0.210 and 0.274, respectively, reaching a significant level), positive environmental marketing strategy (regression coefficients are 0.184 and 0.313, reaching a significant level), and the innovative marketing strategy (regression coefficients are 0.302 and 0.231, reaching a significant level). In terms of the F-value in the three regression equations, all of them have reached a very significant level (P<0.001), the adjusted R² are 0.370, 0.355, 0.379, which indicate that, the regression equations have a strong explanatory power, reaching a level of more than 35%. The regression results show that there is no significant relationship between internal pressure of environmental protection and corporate marketing strategies. But the competitive pressure and social pressure of environmental protection have a significant positive relationship with the reactive, positive and innovative marketing strategies of the enterprise. As a result, most of the study findings support H1.

The regression estimation of the relationship between environmental pressure, environmental marketing strategies and corporate performances

Table 4 shows that there is a significant positive relationship between corporate financial performance and
Table 2. The exploratory factor analysis and reliability testing.

<table>
<thead>
<tr>
<th>Latent</th>
<th>Index (9)</th>
<th>N</th>
<th>Rotated component</th>
<th>E.S.S. L</th>
<th>Cronbach's alpha</th>
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<td>Social pressure(6)</td>
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<td>Internal pressure(7)</td>
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<td>0.826</td>
<td>0.837</td>
<td>0.9</td>
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<td></td>
<td>Competitive pressure(6)</td>
<td>292</td>
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<td>0.838</td>
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<td>Marketing strategies</td>
<td>Reactive strategy(4)</td>
<td>292</td>
<td>0.86</td>
<td>0.864</td>
<td>0.889</td>
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<td></td>
<td>Positive strategy(7)</td>
<td>292</td>
<td>0.86</td>
<td>0.881</td>
<td>0.918</td>
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<td></td>
<td>Innovative strategy(5)</td>
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<td>0.83</td>
<td>0.822</td>
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<td>Corporate performances</td>
<td>Financial performance(3)</td>
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<td>Operational performance(4)</td>
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<td></td>
<td>Development performance(4)</td>
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<td>0.665</td>
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</table>

Note: E.S.S. L stands for extraction sums of squared loadings; the data in () shows the number of questions.

Table 3. The mean, standard deviation and Pearson correlation coefficient.

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<tr>
<th>Parameter</th>
<th>Mean</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tr>
<td>Competitive pressure</td>
<td>5.268</td>
<td>0.905</td>
<td>0.675**</td>
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</tr>
<tr>
<td>Social pressure</td>
<td>5.394</td>
<td>0.903</td>
<td>0.627**</td>
<td>0.677**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovative strategy</td>
<td>5.305</td>
<td>0.977</td>
<td>0.422**</td>
<td>0.483**</td>
<td>0.465**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactive strategy</td>
<td>5.542</td>
<td>0.907</td>
<td>0.418**</td>
<td>0.453**</td>
<td>0.464**</td>
<td>0.652**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive strategy</td>
<td>5.447</td>
<td>0.888</td>
<td>0.397**</td>
<td>0.436**</td>
<td>0.461**</td>
<td>0.574**</td>
<td>0.718**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial performance</td>
<td>4.985</td>
<td>0.893</td>
<td>0.425**</td>
<td>0.518**</td>
<td>0.391**</td>
<td>0.309**</td>
<td>0.299**</td>
<td>0.374**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational performance</td>
<td>5.098</td>
<td>0.869</td>
<td>0.509**</td>
<td>0.558**</td>
<td>0.426**</td>
<td>0.467**</td>
<td>0.515**</td>
<td>0.538**</td>
<td>0.600**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Development performance</td>
<td>5.452</td>
<td>0.977</td>
<td>0.570**</td>
<td>0.510**</td>
<td>0.515**</td>
<td>0.411**</td>
<td>0.461**</td>
<td>0.462**</td>
<td>0.469**</td>
<td>0.541**</td>
<td>1</td>
</tr>
</tbody>
</table>

*P<0.05, **P<0.01, data in line 1 to 8 show the Pearson correlation coefficient between different variables.

The competitive pressure (regression coefficient is 0.533, reaching a significant level); there are significant positive correlations between corporate operational performance and internal/competitive pressure (regression coefficients are 0.287 and 0.473, reaching a significant level); there are significant positive correlations between corporate development performance and internal/social pressure (regression coefficients are 0.423 and 0.245, reaching a significant level). In terms of the F-value in the three regression equations, all of them have reached a very significant level (P <0.001), the adjusted R² are 0.403, 0.503, 0.496, which indicates that the regression equations have a strong explanatory power, reaching a level
Table 4. The Regression results of the impact of environmental protection pressure on environmental marketing strategies

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Constant</th>
<th>Company size</th>
<th>Corporate development stage</th>
<th>Firm age</th>
<th>Business nature</th>
<th>Internal pressure</th>
<th>Competitive pressure</th>
<th>Social pressure</th>
<th>Adjusted R²</th>
<th>F</th>
<th>D. W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactive strategy</td>
<td>0.279</td>
<td>-0.297*</td>
<td>-0.071</td>
<td>0.108*</td>
<td>0.049</td>
<td>0.141</td>
<td>0.210*</td>
<td>0.274***</td>
<td>0.370</td>
<td>25.406***</td>
<td>1.936</td>
</tr>
<tr>
<td>Positive strategy</td>
<td>-0.030</td>
<td>0.003</td>
<td>-0.337***</td>
<td>0.086</td>
<td>-0.069</td>
<td>0.117</td>
<td>0.184*</td>
<td>0.313***</td>
<td>0.355</td>
<td>23.908***</td>
<td>1.921</td>
</tr>
<tr>
<td>Innovative strategy</td>
<td>0.255</td>
<td>-0.151</td>
<td>-0.105</td>
<td>0.077</td>
<td>-0.034</td>
<td>0.108</td>
<td>0.302***</td>
<td>0.231**</td>
<td>0.379</td>
<td>26.395***</td>
<td>1.562</td>
</tr>
</tbody>
</table>

* P<0.05, ** P<0.01, *** P<0.005, **** P<0.001, data in the table are the β coefficients

of over 40%. The regression results show that there are no significant relationships between internal pressure and corporate financial performance, between competitive pressure and development performance, or between social pressure and financial/operational performance. Nevertheless, there are significant positive correlations between internal pressure and operational/development performance, between competitive pressure and financial/operational performance, and between social pressure and development performance. Thus, the study results partially support H2. Table 5 shows that the reactive marketing strategy has a positive and significant relationship with operational performance (regression coefficient is 0.172, reaching a significant level). The positive marketing strategy has a positive and significant relationship with financial, operational, and development performance (regression coefficients are 0.287, 0.275, and 0.180, reaching a significant level). However, there is no significant positive correlation between the innovative marketing strategy and a company’s financial/operational/development performance. In terms of the F-value in the three regression equations, all of them have reached a very significant level (P <0.001), the adjusted R² are 0.423, 0.595, and 0.540 respectively, which indicates that the regression equations have a strong explanatory power, reaching a level of over 40%. The study findings partially support H3. When taking the regression model in Table 4 as the basic equation, this study introduces the reactive, positive and innovative strategies of environmental marketing at different levels, and introduces the interaction terms of marketing strategies and corporate environmental pressure. It can be seen through the regression model in Table 4 that there is no significant direct relationship between the internal pressure and the environmental marketing strategies, thus the internal pressure cannot influence the corporate performances through marketing strategies. However, both the competitive and social pressure can affect all marketing strategies. The regression model in Table 5 shows that the competitive pressure has direct correlation with the financial and operational performance of the enterprise; the social pressure is correlated with the development performance; the reactive marketing strategy directly affects the operational performance, the positive marketing strategy affects all the business performances, and the innovative marketing strategy has no direct relationship with corporate performance. Therefore, we believe that the reactive marketing strategy plays an intermediary role in the relation of competitive pressure and financial performance; the positive marketing strategy plays an intermediary role in the relation of competitive pressure and financial/operational performance; and the innovative marketing strategy plays an intermediary role in the relation of social pressure and development performance. It can be seen from the values of ΔR² (0.026, 0.094, 0.047 respectively) and F (ΔR²) (all reaching significant levels) of the three performance in Table 5 that the introduction of the marketing strategies variable has increased the explanatory power of the equation and reached a statistically significant level, indicating that marketing strategy has made a unique contribution to the equation.

The interactions between reactive marketing strategy and the internal/competitive/social pressure have significant relationships with the financial/development performance, in which the interaction between reactive marketing strategy and the social pressure also has significant relationships with the operational performance, indicating that the reactive marketing strategy has a moderating effect on the relation of internal pressure and development performance, competitive pressure and financial performance, as well as social pressure and operational/development performance. Similarly, we find from Table 5 that innovative strategy has a moderating effect on the relation of internal pressure and operational performance; and the positive strategy has a moderating effect on the relation of environmental
Table 5. The regression results of the impact of environmental protection pressure and environmental marketing strategies on corporate performances.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Financial performance</th>
<th>Operational performance</th>
<th>Development performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-0.353</td>
<td>-0.303</td>
<td>-0.322</td>
</tr>
<tr>
<td>Company size</td>
<td>0.204*</td>
<td>0.176*</td>
<td>0.181*</td>
</tr>
<tr>
<td>Corporate development stage</td>
<td>-0.279*</td>
<td>-0.196</td>
<td>-0.204</td>
</tr>
<tr>
<td>Internal pressure</td>
<td>0.026</td>
<td>0.015</td>
<td>0.01</td>
</tr>
<tr>
<td>Business nature</td>
<td>-0.199</td>
<td>-0.178</td>
<td>-0.129</td>
</tr>
<tr>
<td>Internal pressure q1</td>
<td>0.129</td>
<td>0.115</td>
<td>0.103</td>
</tr>
<tr>
<td>Competitive pressure q2</td>
<td>0.533****</td>
<td>0.520****</td>
<td>0.631****</td>
</tr>
<tr>
<td>Social pressure q3</td>
<td>-0.023</td>
<td>-0.073</td>
<td>-0.138</td>
</tr>
<tr>
<td>Innovative strategy c1</td>
<td>-0.078</td>
<td>-0.007</td>
<td>-0.007</td>
</tr>
<tr>
<td>Reactive strategy c2</td>
<td>-0.077</td>
<td>-0.078</td>
<td>-0.172*</td>
</tr>
<tr>
<td>Positive strategy c3</td>
<td>0.287***</td>
<td>0.182*</td>
<td>0.275****</td>
</tr>
<tr>
<td></td>
<td>0.286</td>
<td>0</td>
<td>0.082</td>
</tr>
<tr>
<td>∆R²</td>
<td>0.026</td>
<td>0.014</td>
<td>0.0138</td>
</tr>
<tr>
<td>F(∆R²)</td>
<td>40.291**</td>
<td>20.447*</td>
<td>220.469****</td>
</tr>
<tr>
<td>D. W</td>
<td>20.139</td>
<td>19.802</td>
<td>10.802</td>
</tr>
</tbody>
</table>

* P<0.05, ** P<0.01, *** P<0.005, **** P<0.001 data in the table are the β coefficients.

The research findings show that environmental pressure significantly affects the Chinese food industry’s marketing strategies through competitive pressure and social pressure, but the internal pressure does not pressure and corporate performances. It can be seen from the values of ∆R² (0.042, 0.030 and 0.067 respectively) and F (∆R²) (all reaching significant levels) of the three performances in Table 4 that the introduction of the interaction variable has increased the explanatory power of the equation and reached a statistically significant level, showing that the interactive variables have made a unique contribution to the equation. Therefore, the study results support H₄.

DISCUSSION

The research findings show that environmental pressure has a significant, direct impact on corporate performances, among which the internal pressure
directly affects operational and developmental performances, the competitive pressure affects financial and operational performances, and the social pressure affects only developmental performance.

The environment-based marketing strategies has a partial direct impact on corporate performances, among which the reactive marketing strategy significantly affects the operational performance, the positive marketing strategy directly affects the financial, operational and developmental performance, but the innovative strategy does not have a statistically significant affect on the performance of the company. The environmental pressure impacts the corporate performances through the selection of environmental marketing strategies, among which competitive pressure affects corporate financial performance through reactive marketing strategy, as well as affecting the financial and operational performance through a positive marketing strategy. The marketing strategies have a moderating effect on the relation of environmental pressure and corporate performances, among which the reactive marketing strategy has a positive moderating effect on the relation of the internal pressure and developmental performance, as well as negative moderating effect on the relations of competitive pressure and financial performance, social pressure and operational performance. The positive strategy has a negative moderating effect on the relations of the internal, competitive, social pressure and the developmental performance of the companies. The innovative strategy has a positive moderating effect on the relationship between society and business operations.

This study makes several contributions. First, unlike traditional models which treat the environmental factor as an exogenous variable affecting business decisions and performances, this study found that the environmental pressure affecting business decision-making and performance mainly comes from the environmental protection knowledge and demands of the members within the enterprise. This internal pressure creates the firm's environmental awareness and understandings, resulting in a push towards a superior operational process. Second, the traditional research generally classifies the environmental factor as an external variable, while this study observes the source of environmental pressure from three aspects: the internal force of the company, the external competition and the macro-social environment. This classification is far more effective in identifying the sources of the environmental pressure and the corresponding measures to deal with them. Moreover, this study divides the performance dimensions into financial performance, operational performance and development performance in order to study the specific influences of environmental issues on corporate performances and examine whether the marketing strategies under the environmental pressure are innovative. Third, the study has verified the consistency of the sustainable development concept of environmental protection in both developing countries and developed countries. It was long believed that developing countries needed to sacrifice environment for economic development, but this study results show the opposite conclusions (Table 3 shows that the importance of environment is considered more than the average value of 3 in the operational process of the enterprises, reaching 5.442, 5.226 and 5.394 respectively). Fourth, the selection of reactive environmental marketing strategy still remains the dominant choice. (Table 3 shows that for the importance of corporate environmental marketing strategies, the reactive marketing strategy reaches an average level of 5.542, while positive marketing strategy reaches 5.447).

There are some interesting results in the conclusion of the study that are worthy of discussion. Firstly, in studying the impact of environmental pressure on environmental marketing strategies, we found that the internal pressure does not affect the environmental marketing strategies of the company, but the social and competitive pressure have significant affect on the firm's environmental strategies. This conclusion has confirmed the viewpoints of Gauthier (2005), Waddock (2004) and other scholars that firms are mainly influenced in their development process by the external pressure from society and investors. This research suggests that a firm's corporate environmental consciousness and its adoption of environmental marketing strategies are mainly influenced by external factors. The unity of personal value and operational business philosophy has not yet been achieved. This conclusion supports the argument of Clarke (2002) that there are dissimilar focuses of environmental sustainability and that conservative attitudes still exist.

Secondly, the internal pressure in the firm affects only the operational performance, indicating that an increase in environmental protection awareness to internal staff can help the firm to improve the operational performance of environmental marketing, supporting the argument by Clarke (2002) that a unified understanding of the sustainable development belief within the company can promote the healthy development of the enterprise. Competitive pressure affecting all business performances confirms the view of Engardio (2007) that the application of competitive strategies can help to improve the competitive advantage of a company. Social pressure affecting the developmental performance of the enterprise verifies the idea that marketing strategies based on sustainable development help firms obtain long-term strategic advantages. Pertaining to the result that social pressure has a negative impact on operational performance, this study suggests that this is due to the fact that continuous upgrading of environmental policies and health standards add heavy, short-term investments to the learning and management within the enterprise, thus affecting the performance of the company.

Thirdly, in the study of the impact of environmental marketing strategies on corporate performance, we found
that positive environmental marketing strategy can influence all of the corporate performances. Indeed, green marketing systems and green quality management can help companies to improve their reputation and long-term competitive advantages (Engardio, 2007; Esty and Winston, 2006; Christmann, 2000; Hart, 1995). The innovative strategy has no significant affect on the performance, which seems to contradict the conclusions in the literature review. Furthermore, the reactive marketing strategy is conducive to the operational effect of the enterprise, which indicates that although, positive marketing strategy does enhance enterprise performance, it also increases the management and training costs of the operational process.

It was also found in the study that mature and large enterprises have inverted constraints on a firm’s marketing tactics. This may be due to the fact that the mature and enlarged size of the enterprise has formed a rigid corporate culture which excludes new environmental perspectives. One issue worthy of concern is that the study results show that foreign-owned enterprises focus less on environmental strategies than domestic enterprises, indicating that there are significant differences in environmental protection viewpoints among companies of different ownership in the Chinese market. As it pertains to the impact of business ownership on corporate performance, domestic-owned companies are more efficient in operation than foreign-owned companies, while the foreign-owned companies pay more attention to development performance than domestic-owned companies. This study suggests that the differences in environmental management standards and requirements lead to the differences in satisfaction of performance. Foreign-owned enterprises obviously emphasize the strategies of environmental development more than domestic-owned enterprises.

MANAGERIAL IMPLICATIONS

The results of empirical research on relationship among the three dimensions of environmental pressure, environmental marketing strategies and corporate performances include the following aspects of managerial implications. Firstly, the major environmental pressure on Chinese companies in the current context is from national policies and regulations as well as the environmental strategies of the competitors. The executives and employees of the company do not have enough positive influence on environmental marketing strategies. As a result, there is generally a lack of active environmental awareness within enterprises. Environmental protection is still seen as an external environmental factor which brings costs to the enterprise, rather than being viewed as the internal stimulus of the company. Therefore, enterprises must adopt an acceptable environmental policy and enhance the green marketing consciousness in the business.

Secondly, from the aspect of influencing factors of corporate performance, the internal pressure (the positive attitude of corporate managers and staff towards environmental protection) and social pressure (the legal norms and regulations of the government and social organizations) have obvious effects in promoting long-term development of the enterprise. Firms have recognized the importance of a positive marketing strategy in promoting the sustained development of the company. They consider the internal and competitive pressures as the driving forces in improving the operational performance of the business, and increasing the operational and managerial efficiency by passively accepting the environmental protection rules or actively carrying out environmental protection measures. At the same time, environmental protection measures can also help the company to enhance the financial performance and achieve the goal of sustainable development.

Thirdly, the study also found that following the environmental rules passively can impact the competitive pressure on corporate financial performance in the short-term, whereas positive marketing strategy is an effective method to explain the environmental pressure which affects the financial and operational performances of a company. Moreover, the innovative strategy can fundamentally change the problem of the social environment pressure faced by most industries.

Fourth, as it relates to the moderating effect of the marketing strategies, it can be concluded that the reactive marketing strategy can enhance the degree of positive correlation between internal pressure and developmental performance, indicating that acceptance of environmental protection policies is conducive in helping companies realize the importance of environmental protection for the long-term development of the enterprises. The reactive marketing strategy can temporarily weaken the influence of social pressure on the operational performance as well as the competitive pressure on the financial performance of the enterprises. The positive marketing strategy can comprehensively reduce the impact of environmental pressure on the long-term development of the enterprises. Besides, the innovative strategy enables companies to become more aware of the influence of social pressure on business efficiency. Therefore, firms can change the relationship between environmental pressure and corporate performance by adopting different marketing strategies.

REFERENCES


