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# Customer Environmental Values and Its Contribution to Loyalty in Industrial Markets

## Abstract

Concern over the effect of industries on the natural environment is growing on a multitude of levels. This study examines the effects of how perceptions of a) environmental values, b) green image, and c) perceived value of industrial customers influence their loyalty towards suppliers in existing relationships, and how the length of B2B relationships may moderate these linkages. A conceptual framework is developed and data is collected from a global sample ( $N=121$ ) of B2B customers. We find that both green image and perceived value have a direct positive link on customer loyalty and environmental values are positively linked to green image of the supplier. Moreover, the effect of green image on loyalty is mediated by perceived value with environmental values only indirectly linked with perceived value of the supplier. As the length of relationship increases, on one hand, positive relationship between green image and customer loyalty is strengthened, while on the other, positive relationship between environmental value and green image is weakened. Regardless of how environmentally aware the customer is, green image is a strong predictor of both perceived value and loyalty.

**Keywords:** environmental values; green image; perceived value; loyalty; relationship length; B2B relationships

## Introduction

With the growing emphasis on sustainability in industrial business markets, firms are increasingly investing in environmental marketing initiatives. The concept of environmental marketing focuses on ecological concerns while remaining competitive in the market (Miles and Covin, 2000). Research suggests that treating environmental investments as a source of competitive advantage yields reputational and financial performance benefits for companies (De Marchi *et al.*, 2013; Menon and Menon, 1997; Miles and Covin, 2000). However, questions regarding the advantages of an environmental emphasis in marketing remain (Crane, 2000; First and Khatriwal, 2010). Banerjee *et al.* (2003) suggest that competitive advantage is the least significant driver of external environmental marketing in industries that have significant impacts on the natural environment. This implies that the benefits of environmental orientation may be more difficult to attain, and thus the full potential of environmental marketing remains unresolved (First and Khatriwal, 2010; Fraj-Andrés *et al.*, 2008). Moreover, recent empirical findings have centered only on the role of environmental advertising (Wong *et al.*, 2013), but the strategic importance of sustainability efforts remains valid (Beckmann *et al.*, 2014; Forsman, 2013; Kurapatskie and Darnall, 2013).

Given the importance and the topicality of environmental concerns, this study explores environmental values and value creation in the context of business-to-business (B2B) relationships.

We confine our research to B2B relationships because scant research has explored environmental values in the context of industrial business relationships between buyers and sellers (for a review, see e.g. Chamorro *et al.*, 2009). From a relationship marketing perspective, all marketing efforts aim to build and maintain mutually profitable, long-term business relationships (Dwyer *et al.*, 1987). Mutual profitability of the business relationship stems from two central concepts of marketing theories: customer-perceived value in exchanges with the supplier and customer loyalty to the supplier. To create value for customers and enhance their loyalty, suppliers present their current and potential customers with offerings that appeal to their value expectations (Flint *et al.*, 2011). Customers assess the expected value of each offering and base their choice on these value perceptions (Ulaga and Eggert, 2006). A supplier's ability to anticipate customer desires and value expectations correlates with success in gaining satisfied and loyal customers (Flint *et al.*, 2011). Our examination of environmental values in B2B relationships is driven by prior findings that suggest that customers' value perceptions of a product or supplier are affected by the more general values they hold (Ledden *et al.*, 2007). Congruence of values in general plays an important role in relationships by creating commitment between parties (Morgan and Hunt, 1994). Specifically in relation to environmental concerns, research has shown that ecological value in a supplier's offering affects the overall value and loyalty the customer feels (Koller *et al.*, 2011).

Thus, the aim of this study is to examine the direct and indirect effects of customers' environmental values on three important business relationship outcomes: customer-perceived image, customer-perceived value, and loyalty to a supplier. In addition, the study examines the moderating effect of relationship length on the proposed causal linkages. Given scarce research examining the connection of environmental issues with relationship marketing theory, our inquiry sheds light on customer values and behavior in industrial business relationships. We empirically test the conceptual model on a sample of long-standing industrial buyer–supplier relationships, which, from the relationship marketing perspective, are the most valuable for suppliers to maintain. The empirical data come from a global sample of companies operating in high-environmental-impact industries such as forestry and mining.

This article proceeds as follows: first, we detail the development of the conceptual model by examining the hypothesized relationships between the constructs under examination. Second, we depict the research methodology and provide the analysis and results of the research. Finally, we present the study outcomes and implications and offer limitations and directions for further research.

## Literature Review and Hypotheses

### Environmental Values

The terms 'values' and 'value' have many meanings in marketing research. In this study, the terms refer to two theoretically distinct constructs. 'Values' arise from a moral-philosophical grounding (Hall, 1989) and reflect 'global beliefs about desirable end states which influence attitudinal and behavioral processes' (Dembkowski and Hanmer-Lloyd, 1994, p. 597). Environmental values therefore refer to the perceived importance of ecological sustainability and the desire to act to preserve the natural environment (Agle and Caldwell, 1999). For its part, 'value' reflects the perceived worth of a business exchange 'in the sense of adding value to create future strengths and profits for a company' (Hall, 1989, p. 131).

In accordance with individuals' values and their hierarchical order, the natural environment is located among universal values, meaning that nature is considered something worth preserving *per se* (Rokeach, 1973; Schwartz, 1992). To understand environmental values in an organization, values must be examined on various levels to account for the effects of individuals on organizational values and vice versa (Hofstede *et al.*, 1990). The influence of senior management, environmental managers and other environmental advocates has a significant effect on environmental strategy formulation and purchasing decisions (Banerjee *et al.*, 2003; Colwell and Joshi, 2013; Drumwright, 1994; Hanson *et al.*, 2004). In large organizations, however, the locus of control may be beyond individual managers' influence, and thus factors other than values may explain actual behavior, such as buying decisions (Williams and Schaefer, 2013). For example, Fryxell and Lo (2003) employed the New Ecological Paradigm scale and showed that environmental values positively affect the pro-environmental behavior of managers. Unfortunately, the internal consistency of this paradigm as a values construct was moderate, and much of the environmental behavior was left unexplained. This replicates consumer research that finds that environmental concerns and attitudes do not always manifest in actual behavior (Mainieri *et al.*, 1997; Schlegelmilch *et al.*, 1996).

Values at the company level are not as easily measured as those at an individual level, and instruments for surveying organizational values are scarce (Agle and Caldwell, 1999). Some studies have simply accepted the implementation of an environmental standard (typically ISO14000) as an indicator of company environmental values (Cheng *et al.*, 2008). However, evidence suggests that environmental standards are no more than a legitimizing front for company operations and that standards do not reflect any true movement toward stronger environmental values (Mueller *et al.*,

2009). In addition, environmental standards are implemented on somewhat varying levels in company practice (Yin and Schmeidler, 2009). Colwell and Joshi (2013) measured corporate environmental responsiveness from annual reports in an attempt to overcome the attitude–behavior gap, but the dimensions of environmental responsiveness were limited to pollution and restoration issues only. Environmental standards and official reports are therefore less informative when attempting to assess the values and attitudes of business organizations. Kärnä *et al.* (2003) assessed corporate social responsibility with a focus on environmental values. They reported three alternative stances to socio-environmental responsibility: proactive, reactive and consumption marketers. These classifications based on the genuineness and permeability of environmental strategies have received much empirical and theoretical research interest (Lee and Rhee, 2007; Menon and Menon, 1997; Paulraj, 2009). However, although they represent the tactical and strategic outcomes of environmental management and marketing, by definition they cannot be interpreted as a theoretical construct free of evaluation.

Dembkowski and Hanmer-Lloyd (1994) contributed to the theory of environmental values by adding an environmental aspect to Vinson *et al.*'s (1977) three-tiered consumer value–attitude model. This framework consists of global, domain-specific and product-attribute levels, which reflect the hierarchical nature of values, from the most stable core values to context-dependent beliefs and evaluations of appropriate behavior and decisions in varying situations. Global environmental values are the most enduring beliefs about the overall importance of the environment. Domain-specific values are beliefs related to specific patterns of consumption and behavior that consider the environment. The product-attribute level covers the situation-specific evaluations of environmental attributes, for example, in a product offering. The systemic model of environmental values also includes situational factors, such as price and quality, that intervene in the transfer of global values to actual behavior. These intervening factors might also explain the gap among values, attitudes and decision making. Given this background, we employ Dembkowski and Hanmer-Lloyd's environmental value–attitude system in this study.

### **Perceived Value and Green Image**

Perceived value is the customer's assessment of the value received when purchasing and using a product or service. It is broadly defined as a tradeoff between benefits and sacrifices (or costs) (Zeithaml, 1988). In the context of buyer–supplier relationships, deriving value from the relationship with a supplier is the superordinate goal of the buyer (Sirdeshmukh *et al.*, 2002). The customer's judgment of the value received is then crucial when successful suppliers strive to offer

the best possible value to their customers (Flint *et al.*, 2002). Zeithaml (1988) presents a means–end chain model of perceived value, explaining how concrete product attributes and objective price form the basis for higher-level perceptions of the product’s quality and value. Price and perceived quality, and their mutual effect on perceived value, have been at the core of value research ever since, but a value perception is not based on these functional dimensions alone. Zeithaml suggests that a supplier’s reputation affects a customer’s quality perception, indicating that more than just purely functional or performance aspects influence value perceptions. Research has also found that the supplier’s image affects perceived quality and value, either as a driver of quality (Ledden *et al.*, 2007; Ulaga and Chacour, 2001) or as a separate construct influencing value perceptions (Andreassen and Lindestad, 1998; Ciavolino and Dahlgaard, 2007).

For the ‘give’ side of perceived value, empirical evidence is contradictory on the importance of economic sacrifice in decision making. Some studies have shown that purchasing managers emphasize price alone when choosing between alternative offerings, regardless of value, perhaps because perceived value is more ambiguous than price at the time of a purchase decision (Anderson *et al.*, 2000). In B2B research, functional value attributes such as price, cost and product quality commonly serve as drivers of perceived value (Ulaga and Chacour, 2001). Lapierre *et al.* (1999) examined perceived value as a function of quality and sacrifices and concluded that costs, including price and other sacrifices, were more definitive of perceived value than quality. In relationships, the components of perceived value seem to have opposite effects. Gaining social value is more important than gaining economic value (Divita *et al.*, 2006), and perceived benefits may outweigh costs when managers choose one supplier over another (Ulaga and Eggert, 2006). For the purpose of this study, customer-perceived value consists of price and quality (Zeithaml, 1988). Image is separated as an antecedent to customer-perceived value, given its incommensurable nature (i.e. it cannot be directly linked to utilitarian value) (Ciavolino and Dahlgaard, 2007; Kilbourne, 1998). More specifically, the concept of image is limited to the supplier’s ability to enhance the customer’s environmental aspirations.

### **Customer Loyalty**

Deriving value is the ultimate motive underpinning a business relationship for the customer (Sirdeshmukh *et al.*, 2002). For the supplier, the customer’s loyalty is the ultimate objective of relationship marketing efforts. Concepts that are both theoretically and empirically relevant to loyalty are satisfaction (Cronin *et al.*, 2000; Lam *et al.*, 2004; Oliver, 1997, 1999), quality (Bell *et al.*, 2005; Hutchinson *et al.*, 2011), trust (Harris and Goode, 2004; Morgan and Hunt, 1994;



Sirdeshmukh *et al.*, 2002), value (Sirdeshmukh *et al.*, 2002; Vogel *et al.*, 2008) and commitment or desire to do business with a supplier (Cater and Cater, 2010; Mohr *et al.*, 1996; Morgan and Hunt, 1994). Research has commonly agreed on these concepts as prerequisites of loyalty, but their interplay and influence varies according to the theoretical interest and empirical context of the studies. Extant studies (e.g., Bell *et al.*, 2005; Harris and Goode, 2004; Oliver, 1999; Scheer *et al.*, 2009; Sirdeshmukh *et al.*, 2002) define customer loyalty as the ultimate aim of a supplier in business relationships. Loyalty is evidenced by the customer's positive evaluation of the supplier, intention to continue the relationship, and demonstration of positive evaluations through further actions, such as repurchasing and a willingness to recommend the supplier to others.

### **Effects of Customers' Environmental Values on Green Image, Perceived Value and Loyalty**

Research suggests that economic situations affect industrial companies' willingness to make environmentally motivated improvements. In less favorable economic climates, monetary goals overrule pro-environmental solutions because the latter are often more expensive to implement in the short run (Forsman, 2013; Lee and Rhee, 2007). This implies that any conflict between ecological and economic values is typically resolved by choosing money over the environment. This situation resonates with hierarchical theories about values (Rokeach, 1973; Schwartz, 1992), which assume that economic wealth ranks higher in the values hierarchy of business organizations (Smith, 2009). Environmental values held on a general level may also appear more distant than monetary and performance considerations in a purchasing situation, resulting in a recognized gap between environmental values and environmentally focused purchasing behavior (Dembkowski and Hanmer-Lloyd, 1994). Fraj-Andrés *et al.* (2008), through a long-term assessment, demonstrated that environmental and monetary values are not mutually exclusive. Environmentally improved solutions can yield ecological resource savings that contribute directly to economic savings in the long run. Although value is assessed before a purchasing decision, it is only fully realized during use of a product (Anderson *et al.*, 2000). This implies that an environmentally conscious buyer perceives more overall value in a supplier whose products are more expensive but also more environmentally oriented.

In their study on loyalty in the B2B context, Hutchinson *et al.* (2011) suggest that relationship benefits and sacrifices affect both relationship value and quality and conclude that quality is the key driver of future behavioral intentions. There are positive outcomes for suppliers in B2B relationship value, just as there are for customers in perceived value; these outcomes include commitment, relationship longevity, loyalty, and an increase in purchase or market share (Barry and Terry, 2008).

In summary, we can conclude that increased customer-perceived value contributes to the long-term beneficial goals of relationship-oriented marketers.

Theoretical and empirical evidence also provides support for the notion that image significantly influences relationship outcomes such as perceived quality, value and loyalty. Andreassen and Lindestad (1998) found image an important antecedent to quality and loyalty in the service context. Menon and Menon (1997) suggest that in high-impact industries, environmentally conscious customers reward suppliers' environmental orientation with increased commitment. Recent empirical findings from a B2B context emphasize the importance of environmental reputation as a mediator in the link between environmental efforts and financial performance (Forsman, 2013; Fraj-Andrés *et al.*, 2008; Wong *et al.*, 2013). In buyer–supplier relationships, the importance of a supplier's environmental image is dependent on the customer's value expectations. Thus, the customer's environmental values likely determine the extent to which the supplier's environmental image enhances the positive linkage between perceived value and loyalty. From this discussion, and augmented by inquiries into the effects of values on value perceptions, the perceived importance of image and perceived value and their effect on customer loyalty, we advance the following hypotheses:

H1a: *Environmental values are positively related to green image.*

H1b: *Environmental values are positively related to perceived value.*

H2a: *Green image mediates the link between environmental value and perceived value.*

H2b: *Perceived value mediates the link between green image and loyalty.*

H3a: *Environmental values moderate the positive relationship between green image and loyalty. Specifically, environmental values enhance the green image–loyalty link.*

H3b: *Environmental values moderate the positive relationship between perceived value and loyalty. Specifically, environmental values enhance the perceived value–loyalty link.*

### **Moderating Effect of Relationship Length**

A growing body of literature on relationship age suggests that the length of a buyer–supplier relationship has an effect on the customer-perceived value (Doney and Cannon, 1997; Gruen *et al.*, 2000; Verhoef *et al.*, 2002). This might be of special interest in industrial markets, in which relationships tend to be much longer than that in consumer industries, owing to the longer investment cycles of complex industrial equipment. Evidence provides support for the notion that relationship age is positively related to the evaluation of a partner (Scheer *et al.*, 2009; Swann and

Gill, 1997). Furthermore, research has argued that as relationships mature, such evaluations change (Dwyer *et al.*, 1987), and customers are able to uncover more benefits from the relationship, leading to stronger loyalty (Scheer *et al.*, 2009). Building on previous empirical findings (Garbarino and Johnson, 1999; Grayson and Ambler, 1999; Raimondo *et al.*, 2008), we postulate that the links between the customer's environmental values and the supplier's green image, as well as the link between the supplier's green image and loyalty, are strengthened with relationship age. Therefore,

H4a: *Relationship length strengthens the link between environmental values and green image.*

H4b: *Relationship length strengthens the link between environmental values and perceived value.*

H4c: *Relationship length strengthens the link between green image and loyalty.*

H4d: *Relationship length strengthens the link between perceived value and loyalty.*

Figure 1 displays conceptualized linkages among environmental values, green image, perceived value, and loyalty. In addition, it depicts the moderating effects of environmental values and relationship length.

< Insert figure 1 about here >

## **Methodology**

### **Sampling**

We collected data from a sample drawn from the customer databases of three industrial manufacturing companies. Two of these companies are listed on the Finnish stock exchange with worldwide operations, and the third caters to the Finnish domestic market. Industries represented in this study are forestry, manufacturing and mining, which have a significant environmental impact on resource usage and operations effect on the natural environment (Banerjee *et al.*, 2013; Colwell and Joshi, 2013). These industries are in a mature stage, characterized by high barriers of entry, intense competition and little opportunities for differentiation in the market. In line with typical complex industrial products, investment cycles are long. These industries are also largely dependent on the overall economic situation, which began to worsen in the late 2000s and coincided with the data collection. With raising interests in sustainability and the perceived potential of competitive advantages, supplier companies had been focusing their marketing strategies on environmental improvements in products and technologies (e.g. solutions that required less water and energy in the production process, technologies that reduced emissions of production, positioning the brand with a more environmental stance in marketing communications).

The target respondents comprised supplier company representatives at the middle and top management level. We chose these individuals because we presumed that they had both power over purchasing decisions and sufficient knowledge of their companies' environmental policies. In line with Paulraj (2009), the survey was presented as part of the supplier companies' customer relationship communications. To match customers' communication expectations and preferences, the survey was formulated in English, German and Chinese. Customers received a cover e-mail from their supplier company representative (the marketing manager or CEO) indicating the supplier's interest in improving its marketing communications by understanding customers' environmental values better. The cover letter also explained that the survey would be conducted as part of an academic research project and that the data gathered would remain confidential. The letter directed the respondents to an online survey managed by the researchers. To improve the response rate, respondents were given the option of participating anonymously in a lottery. Following the recommendations of Armstrong and Overton (1977), we compared the responses of

early and late respondents to gauge non-response bias. We found no significant differences ( $p < 0.05$ ) among any of the study constructs.

## **Measures**

We adapted the questionnaire from those used in previous studies and modified the wording after consultation with five industry experts to suit the study context (see Appendix for the list of variables and items). Seven- and ten-point Likert-type scales were used without a “do not know” option. All scales contained multiple items. Given that no existing scales were available to capture general-level environmental values, environmental consumption values and usage patterns of the customers (Dembkowski and Hanmer-Lloyd, 1994), we compiled items from other studies on green supply chain management, corporate social responsibility and environmental strategies and actions (Banerjee, 2001; Kärnä *et al.*, 2003; Zhu *et al.*, 2005). We operationalized supplier’s green image and perceived value on a seven-point Likert scale with items adapted from Ciavolino and Dahlgaard (2007), Fang *et al.* (2008), Sweeney and Soutar (2001) and Ulaga and Eggert (2006). We measured loyalty on a 10-point scale with three items adapted from Sirdeshmukh *et al.* (2002). We operationalized relationship length by asking the question ‘How long has your company conducted business with X: \_\_\_\_’? All the constructs are considered reflective. Finally, the respondent company’s country of origin served as a control variable in the model. Country was a dummy variable; we assigned a score of 2 if the respondent’s company was from a high-income economy (World Bank, 2014) and 1 if it was based elsewhere. With the perceived association between economic and environmental development (Dasgupta *et al.*, 2001), we assumed that respondents from high-income economies would put more emphasis on the green image of their supplier but would not differ from the other respondents in perceived value and loyalty.

## **Results**

We received 121 responses from 25 different countries. The majority of responses were from Germany (17%), followed by China (13%), Finland (13%), the UK (9%), South Africa (8%) and the US (6%). The mean length of the customer relationship with the supplier firm was 18 years. The median annual turnover of the responding firms was €42 million. Approximately 70% of the firms operated mainly in domestic markets. The respondents were pulp-and-paper companies (50%), mineral concentrators (38%) or metal producers (12%). All the respondents were from different companies and worked in executive positions.

Because common method bias can occur with self-reported data (Podsakoff *et al.*, 2003), we initially took several procedural precautions, such as keeping the respondents' identities confidential, reducing item ambiguity and mixing up the items in the questionnaire. We also ran a method bias model and examined common method variance bias with Harman's (1967) one-factor test. The results from these tests showed the presence of measurement model factors rather than a general factor and that the average variance substantively explained variance of the indicators (0.75), while the method-based variance was 0.008. Thus, common method bias is not a likely contaminant of our results.

We analyzed the data using partial least squares (PLS) structural equation modeling with smartPLS (Ringle *et al.*, 2005). We chose the PLS method because of its suitability for models with small sample sizes (Hair *et al.*, 2013). As Homburg and Pflesser (2000) recommended, we then calculated the composite reliabilities and average variance extracted (AVE) for the scales. This resulted in values above the minimum recommended thresholds of 0.7 for composite reliability and coefficient alpha (Nunnally and Bernstein, 1994) and 0.5 for AVE (Fornell and Larcker, 1981) for all scales (see Table 1).

We assessed discriminant validity at both the item and construct levels. With respect to item discriminant validity, an inspection of indicator cross-loadings revealed that all indicators load at their highest level on their respective construct and that no indicator loads higher on other constructs than on its intended construct. It is therefore safe to assume item discriminant validity. At the construct level, the comparison of the square root of each reflective construct's AVE and the latent variable correlations (Table 1) (Chin, 1998) suggests satisfactory discriminant validity (Cool *et al.*, 1989).

<Insert Table 1 about here>

### **Direct Effects**

Table 2 shows the results of the PLS path model. The model explains a considerable amount of variance of perceived value ( $R^2 = 0.503$ ) and loyalty ( $R^2 = 0.470$ ). The  $f^2$  effect size (0.191) and path coefficient of 0.452 indicate that perceived value has a stronger direct effect on loyalty than green image ( $f^2 = 0.040$ ,  $\beta = 0.227$ ). The direct effects also show that green image has a strong relationship to perceived value ( $\beta = 0.645$ ,  $p < 0.01$ ). The  $q^2$  effect sizes indicate that environmental values and perceived value have a medium effect on the  $Q^2$  predictive relevance for their dependent

constructs (green image and loyalty, respectively). The  $q^2$  effect size for the green image  $\rightarrow$  perceived value path shows that green image has a strong effect on the  $Q^2$  for perceived value. Finally, the model also shows large predictive relevance ( $Q^2$ ) of loyalty ( $Q^2 > 0.35$ ) and a large  $Q^2$  of perceived value.

<Insert Table 2 about here>

The data confirm H1a but not H1b. The direct effects also show that the path from environmental values to perceived value is not significant, indicating a mediation effect of green image on this relationship. A possible explanation is that green image fully mediates the effect of environmental values on perceived value. The direct effects show that our control variable ‘country of origin’ is negatively related to green image and perceived value and that it has no significant relationship to loyalty. The implication of these negative relationships is that customers from developed economies (1) perceive the green image of their supplier as less important and (2) also gain less value from their supplier relationships. Finally, the moderator variable relationship length has a significant direct effect only on green image. The effect is negative, which indicates that the longer the customer relationship with the supplier firm, the less ‘green’ the respondents regard the supplier firm’s image.

### **Mediation Tests**

First, we examined whether green image mediates the relationship between environmental values and perceived value (H2a). According to Hair *et al.* (2013, pp. 224-227), mediation occurs if all four criteria by Baron and Kenny (1986) are met. The results show the following:

1. Environmental values have a positive effect on perceived value in the absence of green image (not confirmed,  $\beta = 0.137$ , *ns*);
2. Environmental values have a positive effect on green image (confirmed, see Table 2);
3. Green image has a positive effect on perceived value (confirmed, see Table 2); and
4. In the presence of green image, the effect of environmental values on perceived value becomes non-significant (confirmed, see Table 2).

Although step 1 was not met, mediation can occur even if there was no significant direct effect without any mediators (Kenny *et al.*, 1998). Therefore, we performed a stronger test for mediation by bootstrapping the sampling distribution (5,000 bootstrap samples with no sign changes) of the indirect effect (Hair *et al.*, 2013; Preacher and Hayes, 2008). The indirect effect’s size is significant

(0.181;  $p < 0.05$ )<sup>1</sup>, stronger than the total effect (0.135, *ns*) and considerably stronger than the direct effect (−0.046, *ns*). A situation in which step 1 is not met and the total effect is low (and variance accounted for [VAF] cannot be assessed) represents inconsistent mediation (MacKinnon *et al.*, 2007). In such a case, the mediator acts like a suppressor variable. This provides an explanation for the low and non-significant total effect, as the positive indirect effect is cancelled out by the negative direct effect. Consequently, we can conclude that the effects of customer environmental values on perceived value are indirect (through green image).

Second, we examined the mediating role of perceived value on the relationship between green image and loyalty (H2b). The Baron and Kenny (1986) test shows that:

1. Green image has a positive effect on loyalty in the absence of perceived value (confirmed,  $\beta = 0.519$ ,  $p < 0.01$ );
2. Green image has a positive effect on perceived value (confirmed, see Table 2);
3. Perceived value has a positive effect on loyalty (confirmed, see Table 2);
4. In the presence of perceived value, the effect of green image on loyalty weakens (confirmed, see Table 2).

The results of the bootstrapping show that the indirect effect's size is significant (0.292,  $p < 0.01$ ). The total effect of green image on loyalty is also strong (0.519,  $p < 0.01$ ), and the strength of the mediation (VAF = 0.83) indicates full mediation, as perceived value mediates 83% of the effect of green image on loyalty.

### **Moderating Tests**

As Table 3 shows, we find that customer environmental values strengthen the relationships between green image and loyalty (H3a) and between perceived value and loyalty (H3b). That is, when environmental values are of high importance, a company's green image becomes a stronger indicator of customer loyalty. This suggests that customers who perceive themselves as environmentally conscious are more loyal to their supplier, owing to supplier's green image, than customers who do not put such high emphasis on environmental issues in their own business.

<Insert Table 3 about here>

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<sup>1</sup> We calculated the significance of the indirect effect by dividing the original value (0.181) by the bootstrapping standard error (0.078) (Hair *et al.*, 2013, p. 228). This process resulted in a *t*-value of 2.309.



Contrary to our expectations, for customers with a longer relationship with the supplier firm, the effect of environmental values on the importance of the supplier firm's green image is attenuated (H4a). In other words, at the early stages of a buyer–supplier relationship, environmental values and green image of the supplier are more strongly linked than in older relationships. Relationship length has no effect on the relationships between environmental values and perceived value (H4b), green image and loyalty (H4c) or perceived value and loyalty (H4d).

## **Discussion**

Firms are increasingly emphasizing environmental marketing initiatives, but the potential of these in terms of outcomes remains unresolved, and even contradictory, from one empirical study to another. Previous studies in a B2B context have mostly examined the implications of environmental values in a single organization, such as the drivers and alternatives of environmental marketing strategies (Banerjee *et al.*, 2003; Kärnä *et al.*, 2003; Menon and Menon, 1997; Paulraj, 2009). The contribution of the current study is the exploration of customer environmental values in buyer–supplier relationships, or what Ulaga and Eggert (2006) referred to as the locus of value creation. We aimed to examine the relationship between environmental values with three specific outcomes: supplier green image, perceived customer value and customer loyalty. We did not intend to verify the true degree of environmental concerns and actions of the buyers because such an objective judgment is neither possible to measure nor relevant to our aims. The focus of interest was on how self-reported environmental values affect the overall value experience, because in B2B relationships, the buyer's experience is definitive (Flint *et al.*, 2002).

We find that industrial companies greatly consider environmental values in their operations. This is in line with expectations that companies operating in high-impact industries also have more external pressure to consider the environment (Banerjee *et al.*, 2003). Specifically, the more environmentally focused industrial customers consider themselves, the more they emphasize the green image of their supplier companies when assessing overall perceived value. This adds weight to previous research on the benefits of environmental marketing strategies (Forsman, 2013; Fraj-Andrés *et al.*, 2008; Wong *et al.*, 2013).

Previous research has shown the effect of personal values on perceived customer value (Ledden *et al.*, 2007) as well as the influence of ecological value on other value dimensions such as functional, economic, emotional and social value (Koller *et al.*, 2011). Our results add to the knowledge on value in a B2B context by revealing the influence of environmental values on business

relationships. In ongoing business relationships, customers are able to uncover more accurately the various ecological and economic benefits that realize only after purchase (Anderson *et al.*, 2000). The perceived value-adding influence of environmental values may reflect the post-purchase value assessment taking place. However, as we demonstrate, the relationship between environmental values and perceived value is not linear but inconsistently mediated by the green image of the supplier. Some research has questioned the importance of environmental brand building (First and Khatriwal, 2010), whereas others have stressed the benefits of environmental marketing, as long as it is based on solid environmental performance (Forsman, 2013; Fraj-Andrés *et al.*, 2008; Kärnä *et al.*, 2001; Miles and Covin, 2000). Our findings reinforce the latter view, suggesting that environmental image plays a significant role when a customer evaluates the supplier's ability to deliver the desired value (Flint *et al.*, 2002). Recent studies in B2B context have also increasingly emphasized the significance of a favorable environmental image and reputation (Wong *et al.*, 2013).

With respect to the prevailing view that environmental benefits come second to financial costs in value assessment of business companies (Lee and Rhee, 2007; Zhu *et al.*, 2005), our findings are not unequivocal. We show that perceived value, in terms of quality and price, has a stronger direct relationship to loyalty than green image does. In addition, the effects of green image on loyalty are inconsistently mediated by perceived value, resulting in a stronger total effect of green image on loyalty than that of perceived value on loyalty. Thus, it is important to understand the interplay between image and perceived value as antecedents of loyalty. Both image and perceived value are strongly linked to loyalty, but as stated, the effect of green image on loyalty is mediated by perceived value. We thus confirm that non-economic benefits, specifically environmental aspirations, may be of importance alongside purely economic and functional buying criteria (Drumwright, 1994; Ulaga and Eggert, 2006). The role of environmental image as an antecedent of favorable business outcomes has emerged as especially ambiguous in recent research. Forsman (2013) suggests that image-related competitive advantage can serve as a way of differentiation, whereas others have concluded that there is no gain in environmental communication if the company is already known as environmentally oriented (Wong *et al.*, 2013). Given our global sample of customers, our study is no exception in yielding mixed conclusions that highlight the need for further examination in the future.

That customers from more developed economies perceived the environmental image of their supplier as less important and reported less perceived value in their business relationships was an

unexpected finding. Various explanations for this are available in the literature. First, Lee and Rhee (2007) stress that during economically challenging times, companies value economic (rather than ecological) aspects and act accordingly. The impact of the recent economic downturn has had a varying effect, not necessarily according to the stage of development of each national economy (Shimelse *et al.*, 2009). Second, empirical research suggests that the correlation between economic development and environmental performance is not linear and that inverse trends may manifest because, along with globalization, developed countries have been able to “distance” themselves from perceived ecological problems (Rothman, 1998). This may be the case especially in high-impact industries, diminishing the perceived importance of environmental issues in business relationships. Third, cultural differences may have affected the respondents’ views on environmental values, congruence of values and loyalty (Morgan and Hunt, 1994). For example, Zhu *et al.* (2005) found that Chinese companies consider their buyers’ environmental mission when managing their own supply channels. Altogether, our results add to the literature on organizational values by concluding that environmental values may be considered universal as a topic but are context dependent.

From the supplier’s perspective, successful value creation for the customer is not the endpoint of relationship marketing. Higher customer-perceived value strengthens customer loyalty, the desired supplier outcome of business relationships. In line with previous research (Andreassen and Lindestad, 1998; Cronin *et al.*, 2000; Harris and Goode, 2004; Sirdeshmukh *et al.*, 2002; Vogel *et al.*, 2008), our results indicate that green image and perceived value are important indicators of customer loyalty in industrial markets. We further demonstrate that when customers perceive environmental values as important, the relationship between green image and loyalty is reinforced. For customers who report stronger environmental values, the green image of the supplier becomes a stronger determinant of loyalty than for those who perceive environmental values as less important. This is in line with previous knowledge about business relationships: congruence of values strengthens loyalty (Morgan and Hunt, 1994). Thus, it is important to distinguish theoretically the various dimensions of customer-perceived value and the factors affecting it: quality, price and image. The functional value domains of quality and price do not always come before environmental benefits, but their link to customer actions is more complex than previously assumed.

The examination of the effects of relationship age illustrated two surprising outcomes. First, we find that relationship length has a bearing only on the customer environmental values–supplier green image relationship but not on the linkage between perceived value and loyalty. Second, the longer

the business relationship, the weaker the relationship between environmental values and green image becomes. We offer two potential explanations for our finding. First, it is possible that the transformation of environmental values into perceptions of value and behavior is influenced by other organizational motives (Dembkowski and Hanmer-Lloyd, 1994; Fryxell and Lo, 2003). Second, in longer relationships, factors other than green image and perceived value *per se* (e.g. personal ties, familiarity) may become more significant in explaining the intention to continue a business relationship (Dwyer *et al.*, 1987). In this study, the mean length of the buyer–supplier relationship was 18 years, which implies that the customers surveyed have had a relatively long experience with their suppliers. Grayson and Ambler (1999) also conclude that long business relationships potentially carry a flip side, which may cause unexpected (negative) effects on the linkage between customer experience and future behavioral intentions. It is possible that customers whose investments are farther in the past have not considered their environmental stance in relation to the supplier as actively as newer customers. We believe that our inquiry on relationship length illustrates the importance of this variable and call for further research.

### **Managerial Implications**

Building an environmentally aware and reliable image among external stakeholders is an important part of company responsibility in industries that have a significant impact on the natural environment. This study makes a seminal contribution at the interface of sustainability issues, especially in environmental marketing and relationship management, by demonstrating that green image is beneficial in industrial relationships between suppliers (marketers) and buyers (customers). Although previous research has also questioned the role of environmental marketing in terms of purely monetary performance, we contend that there are advantages to be accrued in subscribing to environmental values. We show that B2B customers in high-impact industries consider themselves environmentally conscious and this, in turn, enhances customer loyalty.

However, the importance of building a green image that is responsive to customers' environmental aspirations is dependent on the specific market area and economy. Our study shows that the interest in environmental values does not follow the general economic development of a certain country. On the contrary, we find that companies originating from lower-income economies put more emphasis on the environmental image of their suppliers whereas in higher-income countries, customer companies have less expectations of the environmental responsiveness of supplier offerings. Reasons for this difference in preferences may be found in situational factors such as the current state of the economy in general (e.g. the local effect of global recession) or cultural differences.

Suppliers should therefore be cognizant of the importance of environmental reputation in their specific industry and operating environment.

The prevailing wisdom in relationship marketing dictates that the longer the supplier company keeps a customer, the more benefits both parties of the business relationship gain. Our findings do not endorse this view in terms of environmental value expectations. Specifically, we find that customers with longer relationships put *less* emphasis on the match between their environmental values and their suppliers' green image. This implies that in older relationships, the importance of the environmental aspect diminishes and factors other than green image and perceived value become the determinants of customer loyalty. To remain competitive during economically challenging times in highly competitive markets, suppliers should help their existing customers effortlessly express their preferences and expectations and tailor marketing communication accordingly.

When dealing with newer (or potential) customers, industrial suppliers may find competitive advantage in differentiation through green image. Customer loyalty to the supplier is strengthened if suppliers can convince their customers about their ability to offer environmental benefits alongside functional value. Industrial suppliers in highly competitive markets should emphasize their ability to co-create value with their customers in the broader value chain. However, in more mature customer relationships, industrial marketers should formulate the environmental marketing and sales arguments so that the buyer is also convinced of the cost-effectiveness and quality of the more environmentally oriented solution. Because investment cycles of complex industrial equipment are typically long and customer relationships may last for decades, the challenges of cultivating customer loyalty among long relationships are especially relevant to industrial marketing managers. Customer preferences are dynamic so there is value in examining customers' environmental aspirations, to meet their expectations as the relationship matures, keeping in mind the possible effect of the general economic situation.

### **Limitations and Research Suggestions**

It is prudent to consider the limitations of any research project so that the findings can be put in context for improvements in the future. First, this study examined the customers of three B2B companies that operate in industries perceived as having a rather significant impact on the environment. While we collected data from 25 countries, the validity of the findings could have been strengthened if we had been able to examine business customers in diverse industries. Second,

we measured all the constructs in our conceptual model with one survey conducted at one point in time. While we attempted to mitigate the common method variance problem both through survey design and with analytical tools, we could have conclusively ruled out its impact had we collected data from more sources or through longitudinal methods. Furthermore, our study is based on a cross-sectional analysis, and it measured relationships between variables rather than tested causality. Third, it would have been useful to consider other potential moderators that could influence our conceptual model, such as company size or type of industry.

Further research is encouraged to gain a better understanding of how environmental values can be measured at the organizational level with greater accuracy and coverage. A useful approach would be to understand which factors, whether they are barriers or drivers, might explain the gap between environmental values and pro-environmental purchasing behavior in both new and established B2B relationships. An examination of other exogenous variables such as regulatory forces and stakeholder interests in the value–attitude system may highlight the dynamics between environmental values and relationship outcomes. From a strategic management perspective, the inclusion of financial inputs and outputs of environmental marketing would provide a comparison with the self-reported values and outcomes. Finally, it would be useful to examine the extent to which environmental values and relationship value as perceived by both customers and suppliers are congruent, as well as which domains of environmental values contribute most to satisfaction and commitment in the business relationship.

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**Table 1.** AVE, reliabilities, and correlation matrix of the constructs (square root of the AVE appear in bold on the diagonal)

	AVE	Alpha	CR <sup>a</sup>	(1)	(2)	(3)	(4)	(5)	(6)
Environmental values (1)	0.56	0.80	0.86	<b>0.75</b>					
Green image (2)	0.88	0.76 <sup>b</sup>	0.94	0.38	<b>0.94</b>				
Perceived value (3)	0.66	0.74	0.85	0.15	0.69	<b>0.81</b>			
Loyalty (4)	0.88	0.93	0.96	0.29	0.59	0.65	<b>0.94</b>		
Country (5)	-	-	-	-0.25	-0.42	-0.43	-0.37	-	
Relationship length	-	-	-	-0.11	-0.28	-0.14	-0.12	0.19	-

<sup>a</sup>CR = composite reliability; <sup>b</sup> Correlation coefficient calculated for two-item scale.

**Table 2.** Direct effects

	$\beta$	$f^2$	$q^2$	
Environmental values → Green image	0.281***	0.105	0.132	
Environmental values → Perceived value	-0.046 ns	0.002	-0.032	
Environmental values → Loyalty	0.083 ns	0.009	0.012	
Green image → Perceived value	0.645***	0.588	0.248	
Green image → Loyalty	0.227**	0.040	0.048	
Perceived value → Loyalty	0.452***	0.191	0.183	
Country → Green image	-0.318***	0.131	0.112	
Country → Perceived value	-0.185**	0.054	0.016	
Country → Loyalty	-0.062 ns	0.004	0.000	
Relationship length → Green image	-0.192**	0.050	0.045	
Relationship length → Perceived value	0.068 ns	0.008	-0.004	
Relationship length → Loyalty	0.032 ns	0.000	0.007	
$R^2, Q^2, Total\ effects$	$R^2$	$Q^2$	Perceived value	Loyalty
Environmental values	-	-	0.135 ns	0.208***
Green image	0.296	0.266	0.645*** <sup>a</sup>	0.519***
Perceived value	0.503	0.310	-	-
Loyalty	0.470	0.416	-	-

\*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ; ns - not significant, <sup>a</sup> same as direct effect

**Table 3.** Moderator model results

	$\beta^a$	$\beta^b$	$\beta^c$
H3a. Env.values $\times$ Green image $\rightarrow$ Loyalty	0.174**	0.174**	0.348**
H3b. Env.values $\times$ Perceived value $\rightarrow$ Loyalty	0.438**	0.097 ns	0.535**
H4a. Rel.length $\times$ Env.values $\rightarrow$ Green image	0.256**	-0.133**	0.123 ns
H4b. Rel.length $\times$ Env.values $\rightarrow$ Perceived value	-0.057 ns	-0.078 ns	-0.135 ns
H4c. Rel.length $\times$ Green image $\rightarrow$ Loyalty	0.228**	-0.039 ns	0.189**
H4d. Rel.length $\times$ Perceived value $\rightarrow$ Loyalty	0.469**	-0.083 ns	0.386**

\*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ; ns - not significant

<sup>a</sup> Simple effect in the moderator model

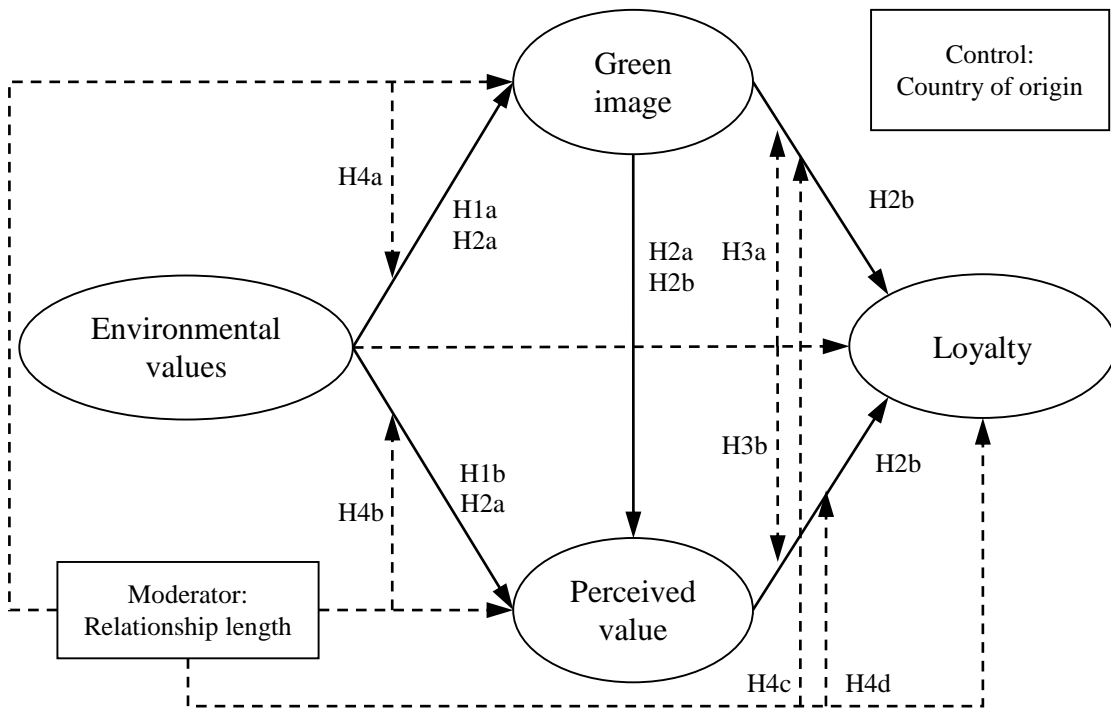
<sup>b</sup> Interaction effects

<sup>c</sup>  $\beta^a + \beta^b$



## Appendix. List of survey items

	Mean	Factor loading
<b>Environmental values</b> (seven-point scale “strongly disagree/strongly agree”)		
Our company’s employees have a strong interest in green values.	5.03	0.850
Environmental issues have had a strong impact on our distribution channels.	4.66	0.737
Our company co-operates with customers on environmentally friendly products.	5.25	0.657
Our company should redirect our customers towards more environmentally friendly products.	4.95	0.650
We are well aware of all the environmental effects of our production.	5.64	0.820
<b>Green image</b> (seven-point scale “strongly disagree/strongly agree”)		
X is known to be environmentally conscious.	4.76	0.931
X offers better products and solutions to improve our company’s environmental performance than its competitors.	4.55	0.943
<b>Perceived value</b>		
<i>Compared to competitors...</i> (seven-point scale “strongly disagree/strongly agree”)		
X’s price is reasonable in relation to the delivered outcome.	3.99	0.733
X’s products and solutions perform consistently.	4.93	0.806
The products/services provided by X are of higher quality.	4.61	0.891
<b>Loyalty</b>		
<i>How likely are you to...</i> (ten-point scale “very unlikely/very likely”)		
Do most of your future business in this sector with X?	6.60	0.929
Recommend X to other firms?	6.94	0.956
Use X the next time you need similar products/services?	7.31	0.931



**Figure 1.** Research model and hypotheses (dashed lines indicate moderating effects)