

Towards Green Loyalty: Driving from Green Perceived Value, Green Satisfaction, and Green Trust

Yu-Shan Chen^{1*}

Department of Business Administration, National Taipei University, Taiwan

ABSTRACT

This study proposed four original concepts – green perceived value, green satisfaction, green trust, and green loyalty – and discussed their relationships. The results showed that enhancing green perceived value, green satisfaction, and green trust of customers can increase their green loyalty. Furthermore, this study demonstrated that green perceived value can not only directly influence green loyalty positively, but also indirectly influence it positively via green satisfaction and green trust. In addition, this study undertook a comparative analysis between the original model and the four competing models. The results indicated that it is imperative to separate green perceived value, green satisfaction, green trust, and green loyalty from perceived value, satisfaction, trust, and loyalty. In the environmental era, if companies intend to raise their customers' green loyalty, they need to invest resources to raise their customers' green perceived value, green satisfaction, and green trust, rather than perceived value, satisfaction, and trust. Copyright © 2010 John Wiley & Sons, Ltd and ERP Environment.

Received 9 December 2009; revised 7 September 2010; accepted 27 September 2010

Keywords: green marketing; green loyalty; green perceived value; green satisfaction; green trust

Introduction

BECAUSE OF THE ENORMOUS AMOUNT OF ENVIRONMENTAL POLLUTION THAT DIRECTLY CONNECTS WITH INDUSTRIAL manufacturing worldwide, society has become increasingly aware of environmental issues such that more companies are willing to take environmental responsibilities (Chen *et al.*, 2006; Chen, 2008a; Moon, 2007). In fact, proper environmental regulations or standards can stimulate green innovations that actually lower cost, increase productivity, and raise competitive advantage (Chen *et al.*, 2006; Hellström, 2007; Porter and Van der Linde, 1995). Environmentalism has rapidly become a mainstream for consumers. Many businesses are seeking to catch this green opportunity. However, not all businesses have enough experience and knowledge to market their green products to consumers, though green marketing is now more important. According to the

* Correspondence to: Dr. Yu-Shan Chen, Department of Business Administration, National Taipei University, 151, University Rd., San Shia, Taipei 237, Taiwan. E-mail: dr.chen.ys@gmail.com

¹ Dr. Chen is an associate professor at the Department of Business Administration in National Taipei University in Taiwan. His research focuses on corporate environmental management, green marketing, technology management, and innovation management.

American Marketing Association, green marketing is the marketing activities of products that are presumed to be environmentally safe, and incorporates a broad range of activities, including product modification, changes to the production process, packaging changes, and modifying advertising (Henion and Kinnear, 1976).

Green marketing includes marketing processes and activities of developing and selling products or services based on environmental benefits. From an organizational standpoint, environmental considerations should be integrated into all aspects of marketing (Ottman, 1992). With the advent of this environmental era, companies must find an opportunity to enhance their products' environmental performance to strengthen customer loyalty. However, there are still several challenges for green marketing. First, green products require renewable and recyclable materials, which are costly; second, green technology requires huge investment in research and development; third, waste treatment is too expensive; and fourth, not all consumers are willing to pay a premium for green products. Despite these challenges, green marketing has continued to gain adherents, particularly in the era of growing global concern about climate change. This concern has led more companies to advertise their commitments to reducing their environmental impacts.

Because more and more consumers are embracing green initiatives and their perceptions of environmental, ethical, and social stewardship are continually growing, the sales of green products have increased and more consumers are willing to pay higher prices for green products over the past decade (Chen *et al.*, 2006). There are five reasons for companies to adopt green marketing: compliance with environmental pressures, obtaining competitive advantages, improving corporate images, seeking new markets or opportunities, and enhancing product value (Chen, 2008b). There are incentives for companies to undertake green marketing. However, green marketing has not been fully explored in the academic community. Although previous studies paid much attention to exploring the relevant issues of perceived value, satisfaction, trust, and loyalty, none explored these factors linked to green issues or environmental concerns. This study wanted to fill the research gap and focused on new ideas of green marketing in compliance with the environmental trends to help companies enhance the performance of green marketing. This has led to the need for this research to propose the four novel concepts – green perceived value, green satisfaction, green trust, and green loyalty – to develop a research framework and to discuss their managerial implications. In addition, this study employs a comparison research of the original model versus the competing models to indicate that it is important to divide green perceived value, green satisfaction, green trust, and green loyalty from general perceived value, satisfaction, trust, and loyalty.

Literature Review and Hypothesis Development

Environmental Pressures from External Institutions and Stakeholders

Firms may determine to adopt green marketing as the result of external environmental pressures. Neoclassical economists think of maximizing shareholders' wealth as firms' social objective (Friedman, 1970). However, institutional theory focuses on the impacts of external institutions on firms' strategies (Hoffman, 1997). It indicates that the main goal of firms is not always maximizing profit, and their strategies often reflect external pressures for legitimacy. To obtain the trust of external institutions, firms could have a good reason to green their products and to provide reliable information to consumers.

The literature on corporate social responsibility argues that firms have social responsibilities that may reinforce the profit objective (Wood and Jones, 1995). Companies green their products because they hope to be socially responsible. Such policies may not increase profits in the short term. However, socially responsible policies could have economic payoffs in the long term (Hart and Ahuja, 1997). Similarly, stakeholder theory suggests that firms should take into account the preferences of their multiple stakeholders to formulate their strategies to win the trust and satisfaction of their key stakeholders (Freeman, 1984; Mitchell *et al.*, 1997). If companies' decisions are based only on economic goals, incorporating environmental concerns into their strategies may be impossible (Drumwright, 1994). Companies need to adopt long-term sustainable thinking that relies on noneconomic goals as well as highlighting stakeholder and institutional pressures (Prakash, 2002).

A main strategic reason for green marketing is to enable companies to shape environmentally competitive rules, and thereby to reap first-mover advantages (Peattie, 1992; Peattie and Ratnayaka, 1992). Highlighting green

marketing often forces companies to apply strict environmental standards to their green products or processes, which would raise rivals' cost of entry (Barrett, 1991). In the end, companies could obtain support from external institutions and key stakeholders (Vogel, 1995). By pursuing economic goals they could strategically employ the arguments from the previous literature about institutional theory, stakeholder theory, and corporate social responsibility to adopt green marketing (Prakash, 2002).

Green Marketing

Environmental issues have been considered as important within the field of marketing since the early 1970s (Kassarjian, 1971). There was rising environmentalism of consumers in the 1990s; they were more willing to purchase green products that generate a minimum detrimental impact on the environment from responsible and environmental attitudes (Ottman, 1992; Peattie, 1992; 1995; Vandermerwe and Oliff, 1990; Wasik, 1995). Green marketing involves all marketing activities designed to generate and facilitate any exchange intended to satisfy the customers' environmental needs or wants (Polonsky, 1994). The main aim of green marketing is to formulate and implement environmentally beneficial marketing activities with the goal of creating revenue by providing exchanges that satisfy the firms' economic and social objectives (Menon and Menon, 1997). Green marketing does not only include developing green claims or making green packages, but also involves identifying, positioning, pricing, and promoting green products (Jain and Kaur, 2004).

Proper green marketing activities include identifying the market for green products and ideas, investigating consumers' green attitudes and behaviors, stratifying the green market into different segments based on the consumer needs, developing green positioning strategies, and formulating a green marketing mix program (Jain and Kaur, 2004). Green marketing has evolved over time. The evolution of green marketing includes three phases: the first phase was 'ecological' green marketing – during this period all marketing activities focused on clean technologies; the second phase was 'environmental' green marketing – during this period, marketing activities focused on designing and developing innovative green products; and the third phase was 'sustainable' green marketing – during this period marketing activities focused on the long-term sustainability from environmental, economic, and social considerations (Peattie, 2001).

The Positive Effect of Green Perceived Value on Green Satisfaction, Green Trust, and Green Loyalty

Satisfaction can be defined by the expectancy–disconfirmation paradigm. A comparison of customers' expectations and perceptions would result in either confirmation or disconfirmation (Oliver, 1996). Expectations of customers are confirmed when the perceptions of products or services exactly meet their expectations (Jiang and Rosenbloom, 2005). Disconfirmation would be the result of a discrepancy between the expectations and the perceptions (Oliver, 1996; Ruyter and Bloemer, 1999). Confirmation and positive disconfirmation could result in satisfaction, whereas negative disconfirmation leads to dissatisfaction (Oliver, 1996; Ruyter and Bloemer, 1999). Satisfaction is the degree of overall pleasure or contentment felt by a consumer, resulting from the performance of the product to fulfill the consumer's desires, expectations, and needs (Mai and Ness, 1999; Oliver, 1994, 1996; Olsen, 2002). Based on the definition above, this study proposed a new concept, 'green satisfaction', and referred to Oliver (1996) to define it as 'a pleasurable level of consumption-related fulfillment to satisfy a customer's environmental desires, sustainable expectations, and green needs'. Perceived value is a consumer's overall evaluation of the net benefit of a product or service based on a consumer's appraisal of what is received and what is given (Bolton and Drew, 1991; Patterson and Spreng, 1997). Based on the definition above, this study proposed a novel notion, 'green perceived value', and referred to Patterson and Spreng (1997) to define it as 'a consumer's overall appraisal of the net benefit of a product or service between what is received and what is given based on the consumer's environmental desires, sustainable expectations, and green needs'. Previous literature suggested that there is a positive relationship between perceived value and customer satisfaction (Cronin *et al.*, 2000; Keh and Sun, 2008). This study hypothesized that green perceived value of customers positively affects their green satisfaction, and proposed the following hypothesis.

Hypothesis 1 (H₁). Green perceived value of customers is positively associated with their green satisfaction

Trust includes three beliefs: integrity, benevolence, and ability (Blau, 1964; Schurr and Ozanne, 1985). Rotter (1971) defined interpersonal trust as 'an expectation held by an individual that the word, promise, or statement of another one can be relied on'. Similarly, Hart and Saunders (1997) argued that trust is a level of the confidence that another party would behave as expected. Trust is the intention to accept vulnerability based on positive expectations of the intentions or behaviors of another (Lin *et al.*, 2003; Rousseau *et al.*, 1998). In addition, Ganesan (1994) posited that trust is an extent of the willingness to depend on another partner based on the expectation resulting from the partner's ability, reliability, and benevolence. Referring to Blau (1964), Ganesan (1994), and Schurr and Ozanne (1985) this study proposed a new concept, 'green trust', and defined it as 'a willingness to depend on a product or service based on the belief or expectation resulting from its credibility, benevolence, and ability about environmental performance'. There is a positive relationship between perceived value of customers and their trust (Sirdeshmukh *et al.*, 2002). Some companies exaggerate or even fabricate the environmental value of their products, and in turn customers no longer trust their products (Kalafatis and Pollard, 1999). This study hypothesized that green perceived value of customers positively influences their green trust, and implied the following hypothesis.

Hypothesis 2 (H₂). Green perceived value of customers is positively associated with their green trust

Loyalty is the level of commitment to rebuy or to repurchase a preferred product or service consistently in the future (Oliver, 1999). Dick and Basu (1994) defined loyalty as the strength of the relationship between an individual's relative attitude and his repeat purchases. Based on the definitions above, this study proposed a novel notion, 'green loyalty', and referred to Oliver (1999) to define it as 'the level of repurchase intentions prompted by a strong environmental attitude and sustainable commitment towards an object, such as a product, a service, a company, a brand, a group, or so on'. Previous studies indicated that perceived value of customers demonstrated a strong and positive impact upon their repurchase intentions (Eggert and Ulaga, 2002; Patterson and Spreng, 1997). Tam (2004) argued that perceived value of customers would positively influence their post-purchase behaviors. In addition, perceived value of customers is a primary factor influencing their purchase intentions and loyalty (Brady and Robertson, 1999; Cronin *et al.*, 1997). This study hypothesized that green perceived value of customers positively affects their green loyalty, and proposed the following hypothesis.

Hypothesis 3 (H₃). Green perceived value of customers is positively associated with their green loyalty

The Positive Effect of Green Satisfaction on Green Loyalty

A previous study posited that the satisfaction–loyalty relationship is positive (Bowen and Chen, 2001). Customer satisfaction has an important role as the antecedent of customer loyalty (Oliver, 1999). Oliver (1999) suggested that customers first become loyal in the cognitive sense, then later in affective sense, and still later in a conative or behavioral manner. Affective loyalty is based on quality-based satisfaction or price-based satisfaction. The outcome of satisfaction is loyalty, and in turn satisfaction has a positive impact on loyalty (Spiteri and Dion, 2004). This study hypothesized that green satisfaction of customers positively influences their green loyalty, and implied the following hypothesis.

Hypothesis 4 (H₄). Green satisfaction of customers is positively associated with their green loyalty

The Positive Effect of Green Trust on Green Loyalty

Previous marketing literature posited that customer trust would increase the commitment to the relationship with the service provider (Grayson and Ambler, 1999; Moorman *et al.*, 1992). Social exchange theory indicated that customer trust would raise the social embeddedness of the consumer–provider relationship to further enhance the customer's commitment to the relationship (Singh and Sirdeshmukh, 2000). Previous research showed the importance of trust in buyer–seller relationships (Ganesan, 1994; Morgan and Hunt, 1994). Flavián *et al.* (2006) and Sirdeshmukh, *et al.* (2002) stated that customer loyalty directly depends on the degree of customer trust.

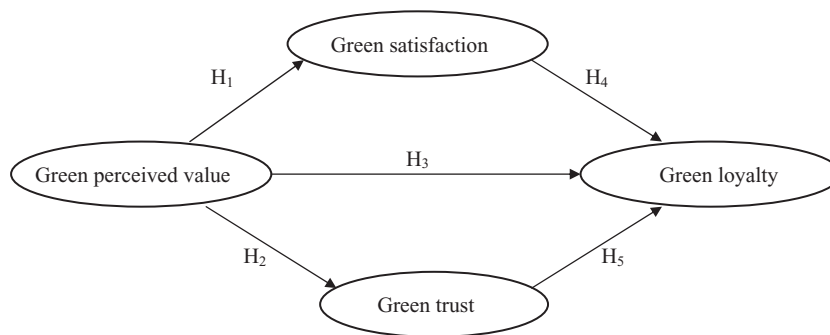


Figure 1. Research framework

Because customer trust is a significant determinant of future purchase intentions (Garbarino and Johnson, 1999), customer trust is positively related to customer loyalty (Chow and Holden, 1997). This study hypothesized that green trust of customers positively affects their green loyalty, and proposed the following hypothesis.

Hypothesis 5 (H₅). Green trust of customers is positively associated with their green loyalty

This study postulated that green perceived value, green satisfaction, and green trust of customers positively affect their green loyalty. In addition, the positive relationship between green perceived value and green loyalty is partially mediated by green satisfaction and green trust. The research framework is shown in Figure 1.

Methodology and Measurement

Data Collection and the Sample

This study used a questionnaire survey to verify the hypotheses. The research object of this study focused on consumers in Taiwan who have the purchase experience of information and electronics products in Taiwan. To obtain the results of the competing models, this study undertook two rounds of sampling and mailing questionnaires. Each respondent was randomly selected from the telephone directory of Taiwan. The respondents of the questionnaires must have the purchase experience of information and electronics products in Taiwan. The first round of sampling and mailing questionnaires was undertaken from 1 June 2009 to 30 June 2009. The second round was undertaken from 1 April 2010 to 30 April 2010. The research assistants explained the objectives of this study and the questionnaire content, made sure the respondents had the purchase experience of information and electronics products in Taiwan, and asked them to fill in the questionnaire via phone calls. Then, the study mailed the questionnaires to them via mailing or e-mail. The respondents were asked to return the completed questionnaires within 2 weeks through mailing or e-mail. High content validity is a necessary requisition for the questionnaire in this study. This study sent 700 questionnaires in the first round and 750 questionnaires in the second round. There were 256 valid questionnaires returned in the first round and 278 valid questionnaires returned in the second round; the effective response rates were 36.6% in the first round and 37.1% in the second round.

The response rates in the first and second rounds (36.6% and 37.1%, respectively) are quite common and acceptable for the type of questionnaire survey method in the academic field of management. There are many published papers in first-tier journals whose response rates are near or less than the response rate in this study. This rate compares favorably with the response rates obtained in previous management research based on the survey method: Blau *et al.* (1976) reported 36%; Chen *et al.* (2006, 2009) reported 33.8% and 21.2%, respectively; Chen (2008a,b) reported 22.7% and 21%, respectively; Lincoln and Kalleberg (1985) reported 35%; and Milliken *et al.* (1998) reported 18%.

To examine the possibility of nonresponse bias, this study performed a comparative analysis of the early respondents in the first round versus the later respondents in the second round on key characteristics. This procedure was used by Heide and John (1988). The key characteristics used for comparison reflect the factual information requested in the questionnaire: (1) age; (2) annual income; (3) gender; (4) city of residence; and (5) education. The distributions of these variables are not significantly different for the two groups. According to Armstrong and Overton (1977), if it is assumed that respondents who answer late are like nonrespondents, the lack of significant difference between early and late respondents would suggest that nonresponse is not a severe problem. In addition, Hung (2008) explored Taiwanese consumer behavior with respect to the purchase experience of information and electronics products in 2008. Because his research object is the same as in this study, we compared the key characteristics of the two groups in this study with Hung's sample. The distributions of the key characteristics are not significantly different for Hung's sample and the two groups in this study. The sample of this study is representative for Taiwanese consumers who have purchase experience of information and electronics products.

The questionnaire items in this paper were derived from the literature. They were originally designed in English and then translated into Chinese by two management scholars competent in both languages in the subject area in Taiwan. To avoid cultural bias and ensure validity, the Chinese version was finally back-translated into English by another two management scholars competent in both languages in the subject area in Taiwan and the author paid much attention to detecting any misunderstanding caused by translation. These back-translated questionnaire items and distinct classes of attitudes were the same as the original English ones. Furthermore, the questionnaire was pretested with eight experts and scholars in Taiwan to improve the clarity and relevance of the questionnaire and to ensure that items were interpreted as expected. Subsequently, this study invited 12 consumers who had purchase experience of information and electronics products to fill in the questionnaire and to identify ambiguities in terms, meanings, and issues in the second pretest. The questionnaire of this study had a high level of content validity.

Measurement

This study used 'five-point Likert scale from 1 to 5' rating from strong disagreement to strong agreement to measure the questionnaire items. 'Five-point Likert scale measures' are common and acceptable for this type of questionnaire survey method in the academic management field. There are many previous published papers in the first-tier journals that used the 'five-point Likert scale measure' (Chen and Chang, 2010; Chen *et al.*, 2006, 2009; Li, 2001; Shin and Zhou, 2003). The questionnaire in the first round contained only four novel constructs (variables): green perceived value, green satisfaction, green trust, and green loyalty. The questionnaire in the second round not only contained the four novel constructs: green perceived value, green satisfaction, green trust, and green loyalty, but also included the four traditional constructs in the marketing field: perceived value, satisfaction, trust, and loyalty. In addition, the questionnaires in the two rounds contained the items to ask the key characteristics of respondents which include: age, annual income, gender, city of residence, and education. The definitions and measurements of the constructs (variables) in this study were in the following categories.

Perceived Value (Green Perceived Value)

This study referred to Patterson and Spreng (1997) to measure perceived value (green perceived value). The measurement of perceived value (green perceived value) includes five items: (1) This product's (environmental) functions provide very good value for me; (2) This product's (environmental) performance meets my expectations; (3) I purchase this product because it has more (environmental) concern than other products; (4) I purchase this product because it is (environmentally) friendly; (5) I purchase this product because its (environmental) benefit is more than other products.

Satisfaction (Green Satisfaction)

This study referred to Oliver (1996) to measure satisfaction (green satisfaction). The measurement of satisfaction (green satisfaction) includes four items: (1) I am happy about my decision to choose this product because of its (environmental) functions; (2) I believe that I do the right thing to purchase this product because of its

(environmental) performance; (3) Overall, I am glad to buy this product because it is (environmentally) friendly; (4) Overall, I am satisfied with this product because of its (environmental) concern.

Trust (Green Trust)

This study referred to Blau (1964), Ganesan (1994), and Schurr and Ozanne (1985) to measure trust (green trust). The measurement of trust (green trust) includes five items: (1) I feel that this product's (environmental) functions are generally reliable; (2) I feel that this product's (environmental) performance is generally dependable; (3) I feel that this product's (environmental) argument is generally trustworthy; (4) This product's (environmental) concern meets my expectations; (5) This product keeps promises and commitments (for environmental protection).

Loyalty (Green Loyalty)

This study referred to Oliver (1999) to measure loyalty (green loyalty). The measurement of loyalty (green loyalty) includes four items: (1) I am willing to repurchase this product because of its (environmental) functions; (2) I prefer purchasing this product to other products because of its (environmental) performance; (3) I seldom consider switching to other products because of this product's (environmental) concern; (4) I intend to continue buying this product because it is (environmentally) friendly.

Empirical Results

To perform a comparison of the original model with the four competing models, this study undertook two rounds of sampling and mailing questionnaires. The sample from the first round was used to obtain the results of the original model (Figure 2 and Tables 1–4), then the sample from the second round was used to obtain the results of the four competing models, illustrated in Figure 3(a–d). This study used structural equation modeling to verify the hypotheses by using the software, *amos* 7.0. Structural equation modeling of this study examined the two levels of analysis, the measurement model and the structure model.

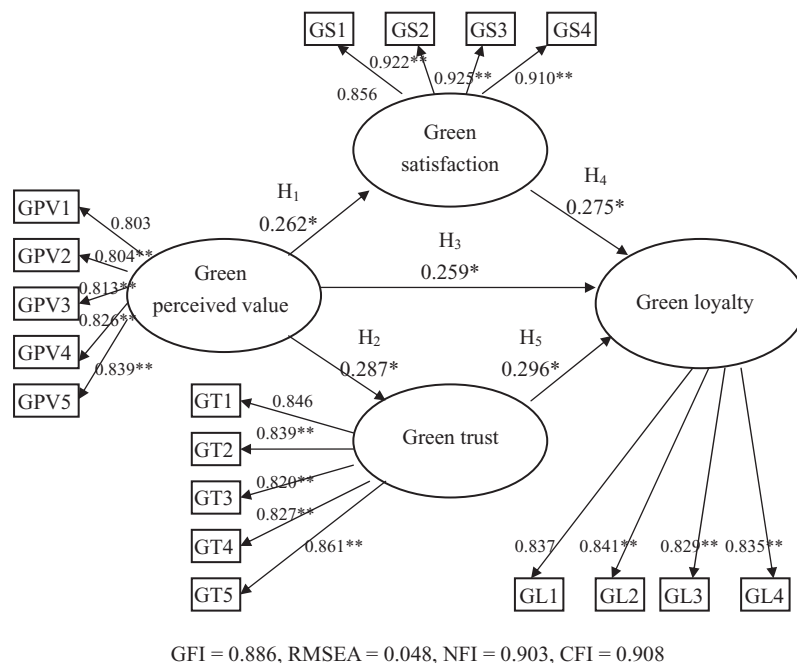


Figure 2. The results of the full model. GFI, goodness of fit index; RMSEA, root mean square error of approximation; NFI, normed fit index; CFI, comparative fit index

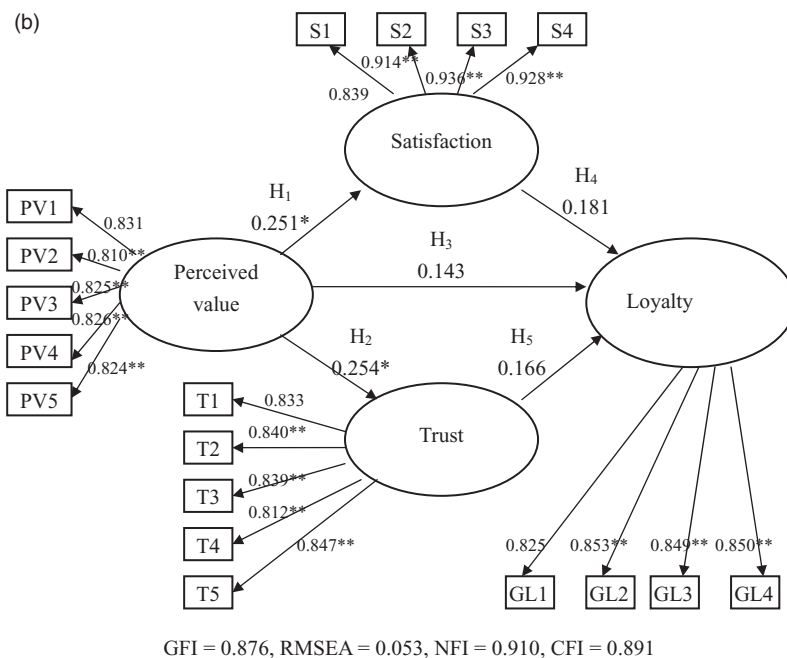
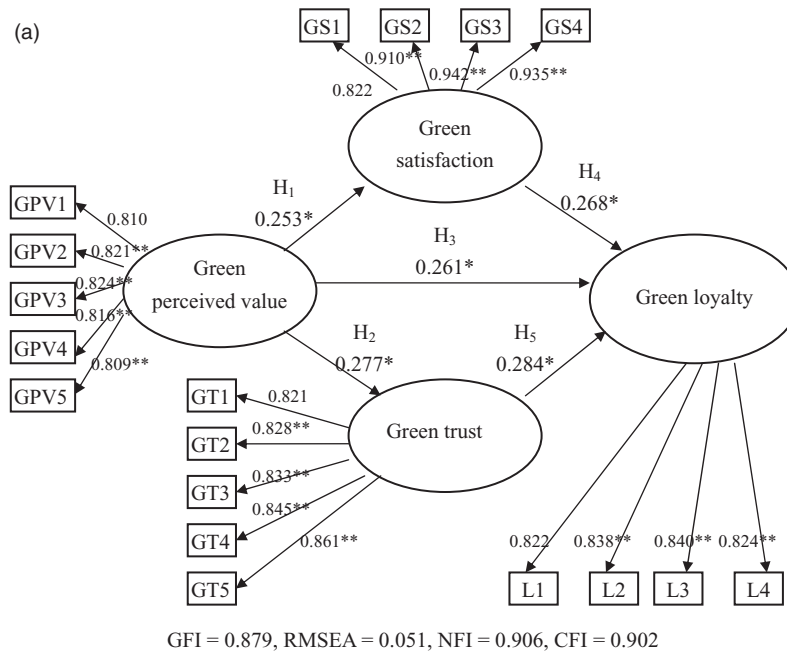


Figure 3. The results of (a) the first competing model; (b) the second competing model. GFI, goodness of fit index; RMSEA, root mean square error of approximation; NFI, normed fit index; CFI, comparative fit index

The Results of the Measurement Model

The means, standard deviations, and correlation matrices are shown in Table 1. In Table 1, there were positive correlations among green perceived value, green satisfaction, green trust, and green loyalty. According to the correlation results in Table 1, this study can roughly check the five hypotheses. Green perceived value, green

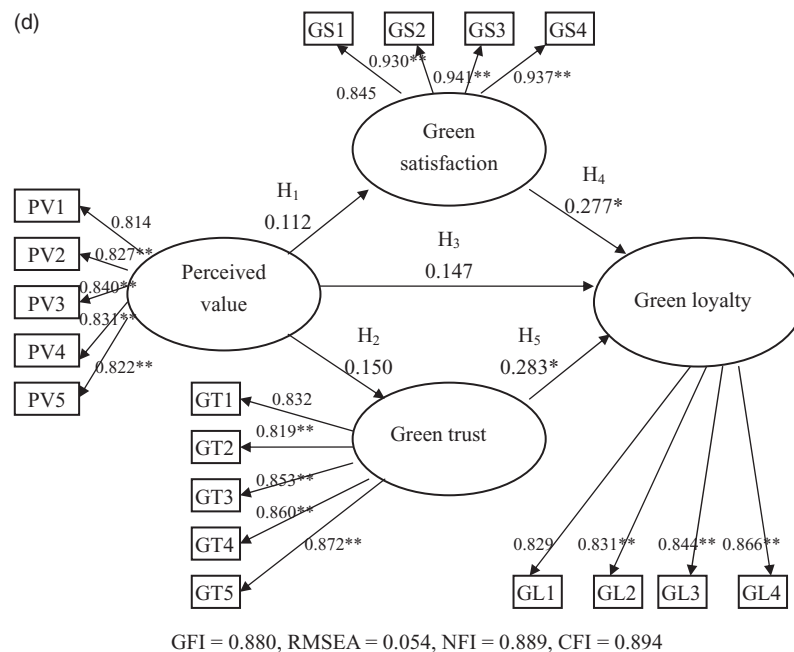
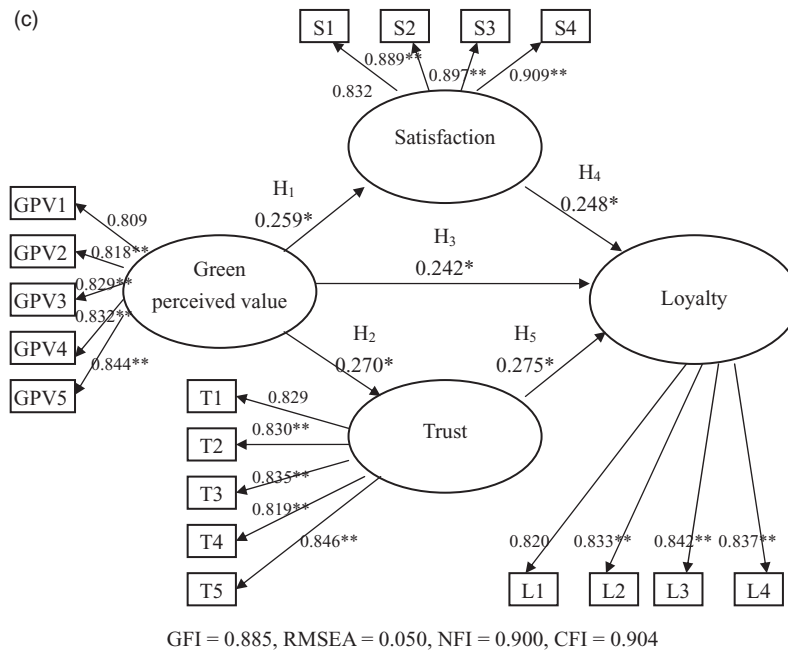


Figure 3. Continued. The results of (c) the third competing model, and (d) the fourth competing model. GFI, goodness of fit index; RMSEA, root mean square error of approximation; NFI, normed fit index; CFI, comparative fit index

satisfaction, and green trust of customers are positively related to their green loyalty, and green perceived value of customers is positively related to their green satisfaction and green trust. Although the five hypotheses might be supported according to the correlation results in Table 1, this study further used the advanced statistical approach, structural equation modeling, to precisely verify the five hypotheses. The factor analysis of the four constructs

Constructs	Mean	Standard Deviation	A.	B.	C.	D.
A. Green Perceived Value	3.938	0.602				
B. Green Satisfaction	4.361	0.471	0.374**			
C. Green Trust	3.834	0.582	0.390**	0.419**		
D. Green Loyalty	4.054	0.638	0.416**	0.364**	0.261**	

Table 1. Means, standard deviations and correlations of the constructs

** $P < 0.01$.

Constructs	Number of Items	Number of factors	Accumulation percentage of explained variance
Green Perceived Value	5	1	51.2%
Green Satisfaction	4	1	56.3%
Green Trust	5	1	52.3%
Green Loyalty	4	1	67.3%

Table 2. Factor analysis of this study

(variables) is shown in Table 2. 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. The measurement of this study was acceptable in content validity and there are several measures to confirm the reliability and validity of the constructs. On one hand, one measure of the reliability is to examine the loadings of each of the constructs' individual items. With respect to the quality of the measurement model for the sample, the loadings (λ) of items of the constructs listed in Table 3 are significant. On the other hand, Cronbach's α is the other measure of reliability. Table 3 lists Cronbach's α for the constructs. In general, the minimum requirement of Cronbach's α coefficient is 0.7 (Hair *et al.*, 1998). It can be observed that Cronbach's α coefficient of 'green perceived value' is 0.746; that of 'green satisfaction' is 0.723; that of 'green trust' is 0.766; that of 'green loyalty' is 0.835. Because the Cronbach's α coefficients of all four constructs are more than 0.7, the reliability of the measurements of this study were acceptable.

In addition, it is also important to verify whether the validity of the measurement in this study was acceptable. This study applied Fornell and Larcker's measure of average variance extracted (AVE) to access the discriminant validity of the measurement (Fornell and Larcker, 1981). The AVE measures the amount of variance captured by the construct through its items relative to the amount of variance because of the measurement error. To satisfy the requirement of the discriminant validity, the square root of a construct's AVE must be more than the correlations between the construct and other constructs in the model. For example, the square roots of the AVEs for the two constructs, green perceived value and green trust, are 0.814 and 0.840 in Table 3, which are more than the correlation, 0.390, between them in Table 1. This demonstrates that there is adequate discriminant validity between the two constructs. The square roots of all constructs' AVEs in Table 3 of this study were all more than the correlations among all constructs in Table 1, so the discriminant validity of the measurement in this study was acceptable. Besides, if the AVE of a construct is more than 0.5, then there is convergent validity for the construct. As shown in Table 3, the AVEs of the four constructs were 0.662, 0.817, 0.706, and 0.743, respectively, which were all more than 0.5, indicating that there was convergent validity in this study. In sum, it demonstrated that there were adequate reliability and validity in this study.

The Results of the Structural Model

Table 4 showed the results of the structural model in this study. The overall fit measures of the structural equation modeling in this study indicated that the fit of the model was good (Goodness of fit index = 0.886, Root mean

Constructs	Items	λ	Cronbach's α	AVE	Square root of AVE
A. Green Perceived Value	GPV1	0.803	0.746	0.662	0.814
	GPV2	0.804**			
	GPV3	0.813**			
	GPV4	0.826**			
	GPV5	0.839**			
B. Green Satisfaction	GS1	0.856	0.723	0.817	0.904
	GS2	0.922**			
	GS3	0.925**			
	GS4	0.910**			
C. Green Trust	GT1	0.846	0.766	0.706	0.840
	GT2	0.839**			
	GT3	0.820**			
	GT4	0.827**			
	GT5	0.861**			
D. Green Loyalty	GL1	0.837	0.835	0.743	0.862
	GL2	0.841**			
	GL3	0.829**			
	GL4	0.835**			

Table 3. The items' loadings (λ) and the constructs' Cronbach's α coefficients and AVEs

** $P < 0.01$.

AVE, average variance extracted.

Hypothesis	Proposed effect	Path coefficient	Results
H ₁	+	0.262*	H ₁ is supported
H ₂	+	0.287*	H ₂ is supported
H ₃	+	0.259*	H ₃ is supported
H ₄	+	0.275*	H ₄ is supported
H ₅	+	0.296*	H ₅ is supported

Table 4. The results of the structural model

The number in the bracket is t value.

* $P < 0.05$.

square error of approximation = 0.048, Normed fit index = 0.903, Comparative fit index = 0.908). All of the paths estimated are significant, and all hypotheses were supported in this study. Adding more paths in this research framework would not significantly improve the fit. The residuals of the covariance were also small and centered near 0.

The results of the full model in this study are shown in Figure 2. All five paths estimated were significant. This study found that the greater were the green perceived value, green satisfaction, and green trust of customers, the higher was their green loyalty. Enhancing green perceived value, green satisfaction, and green trust of customers not only meets the green trends and the popular environmentalism of consumers, but also increases their green loyalty. Besides, this study also verified that green satisfaction and green trust had partial mediation effects on the positive relationship between green perceived value and green loyalty. Green perceived value would positively affect

green loyalty directly, and positively affect it indirectly through the two partial mediators: green satisfaction and green trust. H_1 , H_2 , H_3 , H_4 , and H_5 were all supported in this study.

To clarify the conceptual model, this study added four competing models in Figure 3(a–d), and compared their empirical results with those of the original model in Figure 2. This study used the sample of the first round to obtain the results of the original model, when this study used the sample of the second round to obtain the results of the four competing models. According to the results of Figure 3(a), green perceived value, green satisfaction, and green trust positively affect loyalty. However, perceived value, satisfaction, and trust could not positively affect green loyalty in Figure 3(b). Comparing their empirical results with those of Figure 2, this study points out that green perceived value, green satisfaction, and green trust positively affect both general loyalty and green loyalty. Nevertheless, only green perceived value, green satisfaction, and green trust – not general perceived value, satisfaction, or trust – can positively affect green loyalty. As shown in Figure 3(c), green perceived value positively affects satisfaction, trust, and loyalty. However, perceived value could not positively affect green satisfaction, green trust, and green loyalty (Figure 3d). Comparing the empirical results with those of Figure 2, this study demonstrates that green perceived value not only affects general satisfaction, trust, and loyalty positively, but also influences green satisfaction, green trust, and green loyalty positively. However, only green perceived value – not general perceived value – can positively affect green satisfaction, green trust, and green loyalty. It is necessary to separate green perceived value, green satisfaction, green trust, and green loyalty from general perceived value, satisfaction, trust, and loyalty.

Conclusions and Implications

Consumer environmentalism has increased in the last three decades as environmental protection has become a hot issue in the world. Consequently, consumers have become more concerned about purchases that could impact the environment. Companies need to change their business models to comply with the green trends that are now more popular. Green marketing is one of the inevitable trends for companies, and its concept has been widely accepted and applied in recent years. In addition, companies that often develop new green products allow themselves to access new markets, to increase their profitability, and to enjoy competitive advantages over the companies that are not concerned about environmental issues (Chang and Kuo, 2008).

The first purpose of this study was to propose four new concepts – green perceived value, green satisfaction, green trust, and green loyalty – and to develop a research framework to discuss their relationships. The consequent of the research framework in this study is green loyalty, and the antecedent is green perceived value, while green satisfaction and green trust are partial mediators. The empirical results showed that green perceived value, green satisfaction, and green trust of customers are positively related to their green loyalty. In addition, this study found that green satisfaction and green trust partially mediate the positive relationship between green perceived value and green loyalty. Although green perceived value would directly influence green loyalty positively, it could indirectly influence green loyalty positively via the two partial mediators: green satisfaction and green trust. All hypotheses proposed in the research framework were supported in this study. For companies, investing resources to increase green perceived value, green satisfaction, and green trust of their customers can help them enhance the green loyalty of their customers.

The second purpose of this study was to demonstrate that it is essential to separate green perceived value, green satisfaction, green trust, and green loyalty from general perceived value, satisfaction, trust, and loyalty. This study undertook a comparative analysis of the original model versus the four competing models to verify the validity of the conceptual model. There are four findings as follows. First, the results show that green perceived value, green satisfaction, and green trust are positively related to both general loyalty and green loyalty; second, green perceived value, green satisfaction, and green trust – rather than general perceived value, satisfaction, and trust – are positively associated with green loyalty; third, the results indicate that green perceived value is not only related to general satisfaction, trust, and loyalty positively, but also is associated with green satisfaction, green trust, and green loyalty positively; and fourth, green perceived value – rather than general perceived value – is positively related to green satisfaction, green trust, and green loyalty. Under the popularity of green trends in the world, green loyalty would play a more important role in the field of marketing. Based on the four findings above, it is

useless to increase general perceived value, satisfaction, and trust to increase green loyalty. If companies try to improve the green loyalty of their customers, they should improve the green perceived value, green satisfaction, and green trust of their customers. It is meaningful to separate green perceived value, green satisfaction, green trust, and green loyalty from general perceived value, satisfaction, trust, and loyalty.

This study focused on the purchase experience of information and electronics products in Taiwan, so further studies should focus on the purchase experience for other products and compare their findings with this study. This study verified hypotheses by using questionnaire surveys, only providing cross-sectional data, so it cannot observe the dynamic change of green perceived value, green satisfaction, green trust, and green loyalty in the different environmental eras of Taiwan through longitudinal data. Future studies should be designed to investigate differences in green perceived value, green satisfaction, green trust, and green loyalty among the different environmental eras of Taiwan. It is hoped that the research results of this study are helpful to practitioners, scholars, and policy-makers, and contribute to relevant and future studies as reference.

Acknowledgements

The author is grateful for the funding received from the National Science Council in Taiwan for this study; the project number of this study is NSC 96-2416-H-224-006-MY2.

References

- Armstrong JS, Overton TS. 1977. Estimating nonresponse bias in mail surveys. *Journal of Marketing Research* **16**: 396–402.
- Barrett S. 1991. Environmental regulations for competitive advantage. *Business Strategy Review* **2**(1): 1–15.
- Blau PM. 1964. *Exchange and Power in Social Life*. Wiley, Inc.: New York.
- Blau PM, Falbe CM, McKinley W, Tracy PK. 1976. Technology and organization in manufacturing. *Administrative Science Quarterly* **21**(1): 20–40.
- Bolton RN, Drew JH. 1991. A multistage model of consumers' assessment of service quality and value. *Journal of Consumer Research* **17**(4): 375–384.
- Bowen JT, Chen SL. 2001. The relationship between customer loyalty and customer satisfaction. *International Journal of Contemporary Hospitality Management* **13**(5): 213–217.
- Brady MK, Robertson CJ. 1999. An exploratory study of service value in the USA and Ecuador. *International Journal of Service Industry Management* **10**(5): 469–486.
- Chang DS, Kuo LCR. 2008. The effects of sustainable development on firms' financial performance – an empirical approach. *Sustainable Development* **16**(6): 365–380.
- Chen YS, Lai SB, Wen CT. 2006. The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics* **67**(4): 331–339.
- Chen YS, Lin MJ, Chang CH. 2009. The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. *Industrial Marketing Management* **38**(2): 152–158.
- Chen YS. 2008a. The driver of green innovation and green image – green core competence. *Journal of Business Ethics* **81**(3): 531–543.
- Chen YS. 2008b. The positive effect of green intellectual capital on competitive advantages of firms. *Journal of Business Ethics* **77**(3): 271–286.
- Chen YS, Chang KC. 2010. Using the fuzzy associative memory (FAM) computation to explore the R&D project performance. *Quality & Quantity* **44**(3): 537–549.
- Chow S, Holden R. 1997. Toward an understanding of loyalty: the moderating role of trust. *Journal of Managerial Issues* **9**(3): 275–298.
- Cronin J, Brady M, Brand R, Hightower R, Shemwell D. 1997. A cross-sectional test of the effect and conceptualization of service value. *Journal of Services Marketing* **11**(6): 375–391.
- Cronin JJ, Brady MK, Tomas G, Hult M. 2000. Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing* **76**(2): 193–218.
- Dick AS, Basu K. 1994. Customer loyalty: toward an integrated conceptual framework. *Journal of the Academy of Marketing Science* **22**(2): 99–113.
- Drumwright ME. 1994. Socially responsible organizational buying: environmental concerns as a noneconomic buying criterion. *Journal of Marketing* **58**(3): 1–19.
- Eggert A, Ulaga W. 2002. Customer perceived value: a substitute for satisfaction in business markets. *Journal of Business and Industrial Marketing* **17**(2/3): 107–118.
- Flavián C, Guinalíu M, Gurrea R. 2006. The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management* **43**(1): 1–14.
- Fornell C, Larcker DF. 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* **18**(1): 39–50.

- Freeman RE. 1984. *Strategic Management: a Stakeholder Approach*. Pitman Publishing: Boston, MA.
- Friedman M. 1970. A Friedman Doctrine: The Social Responsibility of Business is to Increase its Profit. *New York Times Magazine* September 13: 32–33.
- Ganesan S. 1994. Determinants of long-term orientation in buyer–seller relationships. *Journal of Marketing* 58(2): 1–19.
- Garbarino E, Johnson MS. 1999. The Different Roles of Satisfaction, Trust, and Commitment in Customer Relationships. *Journal of Marketing* 63(2): 70–87.
- Grayson K, Ambler T. 1999. The dark side of long-term relationships in marketing services. *Journal of Marketing Research* 36(1): 132–141.
- Hair JF, Anderson RE, Tatham RL, Black WC. 1998. *Multivariate Data Analysis*. Prentice-Hall, Inc.: Upper Saddle River, NJ.
- Hart P, Saunders C. 1997. Power and trust: critical factors in the adoption and use of electronic data interchange. *Organizational Science* 8(1): 23–42.
- Hart SL, Ahuja G. 1997. Does it pay to be green? *Business Strategy and the Environment* 5: 31–37.
- Heide JB, John G. 1988. The role of dependence balancing in safeguarding transaction-specific assets in conventional channels. *Journal of Marketing* 52: 20–35.
- Hellström T. 2007. Dimensions of environmentally sustainable innovation: the structure of eco-innovation concepts. *Sustainable Development*, 15(3): 148–159.
- Henion KE, Kinnear TC. 1976. *Ecological Marketing*. American Marketing Association: Chicago, IL.
- Hoffman AJ. 1997. *From Heresy to Dogma*. New Lexington: San Francisco, CA.
- Hung ZH. 2008. *The Influences of Loyalty, Reputation, and Service Quality upon Repurchasing Behaviors – the Case of Taiwanese Information and Electronics Products*. Kaohsiung: National Kaohsiung First University of Science and Technology.
- Jain SK, Kaur G. 2004. Green Marketing: an Indian perspective. *Decision* 31(2): 168–209.
- Jiang P, Rosenbloom B. 2005. Customer intention to return online: price perception, attribute-level performance, and satisfaction unfolding over time. *European Journal of Marketing* 39(1/2): 150–174.
- Kalafatis SP, Pollard M. 1999. Green marketing and Ajzen's theory of planned behaviour: a cross-market examination. *Journal of Consumer Marketing* 16(4/5): 441–460.
- Kassarjian H. 1971. Incorporating ecology into marketing strategy: the case of air pollution. *Journal of Marketing* 35(3): 61–65.
- Keh HT, Sun J. 2008. The complexities of perceived risk in cross-cultural services marketing. *Journal of International Marketing* 16(1): 120–146.
- Li H. 2001. How does new venture strategy matter in the environment–performance relationship? *Journal of High Technology Management Research* 12(2): 183–204.
- Lin NP, Weng JCM, Hsieh YC. 2003. Relational bonds and customer's trust and commitment – a study on the moderating effects of web site usage. *Service Industries Journal* 23(3): 103–124.
- Lincoln JR, Kalleberg AL. 1985. Work organization and workforce commitment: a study of plants and employees in the U.S. and Japan. *American Sociological Review* 50(6): 738–760.
- Mai LW, Ness MR. 1999. Canonical correlation analysis of customer satisfaction and future purchase of mail-order speciality food. *British Food Journal* 101(11): 857–870.
- Menon A, Menon A. 1997. Enviropreneurial marketing strategy: the emergence of corporate environmentalism as market strategy. *Journal of Marketing* 61(1): 51–67.
- Milliken FJ, Martins L, Morgan H. 1998. Explaining organizational responsiveness to work–family issues: the role of human resource executives as issue interpreters. *Academy of Management Journal* 41(5): 580–592.
- Mitchell RK, Agle BR, Wood DJ. 1997. Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts. *Academy of Management Review* 22(4): 853–886.
- Moon J. 2007. The contribution of corporate social responsibility to sustainable development. *Sustainable Development* 15(5): 296–306.
- Moorman C, Zaitman G, Deshpande R. 1992. Relationships between providers and users of market research: the dynamics of trust within and between organizations. *Journal of Marketing Research* 29(3): 314–328.
- Morgan RM, Hunt SD. 1994. The commitment-trust theory of relationship marketing. *Journal of Marketing* 58(3): 20–38.
- Oliver RL. 1994. Conceptual issues in the structural analysis of consumption emotion, satisfaction, and quality: evidence in a service setting. *Advances in Consumer Research* 21(1): 16–22.
- Oliver RL. 1996. *Satisfaction: A Behavioral Perspective on the Consumer*. McGraw-Hill: New York, NY.
- Oliver RL. 1999. Whence consumer loyalty. *Journal of Marketing* 63(4): 33–44.
- Olsen SO. 2002. Comparative evaluation and the relationship between quality, satisfaction, and repurchase loyalty. *Journal of the Academy of Marketing Science* 30(3): 240–249.
- Ottman JA. 1992. *Green Marketing*. NTC Business Books: Chicago, IL.
- Patterson P, Spreng R. 1997. Modeling the relationship between perceived value, satisfaction and repurchase intention in a business-to-business, service context: an empirical examination. *International Journal of Service Industry Management* 8(5): 414–434.
- Peattie K. 1992. *Green Marketing*. Pitman Publishing Corp.: London, UK.
- Peattie K. 1995. *Environmental Marketing Management*. Pitman Publishing Corp.: London, UK.
- Peattie K. 2001. Towards sustainability: the third age of green marketing. *Marketing Review* 2(2): 129–146.
- Peattie K, Ratnayaka M. 1992. Responding to the Green Movement. *Industrial Marketing Management* 21(2): 103–110.
- Polonsky MJ. 1994. Green marketing regulation in the US and Australia: The Australian checklist. *Greener Management International* 5: 44–53.
- Porter ME, Van der Linde C. 1995. Toward a new conception of the environment–competitiveness relationship. *Journal of Economic Perspectives* 9(4): 97–118.

- Prakash A. 2002. Green marketing, public policy and managerial strategies. *Business Strategy and the Environment* **11**: 285–297.
- Rotter JB. 1971. Generalized expectancies for interpersonal trust. *American Psychologist* **26**: 443–450.
- Rousseau DM, Sitkin SB, Burt RS, Camerer C. 1998. Not so different after all: a cross-discipline view of trust. *Academy of Management Review* **23**(3): 393–404.
- Ruyter K, Bloemer J. 1999. Customer loyalty in extended service settings. *International Journal of Service Industry Management* **10**(3): 320–336.
- Schurr PH, Ozanne JL. 1985. Influences on exchange processes: buyers' preconceptions of a seller's trustworthiness and bargaining toughness. *Journal of Consumer Research* **11**(4): 939–953.
- Shin SJ, Zhou J. 2003. Transformational leadership, conservation and creativity: evidence from Korea. *Academy of Management Journal* **46**(6): 703–714.
- Singh J, Sirdeshmukh D. 2000. Agency and trust mechanisms in consumer satisfaction and loyalty judgements. *Journal of the Academy of Marketing Science* **28**(1): 150–167.
- Sirdeshmukh D, Singh J, Sabol B. 2002. Consumer trust, value, and loyalty in relational exchanges. *Journal of Marketing* **66**(1): 15–37.
- Spiteri JM, Dion PA. 2004. Customer value, overall satisfaction, end-user loyalty, and market performance in detail intensive industries. *Industrial Marketing Management* **33**(8): 675–687.
- Tam JLM. 2004. Customer satisfaction, service quality and perceived value: an integrative model. *Journal of Marketing Management* **20**(7/8): 897–917.
- Vandermerwe S, Oliff MD. 1990. Customers drive corporations green. *Long Range Planning* **23**(6): 10–16.
- Vogel D. 1995. *Trading Up: Consumer and Environmental Regulation in a Global Economy*. Harvard University Press: Cambridge, MA.
- Wasik JF. 1995. *Green Marketing and Management: a Global Perspective*. Blackwell: Cambridge, MA.
- Wood DJ, Jones RE. 1995. Stakeholder mismatching: a theoretical problem in empirical research on corporate social performance. *International Journal of Organizational Analysis* **3**(3): 229–267.