



Green organizational identity: sources and consequence

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Abstract

Purpose – This study aims to develop an original framework of green organizational identity to explore the positive effects of environmental organizational culture and environmental leadership on green competitive advantage through the partial mediator – green organizational identity.

Design/methodology/approach – This study proposes an original concept – green organizational identity – to develop an integral framework to enhance green competitive advantage. Structural Equation Modeling (SEM) is applied to verify the research framework.

Findings – The results showed that environmental organizational culture and environmental leadership are positively associated with green organizational identity and green competitive advantage. Green organizational identity had a partial mediation effect on the positive relationships between two antecedents – environmental organizational culture and environmental leadership – and green competitive advantage. Companies should enhance their environmental organizational culture and environmental leadership to raise their green organizational identity and further to increase their green competitive advantage. Furthermore, this study found that environmental organizational culture, environmental leadership, green organizational identity, and green competitive advantage of medium and small enterprises (SMEs) were all significantly less than those of large enterprises in the manufacturing industry in Taiwan.

Practical implications – It is imperative for SMEs to enhance their environmental organizational culture and environmental leadership to strengthen their green organizational identity and further to improve their green competitive advantage.

Originality/value – This study applies the theory of organizational identity to propose a novel concept – green organizational identity – and develops an integral conceptual model to explore its managerial implications, antecedents, and consequence.

Keywords Organizational culture, Environmental management, Corporate identity, Competitive advantage

Paper type Research paper

Introduction

Growing environmental forces from a variety of sources in the last several decades – environmental regulations and consumer environmentalism – have been implemented to solve serious environmental pollution from the increasing industrial activities in the world. The impacts of the strict environmental conventions – Montreal Convention, Kyoto Protocol, Restriction of the Use of Certain Hazardous Substances in EEE (RoHS), and Waste Electronics and Electrical Equipment (WEEE), etc. – and the rising consumer environmentalism would change the context of competition in the industries around the world. Under the huge change, it is not only necessary to adopt a preventive approach to environmental pollution to protect the environment, but also important to



improve business model and management thinking to stimulate the green opportunities and innovations. Informed and concerned stakeholders such as consumers and employees are alert to environmental performance and would not hesitate to take action against companies, which they perceive to be environmentally irresponsible. This movement has been characterized as the increasing importance of environmental management for companies nowadays. Effective environmental management consists of elements that span all aspects of an organization's operations (Lee, 2009). Thus, the concepts of environmental management, such as green design, green marketing, green products, and green production, are now being developed in order to conquer the challenge from the popularity of environmentalism. Hence, environmental management is more important within organizations and it is becoming a crucial part of business management.

Many companies argue corporate environmental management as an unnecessary and ineffective investment, or even misunderstand that it is harmful to the development of the companies. However, several scholars assert that pollution results from inefficient uses of resources, and companies that pioneer in environmental management or green innovation will possess the "first mover advantage", which allows them to enjoy higher benefits for green products, to improve their green images, and to gain competitive advantages (Porter and van der Linde, 1995; Chen, 2008a). The concept of organizational identity is concerned with collective identity (Albert and Whetten, 1985). Subsequently, organizational identity is a motivator in that it influences the actions of people in an organization, a social reality or essence, and a metaphor for describing organizations or an actual phenomenon (Corley *et al.*, 2006). Individuals or groups construct it through symbols and language (Corley *et al.*, 2006). When concern for the environment becomes an integral component of organizational identity, environmental issues become harder to ignore (Weick, 1988). Environmental issues may be legitimated as an integral part of organizational identity on the basis of an internal economic focus or a broader corporate social responsibility focus (Sharma *et al.*, 1999).

Under the trends of strict environmental laws and popular environmental consciousness of consumers, managers should not shirk their duties, because these environmental challenges could be turned into business opportunities that drive them to carry out their environmental organizational identities which can further increase their green competitive advantages. This study focused on proposing and discussing the new concept of environmental management – green organizational identity – in compliance with the environmental trends to help companies enhance their green competitive advantages. This has led to the need of this research to propose the novel construct, green organizational identity, to develop an original environmental management model based on the theory of organizational identity. Although prior study widely discusses the theory of organizational identity in the field of business administration, no research proposes an integral organizational identity model in the field of environmental management. Based on the theory of organizational identity, this study develops a green organizational identity framework to fill the research gap.

Organizational identity is a shared interpretive scheme that members collectively create to provide meaning to their actions, choices, and behaviors (Gioia, 1998). This study proposes the concept of "green organizational identity" and argues that it plays the role of interpretive scheme with respect to environmental issues. The symbol

context of an organization is an important source of identity-creating that can become a non-imitable interpretive scheme would positively influence competitive advantage (Hatch, 1993; Fiol, 2001). Environmental organizational culture embedded within an organization provides the symbolic material from which the meaning with respect to environmental issues in the organization can be interpreted. In addition, environmental leadership can be thought as a symbol of organizational identity with respect to environmental issues, because it is a dynamic process where a leader of an organization affects the interpretation of environmental issues. Thus, the antecedents of green organizational identity are two sources of symbol context – “environmental organizational culture” and “environmental leadership” – and its consequent is “green competitive advantage” which is described a non-imitable condition under which firms occupies some positions about environmental management or green innovation. Green organizational identity is a partial mediator in the research framework. This study develops a “symbol context-interpretive scheme-outcome” framework to explore the managerial implications, antecedents, and consequence of green organizational identity.

Literature review and hypothesis development

Corporate environmental management

In recent years, due to the enormous amount of environmental pollution, which directly connects with industrial manufacturing in the world, the society has noticed environmental issues increasingly (Chen, 2008b). There are more environmental forces influencing companies' operation which are the environment policies of governments, national and international environmental regulations, stakeholder activism and environmentalism, and competitive pressures (Rugman and Verbeke, 1998). Therefore, companies have no choice but to carry out environmental protection activities to comply with international regulations of environmental protection and environmental consciousness of consumers (Berry and Rondinelli, 1998). Instead of compliance, more and more companies are willing to accept the responsibility of being less harmful to the environment because of the strategic consideration (Chen, 2008b). Proper environmental regulations or standards can trigger green innovations that actually decrease cost, increase productivity, or make companies more competitive (Porter and van der Linde, 1995; Chen *et al.*, 2006). Nowadays, environmental concern has rapidly emerged as a mainstream issue for consumers because of global warming, and many businesses are seeking to catch the opportunity.

Corporate environmental management is defined as managerial activities, processes, approaches, or concepts which can help companies achieve their environmental goals, comply with the environmental regulations, anticipate the environmental impacts of their operations, take measures to reduce waste and pollution in advance of regulations, or find positive ways of taking advantage of business opportunities through environmental improvements in order to enhance the effectiveness or efficiency of their environmental activities (Berry and Rondinelli, 1998; Chen, 2008a; Chen, 2008b). Businesses that adopt the proactive environmental management strategies could integrate the objectives of environmental protections with different departments in companies to solve the environmental problems by utilizing the innovative environmental technology (Greeno and Robinson, 1992). Therefore, there is a need in management fields to anticipate and to plan for

environmental concerns and to incorporate this thinking into corporate strategies (Haden *et al.*, 2009). Therefore, an emerging field of management is that dealing with the natural environment as it affects corporate strategy (Rugman and Verbeke, 1998). Pollution is the output of inefficient uses of resources, and companies that pioneer in green innovation will enjoy the “first mover advantage”, which enables them to charge a higher price for green products and improve their competitiveness (Porter and van der Linde, 1995; Chen *et al.*, 2006; Molina-Azorín *et al.*, 2009; Dwyer, 2009). In addition, companies may embody the concept of green products in the design and package of their products to increase their differentiation advantages of their products (Porter and van der Linde, 1995; Chen *et al.*, 2006).

Corporate social responsibility (CSR) and strategic CSR

Corporate social responsibility (CSR) is defined as situations where the firm goes beyond compliance and engages in “actions that appear to further some social good, beyond the interests of the firm and that which is required by law” (McWilliams and Siegel, 2001). There are several theoretical perspectives discussing about CSR as follows. Agency theory perspective doubts about why firms should take CSR and implies that managers can use CSR to advance their careers or other personal agendas such that CSR is a misuse of corporate resources that would be better spent on valued-added internal projects or returned to shareholders (Friedman, 1970). Stakeholder theory implies that it is beneficial for a firm to engage in CSR activities that non-financial stakeholders perceive to be important, because these groups might withdraw their support for the firm that does not engage in CSR (Freeman, 1984). Stewardship theory argues that there is a moral imperative for managers to do the right thing without regard to how such decisions affect firm financial performance, so this perspective supports companies to engage in CSR (Donaldson and Preston, 1995). Institutional theory asserts that companies involved in repeated transactions with stakeholders on the basis of trust and cooperation are motivated to be honest, trustworthy, and ethical such that CSR is beneficial for corporate performance because the returns to such behavior are high (Jones, 1995). Resource-based view (RBV) perspective asserts that environmental social responsibility can constitute a resource or capability that leads to a sustained competitive advantage (Hart, 1995). Strategic leadership theory argues that certain aspects of transformational leadership would be positively correlated with the propensity of firms to engage in CSR and that these leaders would employ CSR activities strategically (Waldman *et al.*, 2004).

McWilliams and Siegel (2001) used the RBV framework to develop a more formal theory-of-the-firm model of profit maximizing CSR and found out that there is an ideal level of CSR, which managers can determine via cost-benefit analysis, so there is a neutral relationship between CSR and financial performance. Husted and Salazar (2006) demonstrated that it is wiser for companies to act strategically than to be coerced into making investments in corporate social responsibility. The theory of the firm perspective on CSR has two strategic implications: first, CSR can be an integral element of a firm’s business and corporate-level differentiation strategies, so it should be considered as a form of strategic investment; second, if one can apply the RBV logic to CSR, it is possible to generate a set of predictions regarding patterns of investment in CSR across firms and industries (McWilliams *et al.*, 2006). Reinhardt (1998) pointed out that a firm engaging in a CSR-based strategy can generate an abnormal return if it

can prevent competitors from imitating its strategy. Thus, it is true that firms can use CSR to achieve a sustainable competitive advantage.

Organizational identity

Organizational identity is the set of beliefs about what is most core, enduring, and distinctive about an organization (Albert and Whetten, 1985). Every organization requires an identity for internal and external stakeholders to construct a sense of how it interacts with other organizations, groups, and people (Albert *et al.*, 2000). Organizational identities help members make sense of what they do in relation to their understanding of what their organization is. In addition, organizational identities provide the context within which members interpret and assign profound meaning to surface-level behavior (Fiol, 1991).

Organizational identity resides in shared interpretive schemes that members collectively construct in order to provide meaning to their experience (Gioia, 1998). Although organizational identity can affect organizational members' thinking and behaviors, organizational members, especially leaders, can modify their interpretations or promote new conceptualizations that would reshape organizational identity when they face environmental changes (Gioia and Thomas, 1996). Although prior study widely discusses the theory of organizational identity in the field of business administration, no research proposes an integral organizational identity model in the field of environmental management. This study proposes the novel concept of "green organizational identity" and refers to Albert and Whetten (1985) to define "green organizational identity" as an interpretive scheme about environmental management and protection that members collectively construct in order to provide meaning to their behaviors. This study develops an original green organizational identity framework to explore the positive effects of environmental organizational culture and environmental leadership on green competitive advantage via green organizational identity.

The positive effect of environmental organizational culture

Organizational culture can be defined a set of shared mental assumptions that guide interpretation and action in organizations by defining appropriate behavior for various situations (Fiol, 1991). While organizational culture tends to be mostly tacit and autonomous and rooted in shared practices, organizational identity is inherently relational and consciously self-reflexive (Hatch and Schultz, 2002). Organizational culture acts as a context for sensemaking efforts and internal self-definitions (Hatch and Schultz, 2002). In addition, culture is perceived as an interpretive frame that guides behaviors and processes of sensemaking (Denison and Mishra, 1995). In this perspective, actors are constantly involved in processes of sensemaking and the construction of meaning through interactions with other actors and with their environment. Contrary to perceiving organizational culture as a system of organizational sensemaking, Hatch and Schultz (1997) perceived organizational culture as a symbolic context within which interpretations of organizational identity are formed and intentions to influence organizational image are formulated. Hatch and Schultz (1997) argued that organizational culture needs to be considered in explanations of the development and maintenance of organizational identity. Identity involves how individuals define and experience and this is influenced by their activities and beliefs which are grounded in and justified by culture (Hatch, 1993).

Culturally embedded organizational identity provides the symbolic material from which the meaning within the organization can be interpreted (Hatch and Schultz, 1997). Therefore, culture is closely related to identity (Christensen, 1995). This study refers to Hatch and Schultz (1997) and defines “environmental organizational culture” as a symbolic context about environmental management and protection within which interpretations guide behaviors and processes of members’ sensemaking. The symbols of organizational culture become important sources of identity-building material, such that organizational identity is a self-reflexive product of the dynamic processes of organizational culture (Hatch, 1993). Therefore, this study proposes the following hypothesis:

- H1.* Environmental organizational culture of a firm is positively associated with its green organizational identity.

Porter (1980) and Barney (1991) defined competitive advantages of a company as a condition under which competitors are unable to replicate its competitive strategies executed by the company, nor are competitors able to acquire the benefit that the company obtains by means of its competitive strategies. Based on the previous literature on strategic CSR has been discussing the creation of competitive advantages based on social and environmental leadership in the last years (Hart, 1995; McWilliams and Siegel, 2001; Husted and Salazar, 2006; McWilliams *et al.*, 2006), this study defines green competitive advantage as a condition under which firms occupies some positions about environmental management or green innovation where their competitors cannot copy its successful environmental strategies and they can gain the sustainable benefits from these successful environmental strategies. Barney (1986) argued that if a firm’s culture is valuable, unique, and imperfectly imitable, then its culture can provide sustained competitive advantages. The organizational culture of the environmental issue as an integral part of organizational identity is one of the key elements for the achievement of superior environmental performance in companies (Egri and Herman, 2000; Sharma, 2000; Fernández *et al.*, 2003). Thus, from the view of organizational culture as a strategic tool, firms can obtain competitive advantages from their valuable, unique, and imperfectly imitable organizational cultures (Fiol, 1991). Previous studies thought companies that pioneer in the field of green management can enjoy the “first mover advantages” which allow them to obtain competitive advantages (Porter and van der Linde, 1995). Hence, this study postulates the following hypothesis:

- H2.* Environmental organizational culture of a firm is positively associated with its green competitive advantage.

The positive effect of environmental leadership

Top managers are able to interpret issues, because they identify threats, formulate strategy, communicate with the groups, and resolve conflicts (Foreman and Whetten, 2002). Therefore, organizational identity is formed by top leaders’ interpretations and beliefs that guide and drive the organization’s behavior (Foreman and Whetten, 2002). A primary goal of leadership is establishing a unified identity that organizational members can understand and follow (Scott and Lane, 2000). Leadership can be defined as the process where an individual member of an organization influences the interpretation of events, choice of objectives and strategies, and motivation of people to achieve objectives (Dechant and Altman, 1994). Leadership can be considered as a

symbol of organizational identity, because it can be used to influence what employees perceive, feel, and think about the organization (Hatch and Schultz, 1997). Because top managers must lead employees into involvement in the company's environmental activities, top managers' ecological awareness is highly associated with environmental performance (Fernández *et al.*, 2003). This study refers to Dechant and Altman (1994) and Cole (1996), and defines "environmental leadership" as a dynamic process in which one individual influences others to contribute to the achievement of environmental management and protection. Firms' leaders create a view that influences their members' values, commitments, and aspirations they intend to achieve in the environmental issue which is interpreted by them (Fernández *et al.*, 2003). Leaders usually use their interpersonal or communication skills that generate positive relations with the stakeholders (Egri and Herman, 2000). Leaders are very important in reaching the outstanding outcomes of environmental development, because they can stimulate an environmental vision to become part of organizational identity and lead their members' actions (Dutton and Dukerich, 1991; Fernández *et al.*, 2003). Thus, this study asserts the following hypothesis:

- H3.* Environmental leadership of a firm is positively associated with its green organizational identity.

Leadership is a dynamic process in which one individual influences others to contribute to the achievement of the group task (Cole, 1996). This influence would be perceived as fully legitimate by those people who are responding to the leadership process (Morden, 1997). Environmental leadership can provide competitive advantage for a company in two ways: catering for a demand in the market for environmentally responsible products or services ahead of its rivals; secondly; and generating cost savings that conserve energy and materials and reduce waste. In addition, environmental leadership can satisfy their stakeholders' environmentalism (Robinson and Clegg, 1998). Top managers can stimulate the motives for seeking organizational changes made to improve environmental performance and to gain the commercial and competitive benefits through environmental leadership. Therefore, environmental leadership is unlikely to be just altruism, but it can improve competitive advantage (Robinson and Clegg, 1998). Environmental leadership comes from four directions: inspiring a shared environmental vision; utilizing well-developed approaches to environmental management; creating partnerships with stakeholders to solve environmental problems and to accomplish environmental goals; and taking on the responsibility of environmental education with the intent of engaging employees in environmental management initiatives (Dechant and Altman, 1994). Ramus (2001) showed that the importance of the role of the leadership in breaking down organizational barriers to environmental progress such that companies can improve their environmental performance. Leaders' contribution is considered essential because they are responsible for creating the conditions through the creation of the strategic vision and the promotion of certain forms of corporate culture under which sustainable competitive advantage is achieved (Fernández *et al.*, 2003). Therefore, this study argues the following hypothesis:

- H4.* Environmental leadership of a firm is positively associated with its green competitive advantage.

The positive effect of green organizational identity

As a powerful cognitive schema, organizational identity can severely constrain organizational interpretations and actions (Dutton and Dukerich, 1991). Members' perception within a company about the identity of the company affects their interpretations of strategic issues, because the interpretations of strategic issues would affect the behaviors of the company's members (Dutton and Dukerich, 1991; Gioia and Thomas, 1996). If environmental issues result in positive associations in the organizational identity, they would create emotional associations in the managing interpretations and would stimulate the search for opportunities in their behavior rather than aversion to a threat (Fernández *et al.*, 2003). In this way, expressing environmental interpretations or putting forward a strategic environmental vision and implementing it adequately may constitute an environmental advantage (Sharma, 2000; Fernández *et al.*, 2003). An integral identity can spur members to seek solutions and create a sense of unity that can be a driving force behind a firm's superior performance (Dutton and Dukerich, 1991). Organizational identity as a core competence can lead to competitive advantage by contextualizing and providing meaning to new adaptive behaviors. By lending contextual firm-specific meanings to behaviors, organizational identity represents a non-imitable resource leading to sustainable advantages. Since identities are embedded in cultural systems of meaning, valuable organizational identities can provide sustainable competitive advantages (Fiol, 2001). Hence, this study proposes the following hypothesis:

- H5.* Green organizational identity of a firm is positively associated with its green competitive advantage.

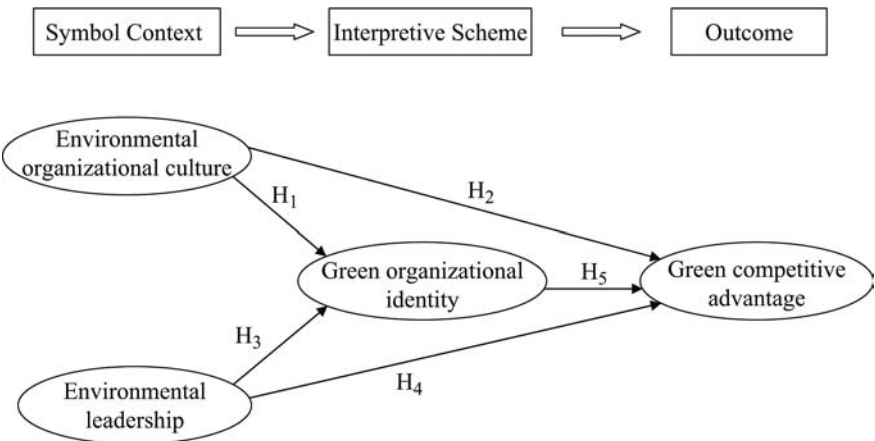
From organizational identity view, the symbol context of an organization is an important source of identity-building which can further result in a non-imitable interpretive scheme can lead to sustainability of competitive advantage (Hatch, 1993; Fiol, 2001). This study proposes the concept of "green organizational identity" and argues that it plays the role of interpretive scheme with respect to environmental issues. According to the theory of organizational identity, this study posits that the two antecedents of green organizational identity are two important sources of symbol context – "environmental organizational culture" and "environmental leadership" – and the consequent of green organizational identity is green competitive advantage. Green organizational identity plays the role of a partial mediator in the research framework. The integral "symbol context-interpretive scheme-outcome" research framework with respect to green organizational identity is shown in Figure 1.

Methodology and measurement

Data collection and the sample

The unit of analysis in this study was business level. This study applied the questionnaire survey to verify the hypotheses and research framework in the Taiwanese manufacturing industry. There are three reasons to select the Taiwanese manufacturing industry as research object. First, Taiwanese products which are highly export-oriented face strict environmental regulations, such as Montreal Convention, Kyoto Protocol, Restriction of the Use of Certain Hazardous Substances in EEE (RoHS), and Waste Electronics and Electrical Equipment (WEEE), so that Taiwanese manufacturing companies need to produce products which can satisfy their

Figure 1.
Research framework



consumers' environmental needs (Chen, 2010). It is meaningful to investigate the sources and consequence of their green organizational identity when environmental regulations become huge challenges for them. Second, comparing to international multinational enterprises (MNEs), most Taiwanese manufacturing companies have fewer resources (Chen *et al.*, 2006), so it is worth discussing the environmental management of Taiwanese manufacturing companies, which have no enough resources. Third, Taiwan is a newly emergent manufacturing base in the world. It is interesting to explore how Taiwanese manufacturing companies enhance their green competitive advantages via green organizational identity, when environmental regulations are stricter. These specific characteristics in the Taiwanese manufacturing industry can contribute to theoretical development. The sample of questionnaire survey was randomly selected from "2008 Business Directory of Taiwan" of Business Express Co, Ltd. The respondents of the questionnaires were the CEOs or the managers of environmental, marketing, HR, manufacturing, or R&D departments in Taiwanese manufacturing companies. To heighten the valid survey response rate, the research assistants of this study called to each company which was sampled, explained the objectives of the study and the questionnaire contents, and confirmed the names and job titles of the respondents prior to questionnaire mailing. The respondents were asked to return the completed questionnaires within two weeks through mailing.

The study referred to the past literature to design questionnaire items for the survey. Prior to mailing to the respondents, eight experts and scholars were asked to modify the questionnaire in the first pretest. Subsequently, the questionnaires were randomly mailed to 12 CEOs or managers of environmental, marketing, HR, manufacturing, or R&D departments in different Taiwanese manufacturing companies and they were asked to fill in the questionnaire and identify the ambiguities in terms, meanings and issues in the second pretest. High content validity is a necessary requisition for the questionnaire in this study. To avoid common method variance (CMV), the respondents of different constructs in this study will be different. For example, the respondents of "environmental leadership" are managers of environmental departments; those of "environmental organizational culture" are managers of HR, manufacturing, marketing, or R&D departments; those of "green

organizational identity” are managers of HR, manufacturing, marketing, or R&D departments; and those of “green competitive advantage” are CEOs in the Taiwanese manufacturing companies. Four hundred questionnaires were sent to CEOs or managers of environmental, marketing, HR, manufacturing, or R&D departments. There were 138 valid questionnaires, and the effective response rate was 34.5 percent.

Definitions and measurements of the constructs

The measurement of the questionnaire items was by use of “five-point Likert scale from 1 to 5” rating from strongly disagreement to strongly agreement. The definitions and measurements of the constructs in this study were in the following:

- (1) *Environmental organizational culture*. The construct, “environmental organizational culture”, was not validated before this study. This study proposes the concept of “environmental organizational culture” and refers to Hatch and Schultz (1997) to define it as a symbolic context about environmental management and protection within which interpretations guide behaviors and processes of members’ sensemaking. This study refers to Denison and Mishra (1995) to measure “environmental organizational culture”. The measurement of environmental organizational culture includes six items:
 - the company concerns the knowledge of environmental management and protection;
 - the company concerns the collaboration of environmental management and protection;
 - the company concerns environmental agreements;
 - the company concerns the change of environmental management and protection;
 - the company concerns the responsiveness of environmental management and protection; and
 - the company concerns the vision of environmental management and protection (Denison and Mishra, 1995).
- (2) *Environmental leadership*. The construct, “environmental leadership”, was validated before this study. This study refers to Dechant and Altman (1994), and Cole (1996) and defines “environmental leadership” as a dynamic process in which one individual influences others to contribute to the achievement of environmental management and protection. The measurement of environmental leadership includes four items:
 - the leaders within the company inspire a shared vision of the organization as environmentally sustainable, creating or maintaining green values throughout the company;
 - the leaders within the company utilize well-developed approaches to environmental management which generally center around a program customized to the company’s specific business and market;
 - the leaders within the company create partnerships with the company’s stakeholders to solve environmental problems and to accomplish environmental goals; and

- the leaders within the company can take on the responsibility of environmental education with the intent of engaging employees in environmental management initiatives (Dechant and Altman, 1994).
- (3) *Green organizational identity.* The construct, “green organizational identity”, was not validated before this study, though organizational identity was validated. This study proposes the novel concept of “green organizational identity” and refers to the definition Albert and Whetten (1985) about organizational identity to define “green organizational identity” as an interpretive scheme about environmental management and protection that members collectively construct in order to provide meaning to their behaviors. In addition, the measurement of organizational identity was validated before this study according to Gioia and Thomas (1996). This study refers to Gioia and Thomas (1996) to measure “green organizational identity”. The measurement of green organizational identity includes six items:
- the company’s top managers, middle managers, and employees have a strong sense of the company’s history about environmental management and protection;
 - the company’s top managers, middle managers, and employees have a sense of pride in the company’s environmental goals and missions;
 - the company’s top managers, middle managers, and employees feel that the company has carved out a significant position with respect to environmental management and protection;
 - the company’s top managers, middle managers, and employees feel that the company have formulated a well-defined set of environmental goals and missions;
 - the company’s top managers, middle managers, and employees are knowledgeable about the company’s environmental traditions and cultures; and
 - the company’s top managers, middle managers, and employees identify strongly with the company’s actions with respect to environmental management and protection (Gioia and Thomas, 1996).
- (4) *Green competitive advantage.* Based on the previous literature on strategic CSR has been discussing the creation of competitive advantages based on social and environmental leadership in the last years (Hart, 1995; McWilliams and Siegel, 2001; Husted and Salazar, 2006; McWilliams *et al.*, 2006), the construct, “green competitive advantage”, was validated before this study. This study refers to Hart (1995), McWilliams and Siegel (2001), Husted and Salazar (2006), and McWilliams *et al.* (2006) to define “green competitive advantage” as a condition under which firms occupies some positions about environmental management or green innovation where their competitors cannot copy its successful environmental strategies and they can gain the sustainable benefits from these successful environmental strategies. This study refers to Porter (1980), Barney (1991), Porter and van der Linde (1995), Hart (1995), McWilliams and Siegel (2001), Husted and Salazar (2006), and McWilliams *et al.* (2006) to measure green competitive advantage. The measurement of green competitive advantage of firms includes eight items:

- the company has the competitive advantage of low cost about environmental management or green innovation compared to its major competitors;
- the quality of the green products or services that the company offers is better than that of its major competitor's green products or services;
- the company is more capable of environmental R&D and green innovation than its major competitors;
- the company is more capable of environmental management than its major competitors;
- the company's profitability with respect to its green products or services is better;
- the growth of the company with respect to its green products or services exceeds that of its major competitors;
- the major competitors of the company can't imitate its green products or services easily; and
- the major competitors of the company can't replace its distinctive position about environmental management or green innovation easily (Porter, 1980; Barney, 1991; Porter and van der Linde, 1995; Hart, 1995; McWilliams and Siegel, 2001; Husted and Salazar, 2006; McWilliams *et al.*, 2006).

Empirical results

This study utilized Structural Equation Modeling (SEM) to verify the research framework and hypotheses, and applied AMOS 7.0 to obtain the empirical results. SEM of this study examined the two levels of analysis, the measurement model and the structure model, and their results were shown in the following.

The results of the measurement model

The means, standard deviations, and correlation matrix were shown in Table I. In Table I, there were positive correlations among environmental organizational culture, environmental leadership, green organizational identity, and green competitive advantage. The factor analysis of the four constructs was shown in Table II. Every construct in this study can be classified into only one factor. The study referred to the previous studies to design questionnaire items. Before mailing to the respondents, this study employed two pretests for the questionnaire revisions. Therefore, the measurement of this study was acceptable in content validity. Besides, there are two measurements to confirm the reliability of the constructs. First, one measure of the reliability is to examine the loadings of each constructs' individual items. With respect

Constructs	Mean	Standard deviation	A	B	C	D
A. Environmental organizational culture	3.941	0.599				
B. Environmental leadership	4.362	0.468	0.372 *			
C. Green organizational identity	3.831	0.580	0.391 *	0.420 *		
D. Green competitive advantage	4.048	0.636	0.416 *	0.368 *	0.268 *	

Note: * $p < 0.01$

Table I.
Means, standard
deviations and
correlations of the
constructs

to the quality of the measurement model for the sample, the loadings (λ) of all items of the four constructs listed in Table III are significant. Second, Cronbach's α is the other measure of the reliability. Table III listed Cronbach's α for the constructs. In general, the minimum requirement of Cronbach's α coefficient is 0.7 (Hair *et al.*, 1998). Because the Cronbach's α coefficients of all four constructs are more than 0.7, the measurement of this study was acceptable in reliability.

In addition, it is also important to verify whether the validity of the measurement in this study was acceptable. There are two measurements to confirm the validity of the constructs. First, this study applied Fornell and Larcker's measure of average variance extracted (AVE) to access the discriminative validity of the measurement (Fornell and

Table II.
Factor analysis of this study

Constructs	Number of items	Number of factors	Accumulation percentage of explained variance
Environmental organizational culture	6	1	51.6
Environmental leadership	4	1	56.2
Green organizational identity	6	1	53.1
Green competitive advantage	8	1	67.8

Table III.
The items' loadings (λ) and the constructs' Cronbach's α coefficients and AVEs

Constructs	Items	λ	Cronbach's α	AVE	The square root of AVE
A. Environmental organizational culture	EOC1	0.778	0.746	0.650	0.806
	EOC2	0.785 *			
	EOC3	0.791 *			
	EOC4	0.807 *			
	EOC5	0.812 *			
	EOC6	0.816 *			
B. Environmental leadership	EL1	0.838	0.730	0.738	0.859
	EL2	0.899 *			
	EL3	0.905 *			
	EL4	0.906 *			
C. Green organizational identity	GOI1	0.811	0.771	0.735	0.857
	GOI2	0.804 *			
	GOI3	0.831 *			
	GOI4	0.827 *			
	GOI5	0.825 *			
	GOI6	0.803 *			
D. Green competitive advantage	GCA1	0.799	0.842	0.703	0.838
	GCA2	0.804 *			
	GCA3	0.812 *			
	GCA4	0.819 *			
	GCA5	0.807 *			
	GCA6	0.824 *			
	GCA7	0.813 *			
	GCA8	0.820 *			

Note: * $p < 0.01$

Larcker, 1981). The AVE measures the amount of variance captured by the construct through its items relative to the amount of variance due to the measurement error. To satisfy the requirement of the discriminative validity, the square root of a construct's AVE must be greater than the correlations between the construct and other constructs in the model. For example, the square roots of the AVEs for the two constructs, environmental leadership and green organizational identity, are 0.859 and 0.857 in Table III, which are more than the correlation between them, 0.420, in Table I. This demonstrated there was adequate discriminative validity between the two constructs. The square roots of all constructs' AVEs in Table III of this study were all greater than the correlations among all constructs in Table I. Therefore, the discriminative validity of the measurement in this study was acceptable. Second, if the AVE of a construct is greater than 0.5, it means that there is convergent validity for the construct. As shown in Table III, the AVEs of the four constructs were 0.650, 0.738, 0.735, and 0.703 respectively, which were all greater than 0.5. It indicated that the convergent validity of the measurement in this study was acceptable. Thus, the measurement of this study was acceptable in both of discriminative validity and convergent validity. According to the several tests of reliability and validity, it demonstrated that there were adequate reliability and validity for the measurement of this study.

The results of the structural model

Table IV showed the results of the structural model of this study, and Figure 2 reported the results of the full model. The overall fit measures of the SEM in this study indicated that the fit of the model was well in Figure 2 (GFI = 0.892, RMSEA = 0.052, NFI = 0.908, CFI = 0.904). All of the paths estimated were significant, and all hypotheses were supported in this study in Table IV. Adding more paths in the research framework would not significantly improve the fit. The residuals of the covariance were also small and centered near 0.

According to the results of Table IV and Figure 2, all five paths estimated were significant. This study found out that companies with high levels of environmental organizational culture and environmental leadership can not only increase green organizational identity, but also enhance green competitive advantage. Besides, this study also verified green organizational identity had a partial mediation effect on the positive relationships between two antecedents - environmental organizational culture and environmental leadership - and green competitive advantage. *H1*, *H2*, *H3*, *H4*, and *H5* were all supported in this study.

Hypothesis	Proposed effect	Path coefficient	Results
<i>H1</i>	+	0.352 **	<i>H1</i> is supported
<i>H2</i>	+	0.328 **	<i>H2</i> is supported
<i>H3</i>	+	0.324 **	<i>H3</i> is supported
<i>H4</i>	+	0.287 *	<i>H4</i> is supported
<i>H5</i>	+	0.251 *	<i>H5</i> is supported

Notes: * $p < 0.05$; ** $p < 0.01$

Table IV.
The results of the
structural model

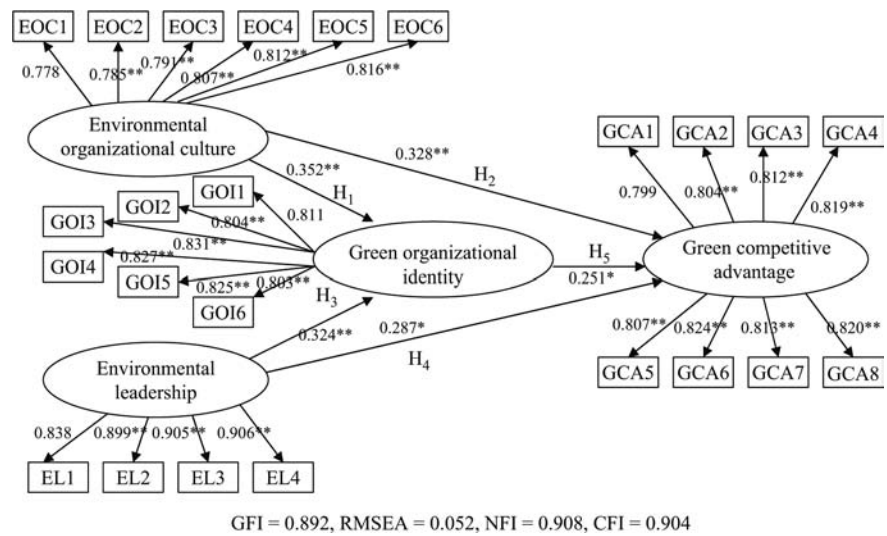


Figure 2.
The results of the full
model

Difference analysis between large enterprises and SMEs

According to “The criteria to identify small and medium-sized enterprises” stipulated by Ministry of Economic Affairs of Taiwan, this study defined a “medium and small enterprise (SME)” as that the number of regular employees of firms in the manufacturing industry does not exceed 200 persons; whereas the number of regular employees of a large enterprise exceeds 200 persons. The total sample size in the study was 138, including 66 large enterprises and 72 SMEs. This study compared environmental organizational culture, environmental leadership, green organizational identity, and green competitive advantage of Taiwanese large enterprises with those of Taiwanese small and medium enterprises (SMEs) in the manufacturing industry. As shown in Table V, this study showed that environmental organizational culture, environmental leadership, green organizational identity, and green competitive advantage of SMEs were all significantly less than those of large enterprises in the manufacturing industry in Taiwan. Hence, there was green competitive advantage of firm size in the manufacturing industry of Taiwan. According to the results of Table IV and Figure 2, environmental organizational culture and environmental leadership of

	Mean of large enterprises (E)	Mean of SMEs (F)	E-F	
			<i>n</i>	<i>t</i> -value
Environmental organizational culture	4.224	3.682	0.542 *	2.187
Environmental leadership	4.634	4.113	0.521 *	2.062
Green organizational identity	4.187	3.505	0.682 *	2.679
Green competitive advantage	4.386	3.738	0.648 *	2.515

Table V.
Difference analysis
between large enterprises
and SMEs

Notes: The measurement of the questionnaire items in this study was with “five-point Likert scale from 1 to 5” rating from strongly disagreement to strongly agreement. The sample size of this study was 138, comprising 66 large enterprises and 72 SMEs. **p* < 0.05

firms can not only positively affect their green organizational identity but also positively influence their green competitive advantage. It is important for SMEs in the manufacturing industry of Taiwan to develop and create their environmental organizational culture and environmental leadership to raise their green organizational identity and further to increase their green competitive advantage.

Conclusion and implications

This study proposes an original concept – green organizational identity – to develop an integral framework to enhance green competitive advantage. From organizational identity view, the symbol context of an organization is an important source of identity-building and represents a non-imitable an interpretive scheme leading to sustainability of competitive advantage. Hence, this study develops the concept of “green organizational identity” and asserts that it plays the role of interpretive scheme with respect to environmental issues. Based on the theory of organizational identity, this study argues that the two antecedents of green organizational identity are two important sources of symbol context – “environmental organizational culture” and “environmental leadership” – and the consequent of green organizational identity is green competitive advantage. Green organizational identity plays the role of a partial mediator in the research framework.

This study found out that environmental organizational culture and environmental leadership are not only positively associated with green organizational identity, but also positively related to green competitive advantage. In addition, this study also verified green organizational identity had a partial mediation effect on the positive relationships between two antecedents – environmental organizational culture and environmental leadership – and green competitive advantage. The five hypotheses in this study were all supported. Thus, companies should enhance their environmental organizational culture and environmental leadership, because both of them can not only positively affect their green organizational identity but also positively influence their green competitive advantage.

This study found that environmental organizational culture, environmental leadership, green organizational identity, and green competitive advantage of SMEs were all significantly less than those of large enterprises in the manufacturing industry in Taiwan. Therefore, it indicated two meanings: first, there was green competitive advantage of firm size in the manufacturing industry of Taiwan; and second, it is imperative for SMEs in the manufacturing industry of Taiwan to cultivate their environmental organizational culture and environmental leadership to strengthen their green organizational identity and further to improve their green competitive advantage.

This study summarized the literature on environmental management and corporate strategy into a new managerial framework from green organizational identity view, which respond to the new trend of “sustainable development” caring both aspects of environmental protection and economy development. Most of Taiwanese companies are SMEs which have few resources to deploy and thereby often fail to meet the requirements and regulations of environmental protection. This would bring Taiwanese SMEs serious damages that resulted from the failure to comply with the international conventions and regulations of environmental protection. However, this study found that investing resources and efforts to raise environmental organizational

culture and environmental leadership could not only foster green organizational identity, but also eventually enhance their green competitive advantage in the Taiwanese manufacturing industry. Thus, Taiwanese SMEs can refer to the results of this study to improve their green competitive advantage.

Discussion

There are four theoretical and managerial contributions in the paper. First, no research explores the organizational identity perspective in the field of environmental management, though previous study widely discusses organizational identity issues in the field of management. From the organizational identity perspective, this study develops an original “symbol context-interpretive scheme-outcome” framework of green organizational identity to explore its managerial implications, antecedents, and consequence to fill the research gap. Second, this study demonstrated that environmental organizational culture and environmental leadership positively affect both of green organizational identity and green competitive advantage. Thus, investing resources and efforts to raise environmental organizational culture and environmental leadership could not only strengthen green organizational identity, but also increase their green competitive advantage in the Taiwanese manufacturing industry. Third, this study indicated that environmental organizational culture and environmental leadership can not only directly affect green competitive advantage positively, but also indirectly affect it via the partial mediator, green organizational identity, positively. Companies should enhance their green organizational identity to increase the positive relationships between green competitive advantage and its two determinants: environmental organizational culture and environmental leadership. Fourth, this study found out that environmental organizational culture, environmental leadership, green organizational identity, and green competitive advantage of large enterprises were all significantly more than those of SMEs in the manufacturing industry of Taiwan. It is necessary for SMEs to raise their environmental organizational culture and environmental leadership to strengthen their green organizational identity and further to improve their green competitive advantage.

Recent microeconomics and management literature focuses on the importance of firm size, because large companies usually have the advantage of firm size (Amato and Amato, 2004). Large firms possess more resources, so there is the advantage of firm size in some industries (Moen, 1999). In addition, large companies often have both scale and scope economies, which result in the advantage of firm size (Huang and Wang, 2004). The new product development in the manufacturing industry needs much R&D expenditures, so the performance of large manufacturing firms in the new product development appears to be better than that of small ones (Cockburn and Henderson, 2001). Hence, there often exists the advantage of firm size in the manufacturing industry. Besides the advantages of resources and the scale and scope economies, large firms also possess the purchasing advantages (Zulauf and King, 1985), and the advertising advantages (Comanor and Wilson, 1969). This study pointed out that there is the advantage of firm size with respect to green organizational identity, environmental organizational culture, environmental leadership, and green competitive advantage in the manufacturing industry of Taiwan. Because previous studies asserted large companies usually possess several kinds of advantages, such as the advantages of resources, the advantages of scale economies, the advantages of

scope economies, the purchasing advantages, and the advertising advantages (Comanor and Wilson, 1969; Zulauf and King, 1985; Moen, 1999; Cockburn and Henderson, 2001; Amato and Amato, 2004; Huang and Wang, 2004), SMEs in Taiwan have lower levels of green organizational identity, environmental organizational culture, environmental leadership, and green competitive advantage. Hence, environmental management is crucial to the future of SMEs in Taiwan.

This study focused on the manufacturing industry in Taiwan, so the further studies can focus on other industries or other countries and compare with this study. This study verified hypotheses by using the questionnaire survey method, only providing cross-sectional information, so that this study cannot observe the dynamic change of green organizational identity, environmental organizational culture, environmental leadership, and green competitive advantage in the different stages of the development of the manufacturing industry of Taiwan through longitudinal data. Therefore, future studies can set forth toward the longitudinal study to find out the dynamic change of green organizational identity, environmental organizational culture, environmental leadership, and green competitive advantage in the different stages of the development in this industry. Finally, this study hopes the research results are beneficial to managers, scholars, or policy makers, and contribute to relevant studies and future researches as reference.

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