Analysis of the Correlation between Environmental Performance in Enterprise Green Management and the Competitive Edge

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Abstract: In recent years, there has been an increasing concern over the topics of enterprise green management and environmental performance’s influence on a company’s competitive edge. This paper mainly analyzed the effect of enterprise green management on a company’s environmental performance and its competitive advantages, as well as environmental performance’s influence over the competitive edge. Furthermore, this paper discussed the role of environmental performance between enterprise green management and competitive edge. Objects of this study are manufactures in northwestern China which have acquired the ISO 9001 certification before December, 2014. Research discoveries shows that enterprise green management would exert positive influence on the environmental performance and its competitive edge; the environmental performance could also add significant competitive edge to a company; last but not the least, environmental performance also plays an intermediary role between enterprise green management and its competitive advantages.

1. Research Background

Over the past few years, there have been haggles between environmentalists and business sector over topics of climate change, air, water and soil pollution, and decreasing biodiversity. Under such circumstance, environmental protection NPOs have been set up one after another, and the international communities have raised their awareness of environmental protection and called for a healthier global environment. Therefore, several international conventions were signed among countries, such as the Washington Convention (1973), the Montreal Protocol (1987), the Framework Convention on Climate Change (1992), the Basel Convention and other declarative conventions, which afterwards were proved to be inefficient in shielding the environment from deteriorating. Consequently, the Kyoto Protocol which has legal constraints was signed among 128 countries in 2005, showing the resolution of the world community to reduce the green gas emission. This global movement indicates that the global intention to protect environment is getting more proactive and measures taken are of increasing legal binding forces (Kirchgeorg, 1990; Peattie, 1992; Porter and van der Linde, 1995; Ramus and Steger, 2001; Shrivastava, 1994; Steger, 1993).

The previous research regarding enterprise green management mainly focused on the countermeasures that company should take, so as to wall off the increasingly strict rules set by environmental organizations and pressures from the stakeholders. However, the industrial circle takes green innovation and management as unnecessary investments, and even thinks they would increase the operational costs and retard company’s development. As a result, this research bridges the academic gap of a comprehensive study on the influence of green management over company’s competitive advantages, so as to examine the hypothesis of environmental performance would exert positive effects on company’s competitive edge.
Consequently, there are three main objectives for this research:
(1) To explore the influence of enterprise green management on its competitive edge and environmental performance;
(2) To discuss the influence of environmental performance on the competitive edge;
(3) To study the role of environmental performance between enterprise green management and competitive edge.

What’s more, the research objects are manufactures in northwestern China which have acquired the ISO 9001 certification before December, 2014.

2. Literature Review and Hypotheses

2.1 Environmental Performance
Performance is the benchmark for a company to evaluate the result of its resource utilization, while different scholars hold distinctive definitions of organization performance, it is mainly because they have different views about the nature of an organization (Goodman and Pennings, 1977). Financial performance and environmental performance are two indicators generally used to evaluate an organization’s performance (Hart, 1995; Judge and Douglas, 1998; Russo and Fouts, 1997). The corporate environmental performance can be classified into four types: Organization system; Stakeholder relationship; Environmental impact; Obedience to the rule of law.

Pollution reduction measures can be divided into ex-post control and ex-ante prevention (Barret and Segerson, 1997; Nehrt, 1998; Shnivastava, 1995c). Ex-post control refers to the disposing of pollutants, wasted water, air and other materials via pollution control equipment, so as to meet the regulatory standards of environmental protection laws; while ex-ante prevention are measures taken to put down the pollution at the source, so as to ameliorate environmental performance through clean production, green marketing and proactive administration (Berry and Rondinelli, 1998; Hart, 1995; Nehrt, 1998). Therefore, the paper raises several hypotheses as follows:
H1: Enterprise green management has positive influence on the environmental performance.
H1-1: Clean production has positive influence on the environment operational performance.
H1-2: Proactive administration has positive influence on the environment operational performance.
H1-3: Green marketing has positive influence on the environment operational performance.
H1-4: Clean production has positive influence on the environment managerial performance.
H1-5: Proactive administration has positive influence on the environment managerial performance.
H1-6: Green marketing has positive influence on the environment managerial performance.

2.2 Environmental Performance’s Influence on the Competitive Edge
Hutchmoson (1992) pointed out that a proactive attitude taken by companies towards environmental problems could invite many potential benefits, such as improving company images and popularity; attracting more green-loving consumers; passing the investment review successfully; increasing production efficiency and lower the costs by recycling, energy-conservation and control over contamination; avoiding heavy premium fee; keeping good terms with surrounding neighbors and producing green products with high value. The Enterprise’s innovative green performance will positively influence its competitive edge, and the innovative green performance covers several areas, such as energy-conservation technology, pollution prevention technology, waste recycling and reusing technology, green products design and green management etc. The innovative green performance will have greater positive influence on the company’s competitive edge as its competitor’s ability decreases or the industrial growth rate increases. Hence, hypotheses are made as follows:
H2: the environmental performance has positive influence on the competitive edge.
H2-1: the environment operational performance has positive influence on the competitive edge.
H2-2: the environment managerial performance has positive influence on the competitive edge.

2.3 The Intermediary Role of the Environmental Performance
According to the above literature reviews, a conclusion can be drawn that enterprise green management could not only increase its competitive edge (Berry and Rondinelli, 1998; Porter and van der Linde, 1995), but also bring about better environmental performance (Berry and Rondinelli, 1998; Hart, 1995; Nehrt,
1998; Porter and van der Linde, 1995). Besides, improvements in the environmental performance could
also add competitive advantages to a company (Hutchinson, 1992; Stock d/a., 1997; Maxwell da./, 1997;
Chen a./, 2006). While modern theories think efficient use of energy and waste reduction could save cost
(Berry and Rondmelli, 1998; Hart, 1995; Porter and van der Lind, 1995; Shrivastava, 1995c) and improve
company’s competitive edge (Hutchinson, 1992; Stock d/a., 1997; Maxwella./, 1997; Chena./, 2006).
Therefore, based on the above literature reviews, this paper deduces that the environmental performance
plays an intermediary role between enterprise green management and competitive edge, and the following
are the hypotheses proposed:
H3: Green management can influence company’s competitive edge through environmental performance.
H3-1: Clean production can influence company’s competitive edge through environmental performance.
H3-2: Proactive administration can influence company’s competitive edge through environmental
performance.
H3-3: Green marketing can influence company’s competitive edge through environmental performance.

3. Framework of the Research
This study will focus on the influence of enterprise green management on the environmental performance
and the competitive edge, and will further analyze environmental performance’s effect on competitive edge.
In addition, this study will take environment performance as the intermediate variable to testify whether it
would play an intermediary role between green management and competitive edge. And the relation can be
illustrated as follows Figure1:

4. Sample Study
Objects of this study are manufactures in northwestern China which have acquired the ISO 9001
certification before December, 2014, and questionnaire surveys have been conducted among these
manufactures. In April, 2014, 1261 questionnaires were sent to them and in order to assure the reply rate,
self-addressed envelopes have also been enclosed within questionnaires. The investigated were required to
return the questionnaire within two weeks. Two weeks later, phone calls were made to recollect
questionnaires from the manufactures, and there were some follow-up mailings as well. People who
answered the questionnaires were principles of companies, directors or deputies of environmental
protection departments.

Among the 1261 questionnaires, 202 were recollected and the recollection rate of effective
questionnaires was 16.01%. The study has adopted the Cronbach's alpha to do reliability analysis of each
dimension, and the results has been listed in chart 3. Among the three dimensions of enterprise green
management, the reliability of clean production, proactive management and green marketing are 0.875,
0.847, and 0.852 respectively, and they are all relatively high. In terms of the two dimensions of
environmental performance, the reliability of environment operational performance and environment
managerial performance are 0.938 and 0.902 accordingly, which are both high. And the reliability of
environmental performance is 0.910, which is also relatively high. Generally speaking, the reliability
analysis of this study is quite reasonable.

| Table 1 Multiple Regression Analysis of the Environmental Performance and the Competitive Advantages |
|---------------------------------------------------------|
| Controlled Variable                                   | 1.000 | 0.020 | 1.000 |
| Industry Type                                          | -0.028|      |      |
| Dependent Variable                                     |       |      |      |
| Environment Operational Performance                    | 0.486**| 1.000 |      |
5. Conclusions
The discovery of this study shows that the three dimensions of enterprise green management, which are clean production, proactive administration, and green marketing accordingly, could levy positive influence on a company’s competitive edge. In terms of green management and environmental performance, clean production and proactive administration have obvious positive influence on the environment operational and managerial performances; however, subtle influence of green marketing can be seen on the environment operational and managerial performances, it might due to the fact that green marketing doesn’t have any significant influence on the environmental performance of an organization, while it has conspicuous effect on the external stakeholders and could improve the company’s competitive edge consequently. In the aspect of environmental performance and competitive advantages, discoveries show that both environment operational performances and environment managerial performances can positively influence the competitive edge. That is to say, environmental performance is not the operational cost nor the hindrance to a company’s growth, instead, it is the impetus of a company’s competitive edge.

The research also find that environmental performance plays an intermediary role between enterprise green management and competitive edge, that is to say, clean production and proactive administration can positively affect competitive advantage through environmental performance. Hence, enterprise green management could bring benefits to companies, it could not only improve the environmental performance and competitive edge, but also could further strengthen the competitive edge via environmental performance. This also indicates that enterprise’s undertaking of green innovation and green management could not only meet the requirements of environmental protection regulations and of the stakeholders, but also could decrease environmental damages caused by human productive activities, therefore improves the economic performance.

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