

The Relationship between Shareholder Value and International Transfer of Environmental Management Practices

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The Relationship between Shareholder Value and International Transfer of Environmental Management Practices

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Abstract

This paper analyzes the relationship between the shareholder value of multinational enterprises and the international transfer of environmental management practices. We examine the hypothesis that the higher return on equity (ROE) of a firm is positively related to the higher transfer of environmental management practices to the overseas subsidiary. The results of the analysis have not supported the hypothesis. The relation of shareholder value to environmental management system is negative. Shareholder value thus shows reluctance to transfer the environmental management system because the firm regards environmental investment as a cost increase or has minimal environmental concern.

Keywords: international transfer, environmental management, shareholder value, Vietnam, Japanese firms

1. Introduction

With the philosophy of sustainable development, environmental management became prerequisite of business activities for most firms. A large part of environmental load originates from the activities of firms. Accordingly, firms in developing and developed economies need to make all possible efforts to reduce environmental load. Diffusion of advanced technologies and practices, which are owned by multinational enterprises (MNEs), among developing and developed countries, is both necessary and effective to reduce the load. MNEs that operate globally can disseminate their practices in overseas operations and transfer them to a supply chain through transactions.

To encourage firms to strengthen environmental effort globally, firms must achieve economic performance while they improve environmental performance in their overseas operations. When there is economic incentive in implementing environmental practices, the rational approach is that firms make environmental efforts.

As significant constraints of firm behavior, we recognize the influence of the Restrictions

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of Hazardous Chemicals (RoHS) enacted in 2003 and the Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH), which came into effect in 2007. These regulations require that firms take positive environmental action in a whole supply chain. Firms otherwise often incur environmental risks.

In this paper, we analyze environmental management across borders, focusing on the effect of shareholder value on the international transfer, from two perspectives. First, we examine the relationship between economy and environment in a global dimension. As the environmental management across border is important for sustainability, this study may contribute to the progress of theory and provide useful information for policy making and business practice. Most existing studies on the relationship between economic performance and environmental performance have investigated domestic operations. We investigate the relationship in a new dimension. Second, we examine the relationship between parent firms and overseas subsidiaries using statistical rather than case study methodology.

We briefly review preceding studies in the second section. The third section is methodology; the fourth is the results of analysis; the fifth is discussion; and the last section summarizes our findings.

2. Literature Review

Few studies have investigated the international transfer of environmental management. The predominant interest of existing studies about transfer focuses on individual topics such as ISO14001 or environmental technologies that are practiced in foreign operations.

When economic performance and environmental performance are compatible in an overseas operation, the expectation is that environmental management disseminates further across borders. We investigated the relationship between financial performance of the parent firm and environmental performance of the overseas operation. This is a new research issue and has two important underlying approaches.

First, research has intensively analyzed the relationship between economy and environment. Second, research has investigated environmental management transfer. Specific technology transfer such as water treatment or air treatment technology is often argued in the context of a corporate social responsibility (CSR) or a program of official development aid (ODA).

2.1 Shareholder Value and Environmental Performance

Many researchers have examined the Porter hypothesis (Porter and van der Linde, 1995; Palmer et al., 1995; Hart and Ahuja, 1996; Russo and Fouts, 1997; Corderio and Sarkis, 1997; Wagner et al., 2002). The Porter hypothesis indicates that firms can obtain economic performance when they invest in environmental innovations under appropriate regulations,

since environmental innovations improve resource efficiency and in turn, generate competitiveness. These are important underlying studies on the relationship between the financial performance of parent firms and the environmental performance in international operations.

Several researchers have investigated the relationship between shareholder value and environmental performance for domestic operations. Of these studies, Corderio and Sarkis (1997) used Toxic Release Inventory (TRI) data as environmental performance and security analyst forecast on earnings per share (EPS) as economic performance. EPS implies value for shareholders. Corderio and Sarkis found a significant negative relationship between the two performances.

Hart and Ahuja (1996) used, as the explaining variable, the change rate of emission of toxic chemicals in 1988 to 1989 based on TRI data. They used return on sales (ROS), return on assets (ROA) and ROE as explained variables. Control variables are R&D intensity, advertising cost ratio to sales, capital intensity, debt ratio and growth rate of industry. ROE is the ratio of profit to shareholder equity. Hart and Ahuja showed that pollution prevention is positively related to economic performance with a one or two year time lag.

Wagner et al. (2002) examined the relationship between the two performances in paper manufacturing companies in Germany, Italy, Netherlands and UK. They used a composed index of SO₂, NO_x and Chemical Oxygen Demand (COD) emission for environmental performance and ROS, ROE and rate of return on capital employed (ROCE) for economic performance. Wagner et al. found that ROS and ROE showed negative relation and ROCE positive relation.

2.2 Environmental Management Transfer

Hansen (2002) using case study methodology analyzed environmental management across borders in India, Malaysia and China from 1998 to 2001. He showed important details about environmental management diffusion in developing countries, but his analysis does not reflect corporate practices after RoHS and REACH directives. We need to examine environmental management practices after RoHS regulation and analyze the data using statistical methodology.

Jeppesen and Hansen (2004) explained the environmental upgrading of developing country enterprises through linkages to transnational corporations. They indicated the determinants of international transfer are government regulation, market, internal resources and environmental strategy. Their model thus presented external factors and internal factors.

Kimbara and Murakami (2016) showed the transfer of environmental management across borders using data from Japanese multinational firms in Vietnam. Their conclusion indicated that environmental regulation has positive significant relation with the transfer of green

procurement, but economic performance was related to the transfer of environmental management system.

One study focused on the transfer of ISO14001 practices. Prakash and Potoski (2007) examined the conditions under which MNEs transfer corporate environmental practices from home countries to host countries. They emphasized that higher level of ISO14001 adoption in host countries is found only when foreign direct investment (FDI) originates in the home countries with high level of ISO14001 adoption.

Florida (1996) examined the transfer of environmental practices in Japanese transplants in the US. He found that practices such as total quality environmental management (TQEM), recycling, green process technology, worker involvement, supply chain integration and emission reduction are transferred across borders in the transplant. He suggested that customer-supplier relations make possible the transfer of environmental practices to overseas operations.

3. Methodology

3.1 Data

Data used in this paper were obtained from two sources. The first data source is the questionnaire survey that was used for collecting the data on the transfer of environmental practices in the subsidiary. This questionnaire survey was conducted in January and February of 2011 with Japanese manufacturing subsidiaries in Vietnam. We prepared a structured questionnaire. Four hundred manufacturing firms listed in the directories of Japanese affiliated companies in Vietnam by Toyo Keizai Shinpo Sha and Japan External Trade Organization (JETRO) were contacted by telephone and email and asked to participate in the survey. We worked with Vietnamese researchers in the translation of the questionnaire from Japanese into Vietnamese and discussed the data collection method. Vietnamese research assistants were hired to conduct face-to-face interviews with company managers using the structured questionnaire. The number of effective responses obtained was 96.

Buckley and Casson (1976) defined an MNE as a firm that operates in more than two countries. This definition, therefore, does not necessarily suggest a large firm. Smaller firms with less than 300 employees in the food, garment and stationary industries are sometimes included. Our focus is the Japanese subsidiary in Vietnam operating in the manufacturing sector. For these firms, we examined the transfer of environmental practices from parent to subsidiary.

The second source was ROE data obtained from Nihon Keizai Shinbunsha's NEEDS financial data. We used ROE as an indicator of shareholder value based on preceding studies. Nihon Keizai Shinbunsha is the largest economic newspaper in Japan. We used the

average of 2006 and 2010 ROE data and dependent variables as in 2010. We excluded 2008 and 2009 data because the world economy was in chaos after the Lehman Brothers collapse, and the 2008 to 2009 ROE data was slightly different from the other years. We chose the period, excluding 2008 and 2009, of the most recent 5 years up to 2010. The two datasets were then matched to obtain 40 effective samples for analysis.

3.2 Analytical Framework and Hypothesis

How firms transfer environmental management to overseas operations and what relations exist between shareholder value of the parent firm and the transfer of environmental practices to foreign operations are the issues to be analyzed. For the determinants of environmental management, Jeppesen and Hansen (2004) specified the determinants were government regulations, market, internal resources and strategy. Schaltegger and Synnestvedt (2002) specified that the environmental management of a firm depends on the state of business management, market and environmental interest of society and government. Beise and Rennings (2005) also saw that transfer of environmental innovation was determined by government regulation, market and organizational capabilities.

Based on the preceding studies in environmental management and strategic management, we developed a framework that consisted of external factors, environmental strategy, organizational practices and environmental performance of the subsidiary. With this framework, we investigated the relationship among variables and the influence of individual factors on the transfer. We examined the following hypothesis on the international transfer of environmental practices in Japanese subsidiaries in Vietnam.

Hypothesis: Firms with higher ROE performance tend to transfer environmental practices to overseas operations.

The basis for this hypothesis is that when a firm's ROE performance is better, the firm has more resources with the agreement of shareholders to invest in environment preservation so that the firm is likely to transfer related practices. In contrast, a firm that regards environmental investment as a cost increase will be reluctant to invest in environmental preservation and slow to transfer practices since the firm perceives the practices as incurred additional costs. As shown in the second section, a number of prior studies indicated the opposite result; one showed the positive impact of ROE, and another showed the negative impact of ROE. We examined the effects of ROE standing on the hypothesis of a positive impact of ROE.

The analytical model is shown below. The hypothesis is divided into 4 sub-hypotheses. An explained variable uses four indicators: environmental management (MANA), green

procurement (GREN), support in implementing supplier environmental management (EMSUP) and support in supplier improvement of environmental technologies (TESUP). There is a high correlation between GOAL and LDS of strategic factor ($r=0.577$, $p<0.01$). Accordingly, patterns are estimated using two indicators separately. The dummy variables mean that when the number of employees is less than 299, it is 0. When the number is greater than 300, it is 1.

$$\text{MANA}=\alpha+\beta_{m1}\text{GOV}+\beta_{m2}\text{COM}+\beta_{m3}\text{CUS}+\beta_{m4}\text{ROE}+\beta_{m5}\text{OSR}+\beta_{m6}\text{JOWN} \\ +\beta_{m7}\text{LDS}(\text{GOAL})+\beta_{m8}\text{D_Scale} \quad (1)$$

$$\text{GREN}=\alpha+\beta_{g1}\text{GOV}+\beta_{g2}\text{COM}+\beta_{g3}\text{CUS}+\beta_{g4}\text{ROE}+\beta_{g5}\text{OSR}+\beta_{g6}\text{JOWN} \\ +\beta_{g7}\text{LDS}(\text{GOAL})+\beta_{g8}\text{D_Scale} \quad (2)$$

$$\text{EMSUP}=\alpha+\beta_{e1}\text{GOV}+\beta_{e2}\text{COM}+\beta_{e3}\text{CUS}+\beta_{e4}\text{ROE}+\beta_{e5}\text{OSR}+\beta_{e6}\text{JOWN} \\ +\beta_{e7}\text{LDS}(\text{GOAL})+\beta_{e8}\text{D_Scale} \quad (3)$$

$$\text{TESUP}=\alpha+\beta_{t1}\text{GOV}+\beta_{t2}\text{COM}+\beta_{t3}\text{CUS}+\beta_{t4}\text{ROE}+\beta_{t5}\text{OSR}+\beta_{t6}\text{JOWN} \\ +\beta_{t7}\text{LDS}(\text{GOAL})+\beta_{t8}\text{D_Scale} \quad (4)$$

3.3 Variables

The main variables in this study are external factors, organization of parent firm, environmental strategy of the subsidiary, the environmental practice and system used in the subsidiary and subsidiary support of the suppliers (Table 1, Table 2). This framework includes significant dimensions in the analysis of strategic management and organization theory.

Table 1. Descriptive statistics

Variable			Mean	SD
External factor	GOV	Government environmental regulations and mandates are strict	3.732	(0.837)
	COM	Community's demand in Thailand for environmental performance is strong	3.073	(1.191)
	CUS	Customer's demand in Thailand market for environmental performance is strong	3.950	(0.876)
Organization of parent firm	ROE	Parent company's ROE (return on equity) [average of 2006, 07, 10]	10.523	(4.791)
	OSR	Parent company's ratio of overseas sales [average of 2006, 07, 10]	49.163	(23.860)
	JOWN	The ownership ratio of Japanese parent firms	94.833	(13.708)
Environmental strategy	LDS	Leadership on environmental issues by top management is strong	4.205	(0.656)
	GOAL	Your company has specific goals for reducing environmental burdens	4.190	(0.707)
Management system	ISO	Your company has obtained ISO14001 certification	2.634	(0.662)
	REP	Your company's emission data is reflected to parent company's environmental report	2.952	(0.309)
	GREN	The green procurement level of your company is equal to those of companies in Japan	3.237	(0.971)
Suppliers supports	EMSUP	Your company supports your suppliers in implementing environmental management	3.095	(1.078)
	TESUP	Your company supports your suppliers in their improvement of environmental technologies	2.786	(0.925)

Note: The items are measured in a Likert 5-point scale, but ISO and REP are measured at 3 points.

Table 2. Correlation among variables

	1	2	3	4	5	6	7	8	9	10	11	12
1 GOV	1.00											
2 COM	0.52**	1.00										
3 CUS	0.05	0.25	1.00									
4 ROE	0.17	0.13	0.02	1.00								
5 OSR	0.15	0.25	-0.04	0.61**	1.00							
6 JOWN	-0.36*	-0.23	0.14	-0.19	-0.27	1.00						
7 LDS	0.24	0.20	0.12	0.01	-0.06	-0.36*	1.00					
8 GOAL	0.42**	0.22	0.14	-0.19	-0.08	-0.33*	0.58**	1.00				
9 MANA	0.14	0.17	0.01	-0.14	0.25	-0.23	0.18	0.51**	1.00			
10 GREN	-0.03	0.28	0.31	0.07	0.22	0.14	0.37*	0.20	0.08	1.00		
11 EMSUP	0.00	0.34*	0.27	-0.16	0.11	0.08	0.25	0.26	0.31*	0.55**	1.00	
12 TESUP	-0.01	0.24	0.20	-0.25	0.07	-0.03	0.41*	0.36*	0.31*	0.57**	0.68**	1.00

Note: ISO and REP are combined and summed up as MANA.

Note: * p <0.05, ** p<0.01

External factors have three indicators: GOV means the host government environmental regulation is strict; COM means the community has strong demands on the environment; and CUS means the customer requirements in the market are strong.

Next, the indicators of the organization of parent firm are ROE, ownership ratio of Japanese parent firms (JOWN) and parent company's overseas sales ratio (OSR). ROE indicates shareholder value. The question is when shareholder value in parent firms is larger if the parent firm will make greater environmental investment in foreign operations and, as a result, improve environmental performance of subsidiary firms.

JOWN is measured by the ownership ratio of Japanese parent firms. OSR is measured by the parent company's average ratio of overseas sales from 2006 to 2010 excluding 2008 and 2009, which was influenced by the Lehman Brothers collapse. As control variables, R&D intensity, advertising cost ratio, debt ratio and capital intensity are often used for the analysis of domestic operations (Hart and Ahuja, 1996). When we analyze the relationship in foreign affiliates, overseas sales ratio and foreign ownership ratio are more relevant since they reflect corporate global strategy. We expect the internationalization of business will, in general, require that products comply with RoHS regulation.

The indicators of strategic factors of the subsidiary are measured in terms of top leadership for environment (LDS) and goal of environmental management (GOAL). The organizational practices and system are measured using three indicators: ISO14001 (ISO), environmental report (REP) and green procurement (GREN). Items are measured in a Likert 5-point scale, but ISO and REP are measured at 3 points. ISO and REP are combined as

MANA and the scores are summed up.

The suppliers supported by the subsidiary are measured by the degree of support in implementing supplier environmental management (EMSUP) and support in supplier improvement of environmental technologies (TESUP).

4. Results of Analysis

Based on the models, the data was analyzed using ordinary least squares (OLS). The results are shown in Table 3. The results show the following important points.

First, ROE has a significant negative relationship with the transfer of environmental management system (MANA) in both variables of top leadership (LDS) or environmental goal (GOAL). In the case of EMSUP and TESUP as the explained variables, when LDS is used, the same results were obtained. ROE has a negative relationship with the transfer of green procurement (GREN) even though the result is not significant. The results show that firms with high ROE are likely to slow the transfer of environmental practices. These results indicate that the study hypothesis is not supported and suggest that shareholders do not strongly press firms to disseminate environmental practices.

Second, OSR has a positive relationship to MANA, GREN, EMSUP and TESUP. When GOAL is used, OSR shows a significant positive relationship to MANA. This result indicates that the environmental management system is strongly related to the degree of overseas operations. When firms operate globally, they increasingly face environmental regulations and CSR pressure in both the host country and international markets. They therefore are required to take environment-oriented practices to obtain support from market and society.

Third, GOAL has a significant positive relationship to MANA. This result indicates that the environmental management system is strongly related to the degree to which the management goal of the subsidiary is embedded in the management philosophy.

Fourth, firm size plays a decisive role in establishing environmental management systems (MANA). Large firms generally receive more external pressure to act in socially responsible ways, and large firms are more likely to develop environmental management systems than smaller firms since large firms have more resources to adapt to such pressures.

Fifth, LDS has a significant positive relationship to GREN and TESUP. This result indicates that the transfer of green procurement and environmental technologies are strongly related to the corporate initiatives of the subsidiary and parent company.

Sixth, COM has a significant positive relationship to EMSUP and GREN when we used LDS variables. CSR (Corporate Social Responsibility) makes mandatory green procurement practice and support for the supplier's environmental management. This result implies that the community requires multinational firms to take positive action to implement green

procurement and its diffusion to suppliers.

Seventh, the regulation of the host government is not significant to MANA, GREN, EMSUP and TESUP. MNEs however are required to submit environmental reports such as

Table 3. Results of analysis

	Model 1 (MANA)				Model 2 (GREN)			
	Coefficient	t value	Coefficient	t value	Coefficient	t value	Coefficient	t value
GOV	-0.061	-0.332	-0.197	-1.179	-0.320	-1.889	-0.378	-1.800
COM	0.161	0.891	0.199	1.245	0.385	2.142*	0.411	1.940
CUS	-0.136	-0.869	-0.148	-1.075	0.072	0.484	0.117	0.670
ROE	-0.533	-3.039**	-0.383	-2.348*	-0.147	-0.815	-0.044	-0.208
OSR	0.326	1.751	0.372	2.270*	0.278	1.449	0.205	0.902
JOWN	-0.145	-0.845	-0.023	-0.162	0.397	2.504*	0.265	1.479
LDS	0.118	0.695			0.599	3.894**		
GOAL			0.452	2.904**			0.319	1.613
D_scale	0.438	2.868**	0.331	2.467*	0.085	0.588	0.094	0.547
Constant	5.864	4.285**	4.386	3.994**	-3.278	-1.789	-0.604	-0.306
Adj R ²		0.326		0.441		0.429		0.162
F value		3.052*		4.648**		4.000**		1.823
DW		2.380		2.241		1.753		1.911

	Model 3 (EMSUP)				Model 4 (TESUP)			
	Coefficient	t value	Coefficient	t value	Coefficient	t value	Coefficient	t value
GOV	-0.270	-1.438	-0.298	-1.541	-0.188	-1.073	-0.242	-1.249
COM	0.442	2.323*	0.447	2.383*	0.260	1.461	0.262	1.389
CUS	0.023	0.142	0.049	0.304	0.079	0.515	0.062	0.383
ROE	-0.406	-2.235*	-0.292	-1.556	-0.443	-2.606*	-0.347	-1.843
OSR	0.218	1.127	0.234	1.233	0.317	1.751	0.260	1.362
JOWN	0.182	1.020	0.183	1.088	0.157	0.941	0.069	0.410
LDS	0.319	1.870			0.429	2.683*		
GOAL			0.280	1.554			0.312	1.725
D_scale	0.173	1.082	0.152	0.971	0.241	1.613	0.242	1.539
Constant	-0.483	-0.207	-0.230	-0.108	-1.144	-0.600	0.586	0.320
Adj R ²		0.244		0.218		0.338		0.212
F value		2.414*		2.323*		3.236*		2.279*
DW		1.741		1.726		1.926		2.072

Note: * p <0.05, ** p <0.01

air, water and chemicals to the supervisory office of the host government. Host government regulation does not seem to be a driving force of the transfer, and transfer depends on whether host government regulation is minimum criteria or a strict requirement and a definitive goal.

5. Discussion

From the analysis, we found that the relation of shareholder value to environmental management system (MANA) is negative. Shareholder value thus shows reluctance of transfer of environmental management system because the firm regards environmental investment as a cost increase or does not care about the environment. The reasons and process of the results require further investigation.

The effect of ROE on environmental transfer has two aspects. One is positive. Hart and Ahuja (1996) showed that ROE has a significant positive relation with environmental performance. Viewing their evidence, ROE may enhance environmental performance in overseas operations. The transfer then of environmental management practices to overseas operations is strengthened.

The other is a negative aspect that Corderio and Sarkis (1997) showed. Management based on ROE pursues shareholder profit. When ROE emphasis is strong, the likelihood is avoiding cost increase caused by environmental investment. The result is restraining the international transfer of environmental practice. The relationship between ROE and the transfer then becomes negative.

Kimbara and Murakami (2016) in above-mentioned study showed that economic performance of ROA and ROS positively impacts the discretionary practices of the environmental management system.

The results of this paper showed that ROE has a negative relation to the environmental management system. This means that shareholders do not strongly influence environmental investment, which leads to the decrease of shareholder profit. The shareholder is therefore passive in implementing environmental management and green procurement in the international dimension. ROE as well does not show strong relations with green procurement. Green procurement reflects regulation and social pressure rather than economic performance.

These results imply that when shareholder control of a firm is strong, firms are not proactive in taking environmental practices in overseas operations. Strengthening the enforcement of environmental regulation or guidelines such as ISO14001 or global reporting initiative (GRI) is necessary to contribute to sustainability. In this sense, in the society where firms tend to be controlled to pursue shareholders value, we need stronger regulations.

On the contrary, when there is a collaborative relationship between firms and society or government (Hall and Soskice, 2001), building collaborative relations with direct dialogue is effective. These differences of governance style originate from the difference in corporate governance in each society that has a specific consensus of corporate social responsibility.

To understand environmental management practice and investment behavior, understanding the influence of institutional characteristics of corporate governance is important (Delma, 2002). Firms exist as a social institution in a society and that society approves of firm existence. Firm role and conduct are then fundamentally influenced by the societal value system. In fact, there are differences in terms of the objectives of a firm and corporate governance in developed countries. This fact suggests different shareholder influence in investment of environmental practices.

We recognize two models of corporate governance. One is that shareholders have sovereignty since they are regarded as owners of a firm. The other is that stakeholders have sovereignty. These are often termed the Anglo-Saxon model and the Rhine model.

With shareholder sovereignty, shareholder value is the supreme objective for firms. As a result, the interest in environmental practices is regarded as an increased cost for firms. Consequently, environmental investment and its transfer to overseas operations as well will be slowed in the shareholder approach.

On the contrary, stakeholder sovereignty encourages firms to take greater positive environmental action since firms need to consider the environment and consumer and community requirements. Firms then with a stakeholder approach need to take environmental action when stronger external pressure is present.

6. Conclusion

This paper analyzed the relation of shareholder value of MNEs to the international transfer of environmental management practices. The results of the analysis have not supported the hypothesis. The results show that the shareholder value of parent firms slows the transfer of environmental management system to subsidiary firms under certain conditions. We recognize that environmental management depends on the institutional characteristics of corporate governance.

Although our research suggests meaningful findings about the transfer of environmental management practices, the study has limitations. The analysis used a small number of samples, and the samples were collected from one country at a specific economic stage of development. These findings require verification in another country with a larger sample. In spite of these limitations, our research suggests a useful, logical relationship between shareholder value and transfer of environmental management practices to overseas operations and contributes to the developing and advancing the research agenda.

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