sustainability

MDPI

Article

Strategic Orientation, Environmental Innovation Capability, and Environmental Sustainability Performance: The Case of Taiwanese Suppliers

Chin-Hung Tseng [1], Kuo-Hsiung Chang [2,*] and Ho-Wen Chen [1]

1 Department of Environmental Science and Engineering, Tunghai University, Taichung 40704, Taiwan; kevin12291@gmail.com (C.-H.T.); Hwchen@thu.edu.tw (H.-W.C.)
2 Department of International Business, Tunghai University, Taichung 40704, Taiwan
* Correspondence: kuo1@go.thu.edu.tw; Tel.: +886-4-2359-0239

Received: 20 December 2018; Accepted: 15 February 2019; Published: 21 February 2019

Abstract: Although previous research has explored the effect of strategic orientation (SO) on innovation and business performance, little attention has been paid to its effect on environmental innovation capability (EIC) and environmental sustainability performance. Drawing on the strategic marketing and dynamic capability theory, this study attempts to increase the understanding of how SO (i.e., customer orientation, competitor orientation, and technology orientation) influences the EIC, which in turn enhances supplier's environmental sustainability performance in the context of buyer-supplier relationships. In addition, this study examines the impact of inter-functional coordination on SO and also explores the moderating role of buyers value added in the relationship between SO and EIC. Hierarchical regression analysis was performed to test hypotheses that are based on survey data collected in 127 Taiwanese information technology firms. The results show that customer orientation and technology orientation have a positive impact on the EIC, that buyers value added has a synergistic effect on the impact of competitor orientation on EIC, that inter-functional coordination has a positive impact on SO, and that EIC mediates the relationship between SO and environmental sustainability performance.

Keywords: strategic orientation (SO); environmental innovation capability (EIC); environmental sustainability performance; buyer-supplier relationships; buyers value added

1. Introduction

Global warming, ozone depletion, and climate change have been considered as important issues for global environmental sustainability [1]. The concept of environmental sustainability for firms has increasingly gained importance in academic and business fields in recent years [2,3]. Traditionally, some researchers believe that there is an intrinsic conflict between environmental sustainability and business performance [4]. To balance both economic benefits and environmental sustainability, Porter and van der Linde [5,6] argue that innovative solutions may "partially or more than fully offset the costs of complying with them". Therefore, in order to produce win-win solutions that facilitate both economic benefits and environmental sustainability simultaneously, firms have begun to place great emphasis on innovation, especially environmental innovation capability (EIC). Building from Eiadat et al. [4] and Wong et al. [7], we defined EIC as an organization's ability to develop new or modified pollution-prevention technologies, processes, and products to conserve the natural environment and enhance the organization's performance on environmental issues based on its interaction with the natural environment [4,7,8]. Additionally, some empirical research generally supports that strategic orientation (SO) has a positive effect on innovation and firm performance [9–12].

A firm's SO reflects the strategic directions implemented by a firm to create the appropriate behaviors for the continuous innovations and superior performance [9,10,12]. However, research exploring the SO–EIC–environmental sustainability performance relationship is still limited [4,13], and to date extant literature is relatively neglected to examine the mediating role of EIC in the link between SO and environmental sustainability performance.

To address this gap, this research considers the following research questions: How and when the SO affects environmental sustainability performance? The purpose of this study is to propose and empirically examine a conceptual model linking SO, EIC, and environmental sustainability performance. This article contributes to the literature in several ways. First, it develops and presents an integrated model incorporating SO, EIC, and environmental sustainability performance. The basic marketing concept advocates a market orientation [14–16]. As Narver and Slater [14] stated, market orientation (MO) is "the organizational culture that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers and continuous superior performance for the business." The literature on MO includes not only the customer orientation but also the competitive orientation [14–18]. Based on the MO research stream, more researchers explore the effect of three alternative SO—customer orientation, competitor orientation, and technology orientation—on firm performance [9–12,19,20]. SO reflects the "firm's philosophy of how to conduct business through a deeply rooted set of values and beliefs that guides the firm's attempt to achieve superior performance." [9–12] The vast majority of studies examine SO from a cultural perspective. The cultural perspective that focuses on the organizational norms and values will further influence behaviors. Additionally, according to Homburg and Pflesser [21], the concept of market-oriented organizational culture consists of basic values, norms, artifacts, and behaviors. This study deepens our understanding of how each SO component (i.e., customer orientation, competitor orientation, and technology orientation) [9–12,19,20] impacts on EIC in the context of buyer–seller relationships. Drawing on insights from SO literature [9–12,19,20], we argue that greater SO makes it a more driving force for the focal supplier to enhance EIC. Therefore, this research investigates the impact of SO component (i.e., customer orientation, competitor orientation, and technology orientation) on EIC.

Second, although there is a broad consensus about the value of innovation capability, little is known as to what conditions SO facilitates EIC. A contingency approach, which examines potential moderating factors that may influence the strength (or weakness) of the relationship between SO and EIC, also remains essentially missing. This study incorporates "buyers value added" in the research context and examines their moderating role [22]. Buyers value added refers to the extent to which supplier performance is improved through the influence of the buyer. The buyer's way of challenging supplier's strategies and providing market information will improve supplier performance. Not all firms facing similar organizational cultures will respond to the same prevailing taste. We suggest that SO as an organizational culture can only be effective to strength firm's EIC with the support of complementary market-related external resources. This research argues that a complementary relationship between SO and buyers value added, as well as a combined effect of the two can enhance EIC [23–26]. Therefore, we further suggest that SO is likely to enhance EIC when the buyer provides value added. This study contributes to a theoretical understanding of why some firms have more EIC than others, analyzing SO (organizational cultures) as a predictor and buyers value added (external resources) as a moderator.

Third, this study employs the strategic marketing [9–12] and the dynamic capability theory [27,28] to address the mediating role of EIC in the relationship between SO and environmental sustainability performance. Previous work applies the strategic marketing and dynamic capability theory to the analysis of environmental management strategies [29–36]. Based on the strategic marketing and dynamic capability theory, we argue that SO will allow it to enhance EIC (capability), which in turn, influence environmental sustainability performance. The application of the strategic marketing and dynamic capability theory provide new insights into how SO affects firm environmental sustainability performance through their EIC.

Finally, this study focuses on the specific case of Taiwanese suppliers in newly industrialized countries (NICs), i.e., Taiwan. Most studies on SO, innovation, and environmental performance have been conducted in the context of developed countries (North America, Japan, etc.). While recent research has increasingly dealt with SO and innovation in developing countries such as China, few studies have investigated SO, innovation, and environmental performance in newly industrialized economies such as Taiwan. Economists have used the term of NICs to describe a country with a level of economic development between developing and high- developed categories. These countries have moved from an agricultural economy to a more industrialized economy. Therefore, to survive the competition in the global market, Taiwanese Original Equipment Manufacturing (OEM) suppliers should develop market-based strategies centered on SO to guide their activities toward environmental sustainability. Considering the role of Taiwanese firms competing in the global market, this study focuses on understanding the relationships among SO, EIC, and environmental sustainability performance.

2. Theory, Conceptual Framework, and Hypotheses Development

The existing SO research comes from two different research streams: strategic management and strategic marketing [10]. Following Miles and Snow's [37] traditional typology, the strategic management stream conceptualizes SO in terms of defenders, analyzers, reactors, and prospectors [38,39]. In addition, the strategic marketing stream emerges from the vigorous market orientation (MO) literature originally developed by Kohli and Jaworski [15] and Narver and Slater [14]. Based on the MO research stream, a multidimensional conceptualization of SO includes three distinct orientations: customer orientation, competitor orientation, and technology orientation [9–11,20]. Therefore, the current research not only examines both customer and competitor orientations but also adds technology orientation. Judge and Douglas [34] demonstrated that firms successfully integrating natural environmental management issues into their strategic processes can achieve competitive advantages.

Dynamic capabilities research, extending from the resource-based view (RBV), focuses not on firm resources per se, but on how well firms create new resources or modify existing ones to meet their goals [27,28]. All firms have access to resources, while each firm's capabilities are unique [27,28]. Although considerable overlap existed between resources and capabilities, Teece, Pisano, and Shuen [27] clearly distinguish them. Resources represent a tangible stock of available factors controlled by a firm, while capabilities represent the ability of a firm to deploy these resources for certain desired outcomes.

Figure 1 shows our proposed conceptual framework. Following the environment–strategy–capability–performance paradigm [10,39], we propose that SO can facilitate EIC, which in turn, enhance environmental sustainability performance [9–12,20].

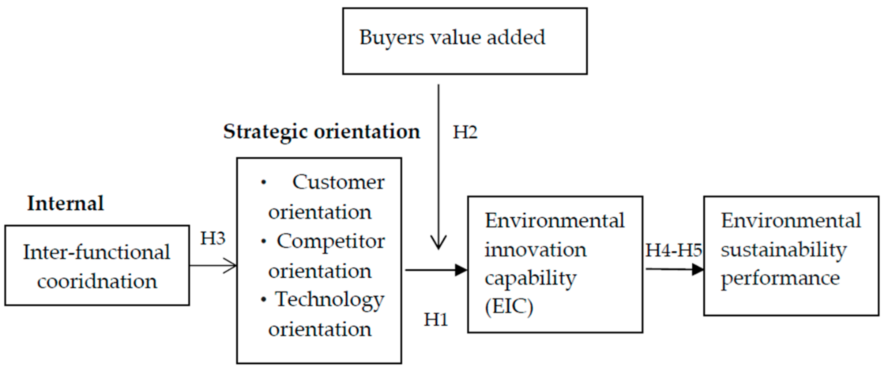

Figure 1. Conceptual framework.

Little is known about suppliers' decisions to enhance through SO in the context of buyer-supplier relationships. From the extant literature, three specific dimensions of SO (i.e., Customer orientation, Competitor orientation, and Technology orientation) are considered as potential antecedents of EIC.

In addition, environmental sustainability performance is proposed as potential outcomes of the EIC. Furthermore, we provide a contingency perspective by considering the moderating role of buyers value added in the relationship between SO and EIC. Furthermore, we also examine the impact of inter-functional coordination on SO [40].

2.1. Strategic Orientation

Previous studies have provided empirical support for the positive association between market orientation and firm performance [14–18]. A market orientation has been defined as a corporate culture "that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers" [16]. However, some researchers caution that overemphasizing on customers could lead to lower the firm's innovative capability because short-sighted customers lead market-oriented firms to lose their foresight of innovation. Grewal and Tansuhaj [41] find that a market orientation has a negative impact on firm performance, possibly because of the lack of foresight of market-oriented firms. The findings have incurred a series of debates.

Although the issue of whether market orientation facilitates or impedes innovation remains unanswered, most studies have presented a model that links SO, innovation, and firm performance in an attempt to contribute to the literature [9–12,19,20]. During the past two decades, the SO has been investigated from either a strategic or a cultural perspective. The strategic perspective focuses on a firm's strategic direction to create proper activities to interact with the market and provides a critical means for firms to survive in the competitive global market [9–11]. In addition, the cultural perspective emphasizes the organizational norms and values that encourage behaviors [9–11]. To keep the scope of the study manageable, we consider three types of SO subsets: customer orientation, competitor orientation, and technology orientation [9–12,19,20].

Customer orientation refers to the collection of intelligence about customers to satisfy their needs and desires [39–41]. Narver and Slater [16] argue that customer orientation is a firm's sufficient understanding of its target buyers in order to be able to create superior value for them. As Han et al. [42] stated, customer orientation advocates a continuous, proactive disposition toward meeting customers' expressed and latent needs.

According to Kholi and Jaworski [14], competitor orientation refers to a firm's ability to identify, analyze, and respond to competitors' actions. Narver and Slater [16] state that competitor orientation reflects a seller's ability to understand the short-term strengths and weaknesses and long-term capabilities and strategies of both the key current and the key potential competitors.

Finally, technology orientation reflects a firm's ability to use sophisticated technologies in the development of their new products, integrate rapidity new technologies, and proactively develop new technologies and create new product ideas [20]. Technology orientation also means that a firm is able to use its sophisticated and new technologies to build a new technical solution in order to meet new needs of the customers and create superior customer value continuously. Technology orientation focuses on new technologies and thus has a direct impact on innovations [9–11,19,20].

2.2. Environmental Innovation Capability

Environmental innovation capability (EIC) refers to the ability of OEM suppliers using new or modified techniques, processes, and products to avoid or eliminate environmental damage and to improve the organization's performance on environmental issues [4,43–45]. EIC reflects an OEM supplier's capabilities that use techniques or methods found to be the most practical and effective means of achieving the objective of pollution-prevention and meeting its environmental and social responsibilities. The EIC consists of several environmental management activities, such as using pollution-prevention technologies and innovating pollution-prevention technologies in environmental management [46]. According to the environmental management literature, we argue that EIC includes two critical dimensions: the use of pollution-prevention technologies and innovation of pollution-prevention technologies as a key source of competitive advantage [6,46]. The EIC may help firms develop an integrated approach to enhance environmental performance, and it allows an organization to be sustained for the long-term [47].

In contrast to general innovation capabilities, EIC may lead to 'win-win' situation characterized by both economic benefits and environmental sustainability due to the positive spill-over effects of environmental innovation [46,48]. EIC is an organization's dynamic capability to develop new solutions to satisfy customers' current and future needs [49–54] and has been considered as a source of competitive advantage [27]. In addition, considering the strong motivation behind environmental protection, firms from NICs must seek strategic asset, such as advanced environmental technologies or environmental innovation resources [38]. The reasoning behind the proposed relationship between EIC and firms' environmental performance is based on several factors. First, an EIC encourages the efficient implementation of new cleaner processes and in-process recycling, resulting in achieving competitive advantage over competitors by having lower costs or offering differentiated products [5,6]. Second, it may lead firms to find new process technologies or process changes of environmental protection that provide the potential to cut emissions well below required levels [5,6]. Third, EIC helps the firm improve its environmental leadership reputation relative to its competitors [5,6]. Therefore, we focus on specific mechanisms relating to EIC, rather than general innovation capability or knowledge acquisition capability.

In contrast with Non-EIC, EIC is a kind of firm-specific asset or resource that includes environmental technology, product, process, knowledge, and experience [35]. Following Christmann [48], EIC consists of two aspects: the capacity of applying appropriate pollution-prevention technologies and the capacity of developing the innovation of proprietary pollution-prevention technologies. Therefore, NIC, as a key mechanism of firms to undertake environmental innovation, is considered as a dynamic capability of the link between SO and environmental sustainability performance.

The general innovation theory emphasizes that innovation activities are mainly from market-driven or technology-driven factors [52]. SO is a corporate culture that creates the necessary behaviors for creating and providing superior value to customers [14,21,55–57]. To create superior customer value, firms need to commit to continuous information gathering of customer needs and competitors' capabilities [37,40]. The SO can be expected to enhance EIC in three ways. First, customer orientation places the highest priority on continuously finding ways to provide superior customer value. A customer-oriented firm may be more interested in long-term business prospects than in short-term profits. In other words, innovation is a long-term investment for the organization; therefore, there is more EIC in a customer-oriented culture than a less customer-centric culture [14,20,37]. Therefore, this notion of a customer-focused culture facilitates EIC. Second, because the goal of a competitor orientation is to stay in sync with other competitors or stay ahead of the competition, competitor orientation should promote EIC. In other words, EIC represents an organization with the ability to surpass competitors [14,20,37]. Finally, a firm's technology orientation reflects the strategic the use of sophisticated technologies, developing new technologies, and creating new product ideas. Such technological superiority gives the firm potential for a greater innovation capability. We expect technology orientation to facilitate EIC.

Based on the strategic marketing and dynamic capability theory, the firm's strategy leads to capabilities, and capabilities influence firm performance [16–19,27,28]. Firms deploy a strategy to create capabilities and then can lead to a competitive advantage [27,28]. In conformity with Verhoef and Leeflang's [58] arguments, SO is an antecedent of capability development. Therefore, We propose that SO can facilitate EIC (capability), which in turn, enhance competitive advantage. We argue that firms successfully integrating environmental management issues into their innovation processes can achieve competitive advantages. Therefore, we propose the following hypothesis.

Hypothesis 1 (H1). *Strategic orientation (a. Customer orientation, b. Competitor orientation, and c. Technology orientation) has a positive impact on environmental innovation capability.*

2.3. The Moderating Role of Buyers Value Added

To advance the understanding of the impacts of SO on EIC, we explore the contingency role of buyers value added. Over the past two decades, the literature on buyer–seller relationships has neglected the role of buyers. In this study, we suggest that buyers still play a major role in the relationships between buyer and supplier. They can add value to their suppliers even under challenging conditions by taking on an active role. We define buyers value added as a situation in which the buyers' influence leads to a level of performance in the supplier that is better than the supplier could have achieved as an independent entity without cooperation with buyers [22].

In general, buyers create value through three mechanisms [56]. First, buyers create value through activities such as information exchange and knowledge sharing. Second, buyers create value by preventing loss. In other words, buyers control suppliers to ensure product quality. Third, buyers create value through co-created value with suppliers. As Teece et al. [27] suggested, firms would need to possess complementary resources to gain competitive advantage. Therefore, buyers value added, a form of external factor, can be viewed as complementary resources, moderate the relationship between market orientation and EIC.

We posit that buyers value added is likely to enhance the positive effect of each SO component on EIC. The logic of this argument is that the combination of each SO component and buyers value added (external factor) is complementary and this bundling is likely to have a synergistic effect on EIC. We argue that if the combination of each SO component and buyers value added is complementary, this bundling is likely to have a synergistic effect on EIC. Building on the strategic marketing and dynamic capability theory [16–19,27,28], each SO component is more likely to lead to higher EIC when bundled with complementary resources, such as buyers value added. Therefore, buyers value added is likely to moderate the relationship between SO and EIC. Therefore, we posit the following hypothesis:

Hypothesis 2 (H2). *Buyers value added positively moderates the relationship between market orientation (a. Customer orientation, b. Competitor orientation, and c. Technology orientation) and environmental innovation capability in such a way that the relationship will be stronger in suppliers with the higher levels of buyers value added than in firms with no buyers value added.*

2.4. Inter-Functional Coordination and Strategic Orientation

Inter-functional coordination refers to the degree to which firms' cooperation between different functions or departments is involved in conducting specific tasks associated with new service development [20]. It can facilitate the generation, collection, and dissemination of market intelligence pertaining to new service development across functional areas [42]. Inter-functional coordination reflects a firm's emphasis on efficiency in all parts of the value chain [43].

Inter-functional coordination that is prevalent in business culture can be managed through various integration mechanisms, including the frequency of meetings, face-to-face contacts, and share decisions [14,20,37]. Therefore, openness in communication across functions provides an environment that is more receptive to innovations. We expect inter-functional coordination to facilitate SO because it influences the firm's orientations toward customers, competitors, and technology by facilitating sharing of important market information [40].

Hypothesis 3 (H3). *Inter-functional coordination has a positive impact on strategic orientation (a. Customer orientation, b. Competitor orientation, and c. Technology orientation).*

2.5. The Mediating Role of Environmental Innovation Capability

The main reason environmental sustainability performance is selected as the dependent variable is that environmental sustainability performance is proposed to create a competitive advantage. This study employs the strategic marketing [9–12,19,20] and dynamic capability theory [27,28] to address the mediating role of EIC in the relationship between SO and environmental sustainability performance.

The mediation perspective decomposes the effects of SO on environmental sustainability performance into the direct effects versus indirect effects. Mediation tests identify clearly the existence of a significant mediating mechanism (EIC) between SO (antecedent variable) and the environmental sustainability performance (consequent variable). First, the marketing strategy literature has proved that a firm's strategic orientation is an important antecedent of its performance [9–12,59–61]. Previous research has examined the impact of SO on firm performance [62], including economic performance [24], environmental performance [63], corporate reputation [24], customer satisfaction [20], new product innovation [64], and employee commitment [24]. We assume that a market-oriented firm will achieve superior environmental sustainability performance [63] because the firm is fully dedicated to one goal of creating superior value for buyers.

In addition, previous literature indicates the positive impact of innovation capability on business performance [47,48]. Environmental innovations, different from "traditional" innovations, may bring about a 'win-win' situation characterized by both economic benefits and environmental sustainability [51]. EIC consists of two distinct components: the use of pollution-prevention technologies and innovation of pollution-prevention technologies [46]. Therefore, EIC can not only reduce the creation of pollution and waste in the production process, but also improve and modify existing products, processes, and technique to increase environmental efficiency [64–66]. According to the dynamic capability theory [27,28], we argue that firms that possess higher EIC are more likely to trigger the environmental sustainability performance since such firms could differentiate processes, techniques, and products to reduce environmental damage from competitors. Based on this analysis, we propose the following hypothesis.

Hypothesis 4 (H4). *Environmental innovation capability has a positive impact on environmental sustainability performance.*

Previous research has argued that SO stimulates innovation which consequently increases firm performance [9–12,67,68]. According to the strategic marketing and dynamic capability theory, the firm's strategy lead to capabilities, and capabilities influence firm performance [9–12,19,20]. Consistent with the SO literature, we argue that SO can improve a firms' environmental sustainability performance, but the effect is indirect and is mediated by EIC. We argue that SO leads to EIC (capabilities), which in turn, enhances environmental sustainability performance.

The above arguments thus imply a potential mediating role of the EIC in the MO-environmental sustainability performance link. The key to actualizing this potential environmental sustainability performance lies in whether a supplier can manage and exploit the market intelligence more quickly to build EIC which ultimately enhances its environmental sustainability performance. That is, without EIC, it is less likely that SO can directly impact on firm environmental sustainability performance. Therefore, market orientation drives its environmental sustainability performance through the development of environmental innovation capability. Consequently:

Hypothesis 5 (H5). *Environmental innovation capability mediates the relationship between strategic orientation (a. Customer orientation, b. Competitor orientation, and c. Technology orientation) and environmental sustainability performance.*

3. Methods

3.1. Sample and Sampling Procedure

To explore the relationships among SO, EIC, and environmental sustainability performance, survey data was collected from Taiwanese firms in technology industries. The sector of technology manufacturers in Taiwan has specifically been chosen for the two reasons. First, technology manufacturers in Taiwan need to meet international buyers' demands [69–71] and comply with the requirements for the environment that have the obligation to reduce environmental pollution, energy and water use, and emissions. Second, these firms have heavy pressures to seek ISO14001 Environmental Management Standards certification and implementation of environmental management is a high priority in the Taiwanese government's economic development agenda.

The sampling frame was constructed from Company Information Database (TOP5000 Company List) published by the China Credit Information Service. The database provides rankings for business in Taiwan, financial information, business directories, and in-depth business information. Of the 900 randomly selected contacts in the sample frame, this study receives 136 responses, yielding a response rate of 15.11%. The study excludes 9 responses due to large amounts of missing data on the main variables. The final sample consists of 127 usable questionnaires, representing a valid return rate of 14.11%.

Respondents have worked with their respective firms for an average of 13.7 years. The surveyed contract manufacturers supply a variety of products, including notebook PCs, desktop PCs, peripherals, card/board, PDAs, integrated circuit (IC), precision machinery, optoelectronics, biotechnology, digital cameras, mobile phones, networking equipment, semiconductors, and others. The average age of these firms was 16.7 years. The number of employees varied between 100 and 30,500, but 55.7% of suppliers were less than 100 employees. The relation duration with international buyer ranged from 5 years to 30 years, but 54.2% of suppliers were more than 15 years.

Before conducting the survey by questionnaire, standard blind translation procedures were used between Chinese and English by bilingual Chinese researchers [72]. The Chinese questionnaire was originally developed in English by two academic researchers in this field, and then translated into Chinese. To ensure the questions are clear, meaningful, easy to understand, we then conducted a pilot-test with 10 manufacturing managers [73].

Following Armstrong and Overton's procedure [74] to assess nonresponse bias, we compared key variables in the survey from a sample of those firms responding earliest (n = 82) to a sample of those firms responding latest (n = 45). We employ T-test to check for differences in a number of employees and annual sales volume between early and late respondents. The study finds no significant differences between early and late respondents on some variables such as a number of employees and sales volume. Therefore, non-response bias is not expected to significantly affect the study results.

3.2. Measures

3.2.1. Construct Measure

The measurements for each construct in this study are listed in the Appendix A. Informants responded to these items using a seven-point Likert-type scale for all variables from 'strongly disagree' (1) to 'strongly agree' (7). The SO was measured with ten items adapted from Jeong et al. [20] and Narver & Slater [14], including three main concepts: customer orientation, competitor orientation, and technology orientation. Sample items are "Our objectives are driven primarily by customer satisfaction", "Our strategy for competitive advantage is based on our understanding of our customers' need", "We respond rapidly to competitive actions that threaten us", "We build upon proven technological breakthroughs made by ourselves", and "We emphasize technological superiority to differentiate our new products". Inter-functional coordination was measured with three items adapted from Narver & Slater [14] and Paladino [75]. Sample items are "All of our functions, not just marketing and sales are responsive to and integrated into serving markets", "We share programs and resources with other business units in the corporation", and "We share programs and resources with other business units in the corporation".

EIC was measured with six items by both uses of pollution-prevention technologies and innovation of proprietary pollution-prevention technologies, adapted from Christmann [46]. Sample items included "Implementation of new cleaner processes", "We address this issue mainly with technologies developed within the company", and "We mainly developed new or improved products". Environmental sustainability performance was measured by the four items adapted from Li et al. [76]. Sample items are "We have reduced energy use in our facilities" and "We have reduced waste at our facilities". This measure of buyers value added is designed to incorporate important elements of buyers' value creation. The measurement of value added is difficult because it is difficult to find objective measures. Therefore, buyers value added was measured by the four items adapted from Nell and Ambos [22]. Sample items included "Your customer's way of challenging your strategies and tactics has improved your performance" and "Your customer's activities have to lead to substantial cost savings at your company".

We controlled for several potential sources of heterogeneity in our sample. Firm size, Firm age, and the length of the relationship are likely to affect EIC. First, the variable of firm size was measured as the logarithm of the number of employees. Regarding the measurement of Firm age, we use the number of years of firms established. Finally, we controlled for the length of the relationship by using the logarithm of the number of years of the exchange relationship.

3.2.2. Reliability and Validity

We develop measurement items based on the previous literature to establish content validity. Table 1 reports the construct reliability of all variables using Cronbach's α and composite reliability (CR) value and average variance extracted (AVE). The overall the Cronbach's α and CR values in this study are greater than 0.70, as Nunnally suggests [76]. Therefore, the reliability of this research is ensured.

Table 1. Results of confirmatory factor analysis (CFA).

Constructs	Scale Items	Standardized Factor Loadings	Cronbach's α	AVE	Composite Reliability
Environmental Innovation Capability (EIC)	EIC1	0.70	0.79	0.63	0.78
	EIC2	0.94			
	EIC3	0.70			
	EIC4	0.90			
	EIC5	0.92			
	EIC6	0.71			
Strategic orientation (SO)	CU1	0.78	0.87	0.62	0.87
	CU2	0.84			
	CU3	0.82			
	CU4	0.70			
	CO1	0.94	0.85	0.69	0.86
	CO2	0.92			
	CO3	0.70			
	TO1	0.70	0.84	0.57	0.85
	TO2	0.89			
	TO3	0.73			
	TO4	0.70			
Inter-functional coordination	IF1	0.91	0.92	0.68	0.91
	IF2	0.81			
	IF3	0.94			
Buyers value added	BVA1	0.70	0.77	0.67	0.79
	BVA2	0.94			
	BVA3	0.88			
	BVA4	0.74			
Environmental sustainability performance	ESP1	0.81	0.94	0.83	0.94
	ESP2	0.97			
	ESP3	0.91			
	ESP4	0.93			

Note: Average variance extracted: AVE.

A confirmatory factor analysis (CFA) was conducted in Amos 24.0 to assess the reliability, and convergent and discriminant validity of the multi-item scales. To assess model fit, we used the overall model chi-square measure (χ^2), the goodness-of-fit index (GFI), the comparative fit index (CFI), the incremental fit index index (IFI), and the root mean square error of approximation (RMSEA). These indices are most appropriate for assessing model fit.

Because the sample sizes are not large, we estimated two measurement models: the first for EIC, buyers value added, environmental sustainability performance (χ^2 = 96.68, df = 61, χ^2/df = 1.58, p = 0.002; GFI = 0.91; CFI = 0.96; IFI = 0.97; RMSEA = 0.07), and the second for the SO and inter-functional coordination (χ^2 = 131.01, df = 65, χ^2/df = 2.02, p = 0.00; GFI = 0.90; CFI = 0.95; IFI = 0.95; RMSEA = 0.08). Although the chi-square statistic is significant, this statistic is sensitive to the sample size and model complexity [77]. These indices are more appropriate for assessing model fit. The results on indicator loadings are significant (p < 001).

Additionally, composite reliabilities (CR) were estimated to establish the internal consistency of the measures. The CR of each factor ranged from 0.78 to 0.94 (larger than 0.70). Therefore, these findings indicate that the measures have adequate convergent validity and construct reliability. As reported previously, the Cronbach's a score for each construct was above the widely accepted threshold of 0.7. Details of the constructs and the operationalizations are provided in Appendix A. Although the chi-square statistic is significant, this statistic is sensitive to the sample size and model complexity [77]. However, the loadings on indicator loadings are also significant, so that convergent validity is achieved.

The discriminant validity of the measures was assessed. We tested whether, for each pair of constructs, the squared correlation between the two constructs was less than the average variance extracted (AVE) for each construct [78]. The results show that the AVE of each factor is larger than 0.5 and larger than the squared correlation of that factor's measure with all measures of other factors in the model [79].

3.2.3. Common Method

We also assessed whether common method bias posed a serious threat. First, following Podsakoff et al. [80,81], the interviewers at the beginning of the survey process gave respondents a strong assurance of anonymity and the confidentiality of their responses. Second, the order of the questions varied between participants to help reduce participant perceptions of a direct relationship between the constructs. Third, we adopted Harman's one-factor test by entering all the principal constructs into a principal components factor analysis. The results show that no common factor loading is apparent in any of the measures, and Factor 1 accounts for roughly 24.5% of the variance in the data [80,81]. Therefore, common method bias is not a serious problem for our data. Finally, following Lindell and Whitney [82], we conducted a marker variable test. We used an common variance (MV) marker variable that was theoretically unrelated to our principal constructs: political ties. The results showed that after adjustment, our proposed relationships still remain significant. Therefore, these efforts confirmed that the common method bias was insignificant.

4. Results

The means, standard deviations, reliabilities (coefficient alphas), and correlations among the variables are presented in Table 2. Data were analyzed using the hierarchical regression analysis. The variance inflation factors (VIF) in the regression models were all less than 2, which indicate that multicollinearity is not a serious problem.

Table 2. Descriptive statistics and correlations.

Variables	1	2	3	4	5	6	7
Mean	5.91	5.36	5.43	4.85	4.94	5.23	5.72
S.D.	0.89	1.32	1.15	0.97	0.97	0.97	0.92
1. Customer orientation	**0.62**						
2. Competitor orientation	0.52 ***	**0.69**					
3. Technology orientation	0.08	0.17	**0.68**				
4. Inter-functional coordination	0.55 ***	0.47 ***	0.18 *	**0.57**			
5. Buyers value added	0.14	0.04	0.19 *	0.36 ***	**0.67**		
6. EIC [a]	0.35 ***	0.22 *	0.22 *	0.18 *	0.41 ***	**0.63**	
7. Environmental performance	0.08	0.02	0.23 *	0.18 *	0.49 ***	0.44 ***	**0.83**

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, bold values on the diagonal are the square root of AVE values.
[a] Environmental innovation capability (EIC).

Table 3 shows the hierarchical regression results of three models in which the dependent variable is EIC. Model 1 includes only the control variables. Among the control variables, relationship length has a positive and significant effect on environmental innovation capability (β = 0.300, $p < 0.01$).

We hypothesize that SO has a positive effect on EIC. In Table 3, Model 2, SO has a positive and significant effect on EIC (β = 0.436, $p < 0.001$). Hence, H1 is supported. Model 3, we introduced each SO component (e.g., customer orientation, competitor orientation, and technology orientation) to assess their possible linear impacts on EIC. We found that customer orientation (β = 0.325, $p < 0.01$) and technology orientation (β = 0.180, $p < 0.05$) have a significant positive effect on EIC. However, the competitor orientation (β = 0.004, $p > 0.1$) does not have a significant positive effect on EIC. Therefore, these results provide support only for H1a and H1c but not H1b.

Table 3. Regression results for environmental innovation capability (EIC).

	Model 1 β(t-Value)	**Model 2(H1) β(t-Value)**	**Model 3 (H1a-c) β(t-Value)**	**Model 4 (H2a-c) β(t-Value)**
Control variables				
Firm size	0.005(0.058)	−0.047(−0.552)	−0.064(−0.746)	0.078(0.908)
Firm age	0.030(0.205)	0.105(0.799)	0.122(0.930)	0.055(0.430)
Relationship length	0.300(2.124) *	0.252(1.993) *	0.235(1.852) *	0.259(2.195) *
Direct effects				
Strategic orientation (SO)		0.436(5.614) ***		
Customer orientation			0.325(3.051) **	0.287(2.658) **
Competitor orientation			0.004(0.423)	0.055(0.546)
Technology orientation			0.180(2.120) *	0.046(0.502)
Buyers value added (BVA)				0.290(3.101) ***
Moderating effects				
Customer × BVA				−0.062(−0.562)
Competitor × BVA				0.363(3.01) ***
Technology × BVA				−0.167(−1.726)
R^2	0.107	0.294	0.311	0.452
Adj-R^2	0.085	0.270	0.276	0.403
F	4.785 **	12.380 ***	8.800 ***	9.304 ***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In H2, we predicted that buyers value added moderates the relationship between each SO component and EIC. To minimize the effect of multicollinearity, the variables of buyers value added and each SO component were first mean-centered [83]. As Table 3 shows, Model 4, the coefficient of the interaction of competitor orientation with buyers value added is significant (β = 0.363, $p < 0.001$), we find support for hypothesis H2b. However, customer orientation (β = −0.062, $p > 0.1$) and technology orientation (β = −0.167, $p > 0.05$) have not a significant positive effect on EIC. Hence, H2a and H2c are not supported.

In H3, we predicted that inter-functional coordination has a positive impact on each SO component. In Table 4, Model 5, SO has a positive and significant effect on EIC (β = 0.486, $p < 0.001$). Hence, H3 is supported. With Models 6–8, we respectively introduced each SO component (e.g., customer orientation, competitor orientation, and technology orientation) to assess their possible linear impacts on EIC. We found that customer orientation (β = 0.445, $p < 0.001$), competitor orientation (β = 0.229, $p < 0.01$), and technology orientation (β = 0.538, $p < 0.001$) have a significant and positive effect on EIC respectively. Therefore, these results provide support for H3a, H3b, and H3c.

Table 4. Regression results for environmental innovation capability (EIC).

	Model 5 Strategic Orientation (SO)	**Model 6 Customer Orientation**	**Model 7 Competitor Orientation**	**Model 8 Technology Orientation**
	(H3) β(t-Value)	**(H3a) β(t-Value)**	**(H3b) β(t-Value)**	**(H3c) β(t-Value)**
Control variables				
Firm size	0.116(1.326)	0.130(1.452)	0.033(0.339)	0.132(1.58)
Firm age	−0.22(−1.655)	−0.250(−1.818)	−0.128(−0.845)	−0.177(−1.360)
Relationship length	0.100(0.771)	0.157(1.183)	0.055(0.373)	0.041(0.329)
Direct effects				
Inter-function coordination	0.486(5.075) ***	0.445(5.453) ***	0.229(2.545) *	0.538(6.95) ***
R^2	0.250	0.220	0.056	0.301
Adj-R^2	0.225	0.194	0.024	0.278
F	9.937 **	8.413 ***	1.753 *	12.828 ***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

H4 predicts a positive relationship between EIC and environmental sustainability performance. H5 proposes that EIC as a mediator in the relationship between SO and environmental sustainability performance. To analyze the mediating model, we follow Baron and Kenny's [84] procedures and assess regression models with environmental sustainability performance as a dependent variable, as displayed in Table 5. First, we determine whether there is a significant relationship between each SO component and environmental sustainability performance. In Model 9, 10, and 11 of Table 5, we examine the impact of customer orientation (β = 0.291, $p < 0.05$), competitor orientation (β = 0.193, $p < 0.05$), and technology orientation (β = 0.353, $p < 0.01$) on environmental sustainability performance respectively. Second, EIC was introduced in Model 12. The results show that EIC (β = 0.422, $p < 0.001$) has a direct effect on environmental sustainability performance, therefore, H3 is supported. In addition, customer and competitor orientation do not have a positive impact on environmental sustainability performance, and that technology orientation (β = 0.217, $p < 0.05$) do have a significant effect on environmental sustainability performance. Therefore, EIC fully mediates the impacts of customer and competitor orientation on environmental sustainability performance, and EIC partially mediates the effect of technology orientation on environmental sustainability performance. Hence, H4 is supported.

Table 5. Regression results for environmental sustainability performance.

	Model 9	Model 10	Model 11	Model 12
	β(t-Value)	β(t-Value)	β(t-Value)	β(t-Value)
Control variables				
Firm size	0.086(0.895)	0.118(1.207)	0.076(0.815)	0.084(0.973) ***
Firm age	−0.036(−0.241)	−0.075(−0.496)	−0.052(−0.364)	−0.072(−0.546)
Relationship length	0.121(0.848)	0.157(1.085)	0.150(1.088)	0.021(0.166)
Direct effects				
CUO	0.291(3.325) **			0.083(0.749)
COO		0.193(2.175) *		−0.078(−0.741)
TEO			0.353(4.152) **	0.217(2.493) *
EIC				0.422(4.537) ***
R^2	0.115	0.069	0.155	0.308
Adj-R^2	0.085	0.038	0.126	0.266
F	3.848 **	2.212 *	5.444 ***	7.361 ***

Notes: $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, customer orientation: CUO, Competitor orientation: COO, Technology orientation: CEO, Environmental innovation capability: EIC.

5. Conclusions and Discussion

The purpose of this study is to explore the association between each SO component (i.e., customer orientation, competitor orientation, and technology orientation) and environmental sustainability performance considering the mediating role of EIC and the moderating role of the buyers value added. This study contributes to the strategic marketing, dynamic capability, SO, and environmental sustainability literature through investigating the relationships among SO, EIC, buyers value added, and environmental sustainability performance.

This study enriches our theoretical perspective in several ways. First, this study has provided insights into understanding the impact of SO on EIC. Drawing on the strategic marketing [9–12,19,20] and dynamic capability theory [27,28], the results show that SO has a significant influence on EIC. In addition, this study contributes to a better understanding of the association between the different components of SO and EIC. The results show that customer and technology orientation seems to be the main factor for achieving EIC. However, competitor orientation has not a significant influence on EIC. This is in line with findings of traditional SO literature which emphasize the importance of understanding core customers' needs and achieving superior customer satisfaction [85,86].

Second, this study investigated the moderating role of buyers value added in the relationship between different components of SO and EIC. Although recent studies in marketing literature highlight the importance of complementary resources–capability combinations [25,87,88], these research findings do not support the positive and significant effect of the interaction between customer orientation and buyers value added on EIC. One possible explanation is that buyers value added is a substitute for and not complementary to customer orientation, therefore, over-reliance on buyers' information may undermine the ability of customer orientation to generate ideas and implement environmental innovations. Furthermore, the findings show that buyers value added has a positive moderating impact on the relationship between competitor orientation and EIC. Empirically, this research finds support when buyers value added as a complementary dimension to the areas of influence in EIC, from the point of view of previous research on complementary capability combinations [25,87,88]. Additionaly, the results show that buyers value added has not a positive moderating impact on the relationship between technology orientation and EIC. Our results reveal that buyers value added has not a synergistic influence on the relationship between technology orientation and EIC. One possible explanation is that technology orientation and buyers value added are separate activities, therefore, this bundling would not have a synergistic effect on EIC. The bundling between technology orientation and buyers value added, is not complementary, is likely to lead to diminished EIC.

Third, this study investigated the impact of inter-functional coordination on different components of SO [40,45]. Most empirical studies have supported the role that the SO and its components play in improving firm performance and fostering innovativeness [9–12]. However, little was known about the association between inter-functional coordination and different components of SO. The results show that inter-functional coordination influences the firm's orientations toward customers, competitors, and technology by the involvement of personnel and other department resources across the whole company in creating value for the customers and by sharing of important market information necessary for innovation.

Finally, as mentioned, there has been relatively little empirical evidence examining the association between SO, EIC, and environmental sustainability performance. Consistent with the existing literature [23,60,61], the results show that SO has a positive impact on EIC (capability), which in turn, enhance environmental sustainability performance. Our study provides further and strong evidence in this regard.

5.1. Managerial Implications

These research findings also provide several important managerial implications for managers. First, our study provides useful information regarding the link between SO and EIC. The managerial implication of this finding is that managers should shape organizational culture in an effort to effectively deploy the behaviors associated with SO. SO, as an important organizational culture, is an essential element in enhancing firms' EIC capability, which in turn, strengthens environmental sustainability performance. Especially, customer orientation seems to be the main factor for enhancing EIC. Therefore, managers should understand customer needs, increase customer value, pay close attention to after-sales service, and increase customer satisfaction to strengthen EIC [23,85,86].

Second, customer orientation and competitor orientation have in influencing environmental sustainability performance through the mediating role of EIC, however, technology orientation has a direct impact on environmental sustainability performance. It is our contention that the main area that managers should focus on is technology orientation. Practitioners should recognize the importance of a technology orientation in enhancing EIC and achieving environmental sustainability performance [9–12]. Our results reinforce this belief: technology oriented firms are able to differentiate themselves from their competitors and identify customers' latent needs by offering tech-based innovations.

Third, our findings lend support to the interaction effects of competitor orientation and buyers value added on EIC. In the extant environmental management literature, a few studies provide insight into how buyers value added may affect EIC. Complementing these studies, the present research suggests that buyers value added, as an external resource, moderates the effects of competitor orientation on EIC. Our results indicate that fostering buyers value added may help firms to enhance the relationship between competitor orientation and EIC [89,90]. As such, this article sheds new light on the role of buyers value added in affecting a firm's EIC. Therefore, managers also should pay more attention to finding ways to use buyers value added as a lever to enhance their firms' EIC.

Finally, inter-functional coordination is about the coordination of application resources across departments within an organization to communicate and interact market intelligence to offer superior value to customers [18,40]. Moreover, we suggest that managers should coordinate and communicate with all members because the firm's orientations toward customers, competitors, and technology require the participation of organizational members at different levels [18,40,45]. Therefore, managers should pay close attention to the inter-functional coordination that helps firms to develop SO.

5.2. Limitations and Future Research

Several limitations are worth addressing in future studies. First, the cross-sectional nature of our study may preclude causal inferences. However, it appears clear that EIC will enhance environmental innovation performance outcomes. While we cannot rule out the possibility that environmental innovation performance outcomes may also affect EIC, it is conceptually sound to assume that EIC will affect environmental innovation performance. Therefore, while future research may adopt longitudinal design to provide stronger evidence on the direction of causality, we believe these results will not be invalidated because of this limitation. Longitudinal designs are suggested for future studies to provide more solid causal relationships.

Second, although the sample for this study is drawn from a wide range of information technology sectors in Taiwan, the applicability of these findings to other industries should be considered with caution. Generalizations to other industries should also be made with caution. Furthermore, past empirical works have been conducted almost exclusively in the US. Consequently, managers of international organizations know very little about the appropriateness and desirability of EIC in different countries.

Third, this study is primarily based on the subjective assessment of the key informant, so the evaluation of the firm's EIC and environmental innovation performance are inclined toward subjective biases. Future research that collects a diversity of objective data can potentially overcome such biases.

Author Contributions: C.-H.T. and K.-H.C. designed the research, analyzed the data, and interpreted the results. H.-W.C. provided extensive suggestion throughout the study regarding the Introduction, Methods, Results, and Discussion. All authors cooperated with each other to revise the paper and have read and approved the final manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Measurement Items.

Constructs	Measurement Items
Environmental Innovation Capability (EIC) [46]	Which environmental technologies does your business unit currently use to address this issue? *Use of Pollution-Prevention Technologies* EIC1: Implementation of new cleaner processes. EIC2: Modification of existing processes. EIC3: In-process recycling/recovery. *Innovation of Proprietary Pollution-Prevention Technologies* EIC4: We address this issue mainly with technologies developed within the company. EIC5: We mainly developed new process technologies and/or process changes. EIC6: We mainly developed new or improved products.
Strategic orientation (SO) [14,20]	CU1: Our objectives are driven primarily by customer satisfaction. CU2: Our strategy for competitive advantage is based on our understanding of our customers' need. CU3: Our market strategies are driven by our understanding of possibilities for creating value for our customers. CU4: We constantly monitor our level of commitment and orientation toward customers. CO1: We respond rapidly to competitive actions that threaten us. CO2: We target customers and customer groups in which we have or can develop a competitive advantage. CO3: Top management regularly discusses competitors' strengths and strategies. TO1: We build upon proven technological breakthroughs made by ourselves. TO2: We emphasize technological superiority to differentiate our new products. TO3: We strive to achieve technological leadership in the market we compete. TO4: We aggressively adopt new technologies in their early phases of introduction.
Inter-functional Coordination [14,75]	IF1: All of our functions, not just marketing and sales are responsive to and integrated into serving markets. IF2: All of our managers understand how the entire business can contribute to creating customer value. IF3: We share programs and resources with other business units in the corporation.

Table A1. *Cont.*

Constructs	Measurement Items
Buyers value added [22]	BVA1: Your customer's way of challenging your strategies and tactics has improved your performance. BVA2: Activities managed by your customer have relieved your management from administrative work. BVA3: Your customer's activities have to lead to substantial cost savings at your company. BVA4: Without your customer, you would receive less information that is important to your business.
Environmental sustainability performance [76]	ESP1: We have reduced energy use in our facilities. ESP2: We have reduced water use in our facilities. ESP3: We have reduced waste at our facilities. ESP4: We have reduced emissions at our facilities.

References

1. Canan, P.; Andersen, S.O.; Reichman, N.; Gareau, B. Introduction to the special issue on ozone layer protection and climate change: The extraordinary experience of building the Montreal Protocol, lessons learned, and hopes for future climate change efforts. *J. Environ. Stud. Sci.* **2015**, *5*, 111–121. [CrossRef]
2. Masocha, R. Does environmental sustainability impact innovation, ecological and social measures of firm performance of SMEs? Evidence from South Africa. *Sustainability* **2018**, *10*, 3855. [CrossRef]
3. Masocha, R. Sustainable marketing practices and sustainable consumer behaviour of tertiary students in South Africa. *J. Econ. Behav. Stud.* **2018**, *10*, 248–257. [CrossRef]
4. Eiadat, Y.; Kelly, A.; Roche, F.; Eyadat, H. Green and competitive? An empirical test of the mediating role of environmental innovation strategy. *J. World Bus.* **2008**, *43*, 131–145. [CrossRef]
5. Porter, M.E.; van der Linde, C. Green and competitive: Ending the Stalemate. *Harvard Bus. Rev.* **1995**, *73*, 120–134.
6. Porter, M.E.; van der Linde, C. Toward a new conception of the environment-competitiveness Relationship. *J. Econ. Perspect.* **1995**, *9*, 97–118. [CrossRef]
7. Wong, C.W.Y.; Lai, K.H.; Shang, G.; Lu, C.S.; Leung, T.K.P. Green operations and the moderating role of environmental management capability of suppliers on manufacturing firm performance. *Int. J. Prod. Econ.* **2012**, *140*, 283–294. [CrossRef]
8. Hart, S.L. A natural-resource-based view of the firm. *Acad. Manag. Rev.* **1995**, *20*, 874–907. [CrossRef]
9. Gatignon, H.; Xuereb, J.M. Strategic orientation of the firm and new product performance. *J. Mark. Res.* **1997**, *34*, 77–90. [CrossRef]
10. Zhou, K.Z.; Li, C.B. How does strategic orientation matter in Chinese firms? *Asia-Pac. J. Manag.* **2007**, *24*, 447–466. [CrossRef]
11. Voss, G.B.; Voss, Z.G. Strategic orientation and firm performance in an artistic environment. *J. Mark.* **2000**, *64*, 67–83. [CrossRef]
12. Zhou, K.Z.; Yim, C.K.; Tse, D.K. The effects of strategic orientations on technology-and market-based breakthrough innovations. *J. Mark.* **2005**, *69*, 42–60. [CrossRef]
13. Yu, W.; Ramanathan, R.; Nath, P. Environmental pressures and performance: An analysis of the roles of environmental innovation strategy and marketing capability. *Technol. Forecast. Soc.* **2017**, *117*, 160–169. [CrossRef]
14. Narver, J.C.; Slater, S.F. The effect of a market orientation on business profitability. *J. Mark.* **1990**, *54*, 20–35. [CrossRef]
15. Kohli, A.K.; Jaworski, B.J. Market orientation: The construct, research propositions, and managerial implications. *J. Mark.* **1990**, *54*, 1–18. [CrossRef]
16. Slater, S.F.; Narver, J.C. Market orientation and the learning organization. *J. Mark.* **1995**, *59*, 63–74. [CrossRef]
17. Baker, W.E.; Sinkula, J.M. Does market orientation facilitate balanced innovation programs? An organizational learning perspective. *J. Prod. Innov. Manag.* **2007**, *24*, 316–334. [CrossRef]

18. Chen, Y.; Tang, G.; Jin, J.; Li, J.; Paillé, P. Linking market orientation and environmental performance: The influence of environmental strategy, employee's environmental involvement, and environmental product quality. *J. Bus. Ethics* **2014**, *127*, 479–500. [CrossRef]
19. Ardito, L.; Dangelico Rosa, M. Firm environmental performance under scrutiny: The role of strategic and organizational orientations. *Corp. Soc. Responsib. Environ. Manag.* **2018**, *25*, 426–440. [CrossRef]
20. Jeong, I.; Pae, J.H.; Zhou, D. Antecedents and consequences of the strategic orientations in new product development: The case of Chinese manufacturers. *Ind. Mark. Manag.* **2006**, *35*, 348–358. [CrossRef]
21. Homburg, C.; Pflesser, C. A multiple-layer model of market-oriented organizational culture: Measurement issues and performance outcomes. *J. Mark. Res.* **2000**, *37*, 449–462. [CrossRef]
22. Nell, P.C.; Ambos, B. Parenting advantage in the MNC: An embeddedness perspective on the value added by headquarters. *Strateg. Manag. J.* **2013**, *34*, 1086–1103. [CrossRef]
23. Morgan, N.A.; Vorhies, D.W.; Mason, C.H. Market orientation, marketing capabilities, and firm performance. *Strateg. Manag. J.* **2009**, *30*, 909–920. [CrossRef]
24. Brik, A.B.; Rettab, B.; Mellahi, K. Market orientation, corporate social responsibility, and business performance. *J. Bus. Ethics* **2011**, *99*, 307–324. [CrossRef]
25. Amores-Salvadó, J.; Martin-de Castro, G.; Navas-López, J.E. The importance of the complementarity between environmental management systems and environmental innovation capabilities: A firm level approach to environmental and business performance benefits. *Technol. Forecast. Soc. Chang.* **2015**, *96*, 288–297. [CrossRef]
26. González-Blanco, J.; Coca-Pérez, J.L.; Guisado-González, M. The contribution of technological and non-Technological innovation to environmental performance. An analysis with a complementary approach. *Sustainability* **2018**, *10*, 4014. [CrossRef]
27. Teece, D.J.; Pisano, G.; Shuen, A. Dynamic capabilities and strategic management. *Strateg. Manag. J.* **1997**, *18*, 509–533. [CrossRef]
28. Eisenhardt, K.M.; Martin, J.A. Dynamic capabilities: What are they? *Strateg. Manag. J.* **2000**, *21*, 1105–1121. [CrossRef]
29. Aragón-Correa, J.A. Strategic proactivity and firm approach to the natural environment. *Acad. Manag. J.* **1988**, *41*, 556–567. [CrossRef]
30. Aragón-Correa, J.A.; Sharma, S. A contingent resource-based view of proactive corporate environmental strategy. *Acad. Manag. Rev.* **2003**, *28*, 71–88. [CrossRef]
31. Jiang, W.; Chai, H.; Shao, J.; Feng, T. Green entrepreneurial orientation for enhancing firm performance: A dynamic capability perspective. *J. Clean. Prod.* **2018**, *198*, 1311–1323. [CrossRef]
32. Feng, L.; Zhao, W.; Li, H.; Song, Y. The Effect of Environmental Orientation on Green Innovation: Do Political Ties Matter? *Sustainability* **2018**, *10*, 4674. [CrossRef]
33. Hart, S.L. Beyond greening: Strategies for a sustainable world. *Harvard Bus. Rev.* **1997**, *75*, 66–77.
34. Judge, W.Q.; Douglas, T.J. Performance implications of incorporating natural environmental issues into the strategic planning process: An empirical assessment. *J. Manag. Stud.* **1998**, *35*, 241–262. [CrossRef]
35. Ma, Y.; Hou, G.; Xin, B. Green process innovation and innovation benefit: The mediating effect of firm image. *Sustainability* **2017**, *9*, 1778.
36. Song, B.; Choi, D. Dynamic Capability of the Firm as Driver of Green Supply Chain Management Implementation. *Sustainability* **2018**, *10*, 2539. [CrossRef]
37. Miles, R.; Snow, C. *Organizational Strategy, Structure, and Process*; McGraw-Hill: New York, NY, USA, 1978.
38. Luo, Y.; Park, S. Strategic alignment and performance of market-seeking MNCs in China. *Strateg. Manag. J.* **2001**, *22*, 141–155. [CrossRef]
39. Tan, J.; Tan, D. Environment-strategy co-evolution and co-alignment: A staged model of Chinese SOEs under transition. *Strateg. Manag. J.* **2005**, *26*, 141–157. [CrossRef]
40. Tyler, B.B.; Gnyawali, D.R. Mapping managers' market orientations regarding new product success. *J. Prod. Innov. Manag.* **2002**, *19*, 259–276. [CrossRef]
41. Grewal, R.; Patriya, T. Building Organizational Capabilities for Managing Economic Crisis: The Role of Market Orientation and Strategic Flexibility. *J. Mark.* **2001**, *65*, 67–80. [CrossRef]
42. Han, J.K.; Kim, N.; Srivastava, R.K. Market orientation and organizational performance: Is innovation a missing link? *J. Mark.* **1998**, *62*, 30–45. [CrossRef]
43. Day, G.S. The capabilities of market-driven organizations. *J. Mark.* **1994**, 37–52. [CrossRef]

44. Hunt, S.D.; Morgan, R.M. The comparative advantage theory of competition. *J. Mark.* **1995**, *59*, 1–15. [CrossRef]
45. Auh, S.; Menguc, B. Top management team diversity and innovativeness: The moderating role of interfunctional coordination. *Ind. Mark. Manag.* **2005**, *34*, 249–261. [CrossRef]
46. Christmann, P. Effects of "best practices" of environmental management on cost advantage: The role of complementary assets. *Acad. Manag. J.* **2000**, *43*, 663–680.
47. Kirchner, S. Linking institutions and firm-level outcomes: The roles of diverse innovative capability profiles in Germany's economy. *Innovation* **2016**, *29*, 462–480. [CrossRef]
48. Sher, P.J.; Yang, P.Y. The effects of innovative capabilities and R&D clustering on firm performance: The evidence of Taiwan's semiconductor industry. *Technovation* **2005**, *25*, 33–43.
49. Anton, W.R.Q.; Deltas, G.; Khanna, M. Incentives for environmental self-regulation and implications for environmental performance. *J. Environ. Econ. Manag.* **2004**, *48*, 632–654. [CrossRef]
50. Hao, Y.; Zhang, Y.; Farooq, Q. The contribution of leading firms in environmental sustainability: Dampening the detrimental effect of political capital ties. *Int. J. Environ. Sci. Technol.* **2018**, *15*, 2581–2594. [CrossRef]
51. Frondel, M.; Horbach, J.; Rennings, K. End-of-pipe or cleaner production? An empirical comparison of environmental innovation decisions across OECD countries. *Bus. Strateg. Environ.* **2007**, *16*, 571–584. [CrossRef]
52. Kong, T.; Feng, T.; Ye, C. Advanced manufacturing technologies and green innovation: The role of internal environmental collaboration. *Sustainability* **2016**, *8*, 1056. [CrossRef]
53. Schoenherr, T.; Swink, M. The roles of supply chain intelligence and adaptability in new product launch success. *Decis. Sci.* **2015**, *46*, 901–936. [CrossRef]
54. Wang, X.; Dass, M. Building innovation capability: The role of top management innovativeness and relative-exploration orientation. *J. Bus. Res.* **2017**, *76*, 127–135. [CrossRef]
55. Hernandez-Vivanco, A.; Bernardo, M.; Cruz-Cázares, C. Sustainable innovation through management systems integration. *J. Clean. Prod.* **2018**, *196*, 1176–1187. [CrossRef]
56. DeshpandeÂ, R.; Webster, F.E., Jr. Organizational culture and marketing: Defining the research agenda. *J. Mark.* **1989**, *53*, 3–15. [CrossRef]
57. Imran, M.; Jian, Z.; Haque, A.; Urbański, M.; Nair, S.L.S. Determinants of Firm's Export Performance in China's Automobile Industry. *Sustainability* **2018**, *10*, 4078. [CrossRef]
58. Verhoef, P.C.; Lemon, K.N.; Parasuraman, A.; Roggeveen, A.; Tsiros, M.; Schlesinger, L.A. Customer experience creation: Determinants, dynamics and management strategies. *J. Retail.* **2009**, *85*, 31–41. [CrossRef]
59. Berrone, P.; Fosfuri, A.; Gelabert, L.; Gomez, L.R. Necessity as the mother of 'green' inventions: Institutional pressures and environmental innovations. *Strateg. Manag. J.* **2014**, *34*, 891–909. [CrossRef]
60. Najafi-Tavani, S.; Sharifi, H.; Najafi-Tavani, Z. Market orientation, marketing capability, and new product performance: The moderating role of absorptive capacity. *J. Bus. Res.* **2016**, *69*, 5059–5064. [CrossRef]
61. Mu, J.; Thomas, E.; Peng, G.; Di Benedetto, A. Strategic orientation and new product development performance: The role of networking capability and networking ability. *Ind. Mark. Manag.* **2017**, *64*, 187–201. [CrossRef]
62. Kirca, A.H.; Jayachandran, S.; Bearden, W.O. Market orientation: A meta-analytic review and assessment of its antecedents and impact on performance. *J. Mark.* **2005**, *69*, 24–41. [CrossRef]
63. Ozdemir, S.; Kandemir, D.; Eng, T.Y. The role of horizontal and vertical new product alliances in responsive and proactive market orientations and performance of industrial manufacturing firms. *Ind. Mark. Manag.* **2017**, *64*, 25–35. [CrossRef]
64. Atuahene-Gima, K.; Ko, A. An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation. *Organ. Sci.* **2001**, *12*, 54–74. [CrossRef]
65. Darnall, N.; Jolley, G.J.; Handfield, R. Environmental management systems and green supply chain management: Complements for sustainability? *Bus. Strateg. Environ.* **2008**, *17*, 30–45. [CrossRef]
66. Yu, W.; Ramanathan, R. Environmental management practices and environmental performance: The roles of operations and marketing capabilities. *Ind. Manag. Data Syst.* **2016**, *116*, 1201–1222. [CrossRef]
67. Lukas, B.A.; Ferrell, O.C. The effect of market orientation on product innovation. *J. Acad. Mark. Sci.* **2000**, *28*, 239–247. [CrossRef]

68. Im, S.; Workman, J.P., Jr. Market orientation, creativity, and new product performance in high-technology firms. *J. Mark.* **2004**, *68*, 114–132. [CrossRef]
69. Chang, K.; Gotcher, D.F. Safeguarding investments and creation of transaction value in asymmetric international subcontracting relationships: The role of relationship learning and relational capital. *J. World Bus.* **2007**, *42*, 477–488. [CrossRef]
70. Ernst, D. Inter-organizational knowledge outsourcing: What permits small Taiwanese firms to compete in the computer industry. *Asia Pac. J. Manag.* **2000**, *17*, 223–255. [CrossRef]
71. Kang, M.; Mahoney, J.T.; Tan, D. Why firms make unilateral investments specific to other firms: The case of OEM suppliers. *Strateg. Manag. J.* **2009**, *30*, 117–235. [CrossRef]
72. Brislin, R.W. Back-translation for cross-cultural research. *J. Cross-Cult. Psychol.* **1970**, *1*, 185–216. [CrossRef]
73. O'Leary-Kelly, S.W.O.; Vokurka, R.J. The empirical assessment of construct validity. *J. Oper. Manag.* **1998**, *16*, 387–405. [CrossRef]
74. Armstrong, J.S.; Overton, T.S. Estimating nonresponse bias in mail surveys. *J. Mark. Res.* **1977**, *14*, 396–402. [CrossRef]
75. Paladino, A. Investigating the drivers of innovation and new product success: A comparison of strategic orientations. *J. Prod. Innov. Manag.* **2007**, *24*, 534–553. [CrossRef]
76. Li, Y.; Ye, F.; Sheu, C.; Yang, Q. Linking green market orientation and performance: Antecedents and processes. *J. Clean. Prod.* **2018**, *192*, 924–931. [CrossRef]
77. Nunnally, J.C. *Psychometric Theory*, 2nd ed.; McGraw-Hill: New York, NY, USA, 1978.
78. Bagozzi, R.P.; Yi, Y.; Phillips, L.W. Assessing Construct Validity in Organizational Research. *Adm. Sci. Q.* **1991**, *36*, 421–458. [CrossRef]
79. Fornell, C.; Larcker, D.F. Structural equation models with unobservable variables and measurement error: Algebra and statistics. *J. Mark. Res.* **1981**, *18*, 382–388. [CrossRef]
80. Podsakoff, P.M.; Organ, D.W. Self-reports in organizational research: Problems and prospects. *J. Manag.* **1986**, *12*, 531–544. [CrossRef]
81. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.Y.; Podsakoff, N.P. Common method variance in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [CrossRef]
82. Lindell, M.K.; Whitney, D.J. Accounting for common method variance in cross-sectional research designs. *J. Appl. Psychol.* **2001**, *86*, 114. [CrossRef]
83. Aiken, L.S.; West, S.G. *Multiple Regression: Testing and Interpreting Interactions*; Sage Publications: Newbury, UK, 1991.
84. Baron, R.; Kenny, D. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J. Pers. Soc. Psychol.* **1986**, *51*, 1173–1182. [CrossRef]
85. Danneels, E. Tight–loose coupling with customers: The enactment of customer orientation. *Strateg. Manag. J.* **2003**, *24*, 559–576. [CrossRef]
86. Blocker, C.P.; Flint, D.J.; Myers, M.B.; Slater, S.F. Proactive customer orientation and its role for creating customer value in global markets. *J. Acad. Mark. Sci.* **2011**, *39*, 216–233. [CrossRef]
87. Harrison, J.S.; Hitt, M.A.; Hoskisson, R.E.; Ireland, R.D. Resource complementarity in business combinations: Extending the logic to organizational alliances. *J. Manag.* **2001**, *27*, 679–690. [CrossRef]
88. O'cass, A.; Ngo, L.V. Creating superior customer value for B2B firms through supplier firm capabilities. *Ind. Mark. Manag.* **2012**, *41*, 125–135. [CrossRef]
89. Portillo-Tarragona, P.; Scarpellini, S.; Moneva, J.; Valero-Gil, J.; Aranda-Usón, A. Classification and measurement of the firms' resources and capabilities applied to eco-Innovation projects from a resource-based view Perspective. *Sustainability* **2018**, *10*, 3161. [CrossRef]
90. Dyer, J.H.; Singh, H. The relational view: Cooperative strategy and sources of inter-organizational competitive advantage. *Acad. Manag. Rev.* **1998**, *23*, 660–679. [CrossRef]