Chapter 2
Fostering a Relationship Learning Context as a Driver of Green Innovation Performance and Green Customer Capital

Gema Albort-Morant, Silvia Martelo-Landroguez, and Antonio L. Leal-Rodríguez

Abstract Sustainability is a popular topic within the current literature on the fields of management and economics. There are plenty of studies that empirically address the ties between strategic management (i.e. knowledge management) topics and corporate environmental performance. However, there is a scarcity of empirical studies examining the combined effects of promoting a relationship learning context on green innovation performance and green customer capital. This chapter develops a research model that links relationship learning, green innovation performance and green customer capital and empirically tests the research hypotheses through Partial Least Squares (PLS-SEM) analysis. Our results suggest that firms should make an effort and invest in resources to enhance their relational capital. Besides, in order to create green customer capital it is advisable that firms are able to transform this relationship learning into green innovative outcomes.

2.1 Introduction

Green consciousness is currently playing an important role due to the rise of international environmental regulations, such as Kyoto Protocol, Montreal Convention, Waste Electronics and Electrical Equipment (WEEE), etc. (Chang & Chen, 2012). Besides, environmental management is becoming crucial for companies because of the highly dynamic and global business environment. Due to the popular environmental trends, green innovations have become important strategic tools to obtain sustainable development in the manufacturing industries (Chen, Lai, & Wen, 2006;

G. Albort-Morant (✉) • S. Martelo-Landroguez
Universidad de Sevilla, Seville, Spain
e-mail: galbort@us.es

A.L. Leal-Rodríguez
Universidad Loyola Andalucía, Seville, Spain

A. Leal-Millan et al. (eds.), *Sustainability in Innovation and Entrepreneurship*,
Innovation, Technology, and Knowledge Management,
DOI 10.1007/978-3-319-57318-2_2

Chen, Shih, Shyur, & Wu, 2012). For this reason, companies adopt a proactive and preventive strategy to deal with the impact of the advent of the environmental era.

Sustainability has also become a noteworthy topic from the business performance lens. Several studies support that green innovation contributes to the development of firms' innovation portfolios (Hull & Rothenberg, 2008), enabling profitability and the improvement of overall quality of life (Hart, 1995). Furthermore, there is an increasing demand for products among environmentally sensitive consumers (Marcus & Fremeth, 2009). Moreover, green innovations could hinder imitation opportunities, at the same time that generate barriers to others competitors, and develop competitive advantages (Chang, 2011). Our study addresses the following research question: Is the relationship learning context a driver of green innovation performance and green customer capital?

The label 'green' indicate the organizations' move towards environmental sustainability. This 'green' perspective emerges because of the popularity of environmentalism nowadays. A successful green customer capital can help firms move towards environmental sustainability. The number of companies concerned about being responsible and less harmful to the environment grows every day because of environmental pressures from the society (Chen et al., 2006). The global climate change has contributed to the consumer environmental consciousness (Chen & Chang, 2012, 2013) and leads companies to change their business models to respond effectively to customer's concerns. Our findings confirm that relying on relationship learning mechanisms is critical to attain and enhance the firm's green customer capital. Furthermore, in order to create green customer capital it is advisable that firms are able to transform this relationship learning into green innovative outcomes.

In this vein, there are several studies that link relationship learning mechanisms with innovation outcomes (Leal-Rodríguez, Roldán, Ariza-Montes, & Leal-Millán, 2014; Leal-Rodríguez, Roldán, Leal, & Ortega-Gutiérrez, 2013) or with green innovation (Albort-Morant, Leal-Millán, & Cepeda-Carrión, 2016; Chen, Lin, & Chang, 2009; Fang, Fang, Chou, Yang, & Tsai, 2011). Other studies have focused on the assessment of the links between relationship learning and green intellectual capital (Chen, 2008b). Besides, Leal-Millán, Roldán, Leal-Rodríguez, and Ortega-Gutiérrez (2016) explores the tie between green innovation performance and customer capital. However, there is a scarcity of empirical studies aimed at understanding the links between green innovation performance and relationship learning with green customer capital. Hence, building upon the previous literature, this chapter develops a research model that links these three constructs. The purpose of this study is hence to test the mediating effect of green innovation performance (GIP) in the relationship between relationship learning (RL) and green customer capital (GCC).

We define RL as a process oriented to sharing information and knowledge with customers, suppliers, partners, and other stakeholders. GIP is defined as a strategic need for firms aiming to meet customers' wishes without harming the environment. And, finally, we introduce GCC as a novel construct that refers to the value derived from an organization's relationship with its customers under the trends of the strict international environmental regulations and the growth of customer environmentalism.

We test our model in the automotive component manufacturing sector (ACMS) in Spain using a sample of 112 companies.

This study is organized as follows. First, we present a review of the existing literature and we define the variables under study. Next, we discuss the research model and hypotheses. We then describe the sample and methodology used. The next section presents the empirical results of the study. And, finally, we display the discussion of results, the conclusions, and future lines of research.

2.2 Theoretical Background

2.2.1 Relationship Learning

Nowadays, firms are continually sharing information and knowledge with their customers, suppliers, partners and other stakeholders. The business partnerships can create value for companies and improve their competitive advantages (Vargo & Lusch, 2004). The studies from Hallen, Johanson, and Seyed-Mohamed (1991) and Snehota and Hakansson (1995) were the first works in deepening into and theorize around the concept of relationship. These authors conceptualize relationship as the mutually oriented interaction between two reciprocally committed parties. Since these seminal works, the topic concerning the assessment of relationships between organizations has received a growing attention.

Selnes and Sallis (2003, p. 81) conceptualize relationship learning as "a joint activity in which the two parties strive to create more value together than they would create individually or with other partners". Cheung, Myers, and Mentzer (2011) explain that relationship learning is a joint activity between the firm and a supplier or buyer in which two parties share information, which is jointly interpreted and integrated into a shared relationship-domain-specific memory that changes the likelihood of potential relationship-specific behavior.

Relationship learning is conceived as a multidimensional construct made up of three ordinary capabilities: (1) information sharing, (2) joint sensemaking, and (3) knowledge integration (Selnes & Sallis, 2003). The first ordinary capability consists of an exchange of information between two interested parties. The second one is defined as the improvement of insight, knowledge, and associations between the past, present and future actions (Fiol & Lyles, 1985). And, finally, the third capability explains that integration is a sign of the state of collaboration that exists among departments that are required to unify their efforts due to the demands of the environment (Cheung et al., 2011).

Therefore, relationship learning is a process oriented to sharing information and knowledge with other stakeholders, and hence, increasing future behavior. To generate good relations, firms tend to deploy strategic alliances, joint ventures, R&D consortia, partnerships and inter-firm networks (Doz, Olk, & Ring, 2000). In this way, firms can and should use external and internal ideas to attain competitive

advantages. For example, the firms of the automotive component manufacturing sector provide highly customized products and services to large automakers. For this reason, they must be very well connected with their suppliers and customers to know what are the last innovations that they wish to incorporate in its portfolio of products and services. Hence, the companies within this sector will be able to incorporate specialized knowledge and skills in the development of new products and processes, which would enable them to differentiate from their competitors.

2.2.2 Green Innovation Performance

As we have said before, the label "green" recently appears as one of the most relevant terms coined to indicate the organizations' move towards environmental sustainability. Moreover, being green is an incentive for fostering a non-stop innovation strategy and for creating new market opportunities for companies aiming to satisfy new consumer demands, creating hence value and performance (Albort-Morant et al., 2016). Thus, green innovation is based upon two fundamental pillars: sustainability and innovation.

Prior research defines innovation as the creation, development and implementation of new products, processes and services (Damanpour, 1991). Lately, several studies are assessing innovation as a critical way to moderate or avoid environmental damage (Pérez-Valls, Cespedes-Lorente, & Moreno-Garcia, 2015). In this vein, Beise and Rennings (2005) contribute to the definition of the green innovation concept, stating that it comprises new or improved practices, processes, techniques, systems, and products to prevent or minimize environmental damages.

Chen et al. (2006, p. 332) conceptualize green innovation performance, as "the hardware or software innovation that is related to green products or processes, including the innovation in technologies that are involved in energy-saving, pollution-prevention, waste recycling, green product designs, or corporate environmental management". Besides, these authors state that there are two types of green innovation performance: green product innovation performance and green process innovation performance. Green product innovation performance consists of product improvements related to environmental innovation, and green process innovation performance involves process improvements related to energy-saving, waste recycling, no toxicity or pollution-prevention (Chen 2008a). Subsequently, Tseng, Huang, and Chiu (2012) propose four categories for the green innovation performance concept: (1) product innovation, (2) process innovation, (3) management innovation, and (4) technological innovation. The green management innovation is defined as a firm's aptitude to prepare green projects that allows to re-design and improve the products or services that carry out the environmental criteria, and the green technological innovation is defined as the installation of new green equipment for carrying out the development of green products and services.

Companies that are proactive on green innovation strategies might be able to encompass competitive advantages (Buhl, Blazejewski, & Dittmer, 2016). In the

same vein, Leal-Millán et al. (2016) have recently redefined the concept of green innovation performance, conceptualizing it as a strategic need for firms aiming to meet customers' wishes without harming the environment.

2.2.3 Green Customer Capital

In addition to human and structural capital, customer capital is considered another element of intellectual capital. Customer capital focuses on the firms' relationships with its customers (Chan & Wang, 2012; Edvinsson & Malone, 1997; Leal-Millán et al., 2016). Although there is no single definition of customer capital, all definitions are based on the relationships between firms and their customers or the value of these relationships (Chan & Wang, 2012; Leal-Millán et al., 2016).

Customer capital is considered to be a major source of competitive advantage in the knowledge era (Chang & Tseng, 2005). According to Duffy (2000), customer capital is the product of the customer relationship management. Customer relationship management is defined as the firms' activities that are oriented towards creating and maintaining long-term relationships with their customers in order to obtain customer loyalty and satisfaction (Martelo-Landroguez, Barroso-Castro, & Cepeda-Carrión, 2011). Therefore, customer relationship management is mostly about transforming the business into a customer-focused company (Martelo-Landroguez, Barroso-Castro, & Cepeda-Carrión, 2013). Firms are not necessarily locked into internally controlled resources and capabilities for strategy and growth purposes, but may draw on customers as sources of new ideas and problem-solving capabilities, and flexibility in assimilating new resources and capabilities (Zander & Zander, 2005).

Consequently, customer capital encompasses a strong component of knowledge about firms' customers that increases when customer relationships are created and maintained over the years. Hence, customer capital highlights the importance of customer relationship management in firms (Chan & Wang, 2012). Firms need to know what is the best way to manage customer relationships in order to maintain and improve them. Although existing literature has discussed the relevant issues about customer capital, no examples in the literature examine customer capital from a green perspective. Environmental changes affect the management of firms. This is why well-known concepts related to firms' management are turning to be 'green'. We would like to address this gap in the literature by proposing a novel construct: green customer capital (GCC). We can find an approach to this concept in Chen (2008b) with the introduction of the green relational capital and in Chang and Chen (2012) who introduced the green relationship capital.

We refer to Duffy (2000) to define GCC as the value, in terms of contributions to current and future revenues, derived from an organization's relationship with its customers under the trends of the strict international environmental regulations and the growth of customer environmentalism. The term GCC describes the capability of firms to understand their customers' environmental wishes, problems and behaviors. GCC helps firms to design and implement a strategy to meet their customers'

environmental needs (Wensley, Cegarra-Navarro, Cepeda-Carrión, & Leal Millán, 2011). The creation, enhancement, and maintenance of close relationships between firms and customers demand the search for mutual environmental interests. The firms' investment of resources in these common environmental interests will develop satisfactory and long-lasting relationships with customers in the environmental era. Thus, this investment of resources will positively influence green customer capital.

2.3 Research Model and Hypotheses

2.3.1 Linking Relationship Learning and Green Customer Capital

Currently, many companies are urged to adopt a proactive strategy to deal with the impact of the advent of the environmental era. Hence, they are called to integrate environmental concerns into their strategies, being able in turn to satisfy their customer at the same time that they remain competitive. As previously mentioned, the term green customer capital might be introduced to describe the firm's capability to understand their customer's environmental preferences, problems and behaviors, being able in turn to design and implement a strategy that will meet environmentally conscious customers' needs (Wensley et al., 2011).

Firms are currently dealing with hypercompetitive markets where customers are becoming increasingly demanding as a consequence of having access to a greater number of companies, products and services. Hence, firms have to make an effort to identify customers' needs, as it is necessary to build strong company-customer relationships. To this end, companies should carry out a joint activity between customers, suppliers and other partners in which the two parties share green-related information and knowledge.

Several studies have focused on explaining that value creation is regarded as the necessary objective for a buyer and a supplier to engage in a relationship (Huang, Hu, Liu, Yu, & Yu, 2016). Nevertheless, the impact of relationship learning on customer capital is still poorly developed or offers inconclusive results. On the one hand, Chen, Zhu, and Xie (2004) expose that customer capital is directly connected to business performance and the firm's intellectual capital. Concretely, these authors state that customer capital is the main determinant in transforming intellectual capital into market value. In addition, according to Duffy (2000), the development and application of customer capital indicators is vital for the sustaining of competitive advantages. On the other hand, other studies claim that buyer-supplier relationships can detrimentally affect strategic outcomes due to increased cultural disparity and a lack of goal congruence between partners who operate in different contexts (Anderson & Jap, 2005; Griffith & Myers, 2005).

The recent work of Leal-Rodríguez et al. (2014) refer to relationship learning as a joint activity between the organization and one or more parts—customers, suppliers, partners, etc.—in which the purpose is to share information. These relationships differ in terms of organization's learning capability, and some relationships perform better because they have developed the right learning methods (Selnes & Sallis, 2003). Therefore, companies should enable the exchange of information with different suppliers, partners and customers to enhance their knowledge base, skills and competitiveness through common learning mechanisms. It might help to improve the firm's ability to meet the needs of its partners (Cheung et al., 2011).

Consequently, companies must build robust relationships with their customers in order to learn from them. In this sense, companies can develop new products and services for emerging customers if they know better the needs of the existing ones. Therefore, we posit the following hypothesis:

H1: Relationship learning (RL) is positively related to Green Customer Capital (GCC).

2.3.2 The Mediating Role of Green Innovation Performance on the Relationship Learning-Green Customer Capital Link

Managers are increasingly taking into account the environmental issue when developing and launching new products. This includes changes in the product portfolio or in the production processes that contribute to reduce the emissions, recycle, and to enhance eco-design, eco-efficiency or waste management among other implementations (De Marchi, 2012). However, adopting green innovation practices implies handling extensive quantities of knowledge both internal and external to the company.

Following Leal-Millán et al. (2016), we define green innovation performance as a strategic need for firms that gives them the opportunity to meet customers' wishes without harming the environment. Indeed, investing resources in green innovation and environmental management constitutes a mechanism for the firm to attain a good image, to reach new markets, to develop new products and services, and to gain sustainable competitive advantages (Chen, 2008b).

According to Wong (2012), green innovation creates value by addressing customers' green interests. Green innovation will also contribute to the creation of relationships between firms and customers. Therefore, green innovations will lead firms to create and maintain long-term relationships with customers and to turn these customer relationships into sustainable competitive advantages; and, in turn, to create green customer capital. In this vein, if a green product or process has been developed by a firm taking into account the consumer environmentalism, green customer capital will increase. Namely, green innovations will increase the value that results from firm-customers relationships.

In this way, relationship learning can be defined as an antecedent of green customer capital and green innovation performance, as it is a joint activity between the company and one or more parts—supplier, customer, partner, etc.—in which the purpose is to share pertinent information (Leal-Rodríguez et al., 2014). In addition, Chang and Lin (Chang & Lin, 2014, p. 345) argue that "the collaboration begins with the distribution of end products to end users (customers), and goes back to the manufacturing, the procurement of raw materials, and finally to the suppliers of materials and services".

Therefore, the development and implementation of collaboration between the organization and one or more parts, allows the exchange of information, the development of knowledge associations between past, present and future actions, and the development of relationship-specific memories stored in the organization's collective cognitions, values and beliefs.

Collaboration with other stakeholders, such as suppliers or customers, is well known as a factor or driver of organizational innovation (Taylor & Thorpe, 2004; Zaheer, Gulati, & Nohria, 2000). The information gathered by means of networking and cooperation contributes to the development of the firm's absorptive capacity that can lead to innovation, and improve business performance (Leal-Rodríguez et al., 2014). It could help companies to take actions that enable their products and processes to do the least harm to the environment.

To develop successful green innovations, suppliers and customers must collaborate with companies. In the case of suppliers, they can indicate the most protective material or processes to the environment. On the other hand, the customers could help companies to meet their needs, and have the capability to implement strategies by being responsive to customers. Thus, the building of collaboration networks between companies and stakeholders has increasingly become a necessity as for developing green innovations at the same time that contributes to reach higher environmental performance (Fig. 2.1).

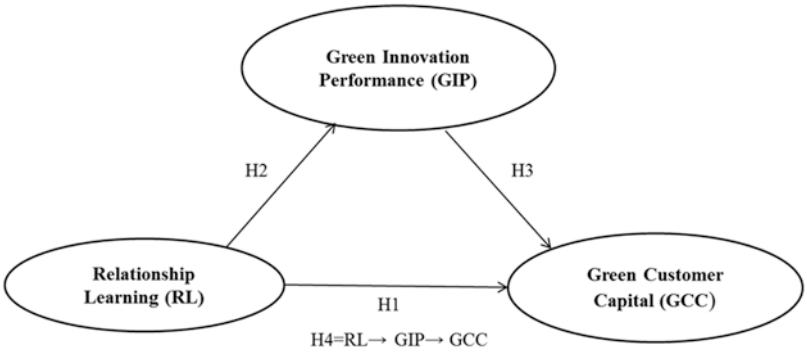
On the basis of the above statements, we hypothesize:

H2: Relationship learning is positively related to Green Innovation Performance.
H3: Green Innovation Performance is positively related to Green Customer Capital.
H4: Green Innovation Performance positively mediates the Relationship Learning-Green Customer Capital link.

2.4 Method

2.4.1 Data Collection and Sample

In this research, we chose the sector of automotive component manufacturers in Spain (ACMS) because this industry presents high doses of knowledge-intensity, innovativeness, and customer orientation. Moreover, the ACMS presents special characteristics that differentiate it from other areas of activity (i.e., non-industrial



Source: Author´s

On the basis of the above statements, we hypothesize:
H2: Relationship learning is positively related to Green Innovation Performance.
H3: Green Innovation Performance is positively related to Green Customer Capital.
H4: Green Innovation Performance positively mediates the Relationship Learning-Green Customer Capital link.

Fig. 2.1 Research model and hypotheses. *Source:* Author's

sectors). These companies provide components and highly customized products and services to mainly major automobile manufacturers (e.g., Renault, Citroen, Ford, Peugeot). The sample is drawn from a list of "Sernauto", the Spanish Association of Manufacturers of Equipment and Components for the Automotive Industry (http://www.sernauto.es). From the 960 companies within this sector, 387 companies received the questionnaire. After two mailing efforts, the outcome is 112 usable surveys returned (a 28.94% response rate).

2.4.2 Measures

The survey was designed on the basis of the literature review present in this study. All of the questionnaire items used to measure the variables were seven-point Likert measurement scales rating from 1 = 'high disagreement' to 7 = 'high agreement'. Building on the previous work of Chen et al. (2006), eight items compose the scale for green innovation performance (GIP). For measuring green customer capital (GCC), we adapted a five items scale from Chen (2008b). Finally, we refer to Selnes and Sallis (2003) to measure relationship learning (RL) and its measurement includes 17 items. We have modeled RL as a second order construct shaped by three dimensions—information sharing, joint sensemaking, and knowledge integration—(see Appendix).

2.4.3 Data Analysis

The selected method for analysing data was structural equations modeling (SEM). Specifically, we relied on the use of Partial Least Squares (PLS), a variance-based SEM technique. This method simultaneously allows the assessment of the reliability and validity of the measures of theoretical constructs (outer model) and the evaluation of the relationships hypothesized among these constructs (inner model) (Barroso, Cepeda, & Roldán, 2010).

Following Roldán and Sánchez-Franco (2012), Partial Least Squares (PLS) is a suitable technique for this study because (1) the sample size (n = 112) is lower than 250 observations (Reinartz, Haenlein, & Henseler, 2009); (2) the study is oriented to predicting the dependent variables (Chin, 2010); (3) the model is complex because it has different types of variables—first and second order constructs—; and (4) latent variables scores are used in the subsequent analysis for predictive relevance (Hair, Hult, Ringle, & Sarstedt, 2014). For obtaining the results of our study, we have used the SmartPLS 3.0 software (Ringle, Wende, & Becker, 2014).

2.5 Results

We analyze and interpret the PLS model in two stages: (1) the assessment of the reliability and validity of the measurement model; and (2) the evaluation of the structural model.

2.5.1 Measurement Model

The evaluation of the measurement model shows that our results are completely satisfactory both for the first order construct and dimensions, and for the multidimensional construct.

Accordingly with Hair et al. (2014), the indicator's outer loadings should be higher than the 0.707 threshold. In this case, all standardized loadings are greater (Table 2.1). Second, all the variables comply with the construct reliability requirement, as their composite reliabilities (pc) surpasses the 0.7 level (Table 2.1). Moreover, these latent variables achieve convergent validity because their average variances extracted (AVE) surpass the 0.5 critical level.

Finally, all the variables attain the requirement of discriminant validity according to the Fornell-Larcker and the Heterotrait-Monotrait (HTMT) criteria (Table 2.2). Table 2.2 presents the comparison of the square root of AVE versus correlations. According to Fornell and Larcker (1981), to achieve satisfactory discriminant validity, the diagonal elements (in bold) should be significantly greater than the off-diagonal elements in the corresponding rows and columns. Besides, the HTMT

Table 2.1 Measurement model: loadings, construct reliability and convergent validity

Construct	Outer loading	Composite reliability	Cronbach alpha	Average variance extracted (AVE)
Relationship learning		0.968	0.950	0.909
IS	0.966			
JS	0.949			
KI	0.947			
Green innovation performance		0.933	0.916	0.636
GIP1	0.854			
GIP2	0.826			
GIP3	0.830			
GIP4	0.851			
GIP5	0.741			
GIP6	0.881			
GIP7	0.607			
GIP8	0.755			
Green customer capital		0.903	0.865	0.651
GCC1	0.811			
GCC2	0.830			
GCC3	0.896			
GCC4	0.794			
GCC5	0.690			

Source: Authors' own data

Table 2.2 Measurement model: discriminant validity

Fornell-Larcker Criterion				Heterotrait-Monotrait Ratio (HTMT)			
	GCC	GIP	RL		GCC	GIP	RL
GCC	**0.807**			GCC			
GIP	0.756	**0.798**		GIP	0.995		
RL	0.712	0.750	**0.954**	RL	0.994	0.998	

Source: Authors' own data

Notes: *GCC* green customer capital, *GIP* green innovation performance, *RL* relationship learning. Fornell-Larcker Criterion: Diagonal elements (Bold) are the square root of the variance shared between the constructs and their measures (AVE). Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements

ratio of correlations evaluates the average of the correlations (Henseler, Ringle, & Sarstedt, 2015).

The Fornell-Larcker criterion fails to identify discriminant validity issues in the vast majority of cases because it only detects a lack of discriminant validity in more than 50% of simulation runs in situations with very heterogeneous loading patterns (i.e., 0.50/0.70/0.90) and sample sizes of 500 or less. In contrast, the Heterotrait-Monotrait (HTMT) criterion yields specificity rates of 80% or higher in terms of

Table 2.3 Structural model results

	Model A		Model B			
	$R^2_{GCC} = 0.328$		$R^2_{GCC} = 0.443$			
			$R^2_{GIP} = 0.476$			
Relationships	*Path coefficient*	*Support*	*Path coefficient*	*Percentile bootstrap 95% CI*		*Support*
				Lower	*Upper*	
H1: RL→GCC	0.410***(4.433)	Yes	0.571***(6.129)	0.355	0.772	Yes
H2: RL→GIP			0.636***(8.726)	0.421	0.960	Yes
H3: GIP→GCC			0.362***(3.849)	0.156	0.567	Yes

Source: Authors' own data

Notes: *GCC* green customer capital, *GIP* green innovation performance, *RL* relationship learning
t values in parentheses: t(0.05, 4999) = 1.645; t(0.01, 4999) = 2.327; t(0.001, 4999) = 3.092
*p < 0.05; **p < 0.01; ***p < 0.001

inter-construct correlations as high as 0.95, which many researchers are likely to view as indicative of a lack of discriminant validity. Exceptions occur in sample sizes of 100 and with lower AVE values. With respect to more homogeneous loading patterns, the Fornell-Larcker criterion yields much lower sensitivity rates, particularly when the AVE is low. Furthermore, HTMT yields sensitivity levels of 95% or higher under all simulation conditions. In general, the HTMT approach detects discriminant validity issues with higher reliability (Henseler et al., 2015). In this case, we can observe that RL, GIP and GCC are very correlated because their values are superior to the threshold level of $HTMT_{95}$.

2.5.2 Structural Model

Table 2.3 presents the variance explained (R^2) in the endogenous variables and the path coefficients for the two models under study (model A with direct relationships, and model B with indirect or mediating effect). Following Hair, Ringle, and Sarstedt (2011), we utilize a bootstrapping resampling technique (5000 resamples) to generate standard errors and t-values (t-statistics), which enables the evaluation of the statistical significance of the relationships considered in the models.

Table 2.3 also includes the three main direct links. We observe that the hypotheses are significant. In model A, the direct link between RL and GCC has a positive effect (c = 0.410; t = 4.433). When green innovation performance (GIP) is introduced as a mediator variable, the direct RL-GCC link becomes reduced. Thus, model B shows how the direct relationship between RL and GCC is lower than in model A (c′ = 0.571; t = 6.129). In addition, the paths for the RL-GIP (a = 0.636; t = 8.726) and GIP-GCC (b = 0.362; t = 3.849) relationships are as well statistically significant.

In Table 2.3, we also present the bootstrap 95% confidence intervals (percentile) for the indirect effect, which are always greater than zero (Baron & Kenny, 1986). It is used to test the mediation effect (Williams & MacKinnon, 2008). According to Chin (2010), this specific model in question including both direct and indirect paths, performing N-bootstrap resampling and finally multiplying the direct paths that make up the indirect path under evaluation.

2.6 Discussion and Conclusions

Plenty of research studies have argued the existence of a direct link between relationship learning and innovation outcomes or green innovation (Albort-Morant et al., 2016; Chen et al., 2009; Fang et al., 2011; Leal-Rodríguez et al., 2013). Besides, Chen (2008b) examines the links between relationship learning and green intellectual capital, which is at the core of the superior order concept of green customer capital. Another study by Leal-Millán et al. (2016) explains the relationship between green innovation performance and customer capital. However, the links between green innovation performance and relationship learning with green customer capital have been scarcely explored. Hence, building upon the previous literature, this chapter develops a research model that links these three constructs.

Results suggest that both the direct and indirect effects of relationship learning and green innovation performance on green customer capital are positive and significant. Moreover, the structural model supports that relationship learning mechanisms exerts a positive impact on green customer capital and that this influence is attained by reconfiguring and enhancing green innovation performance, finding support for the indirect effect of RL on GCC via GIP.

This chapter brings several relevant contributions both at the theoretical level and for practitioners. First, we introduce and define the concept of green customer capital for the first time. We believe GCC might become an interesting variable that should be considered by academics and managers, as it might act as catalyst for business performance and competitive advantage. Second, on the basis of the literature on relationship learning, green innovation performance and green customer capital, we have built a research model that demonstrates the direct and mediated relationships between these variables. Third, we empirically test the research model and hypotheses within a sample containing data from 112 Spanish automotive components manufacturing companies.

The main conclusion and practical implication that can be derived from our results is that relying on relationship learning mechanisms is critical in order to attain and enhance the firm's green customer capital. Therefore, companies ought to invest effort and resources in building relational capital with their different stakeholders (i.e., customers). Nevertheless, as our mediation hypothesis reveals, in order to create GCC it is not enough to foster RL strategies, but is advisable to transform this learning into green innovative outcomes. In other words, only that learning that conducts to GIP improvement will lead to GCC enhancement. Therefore, managers

at ACMS firms must orient their RL efforts to green-related issues, which might in turn lead to improving their GCC.

These managerial implications are even more meaningful for practitioners within the ACMS, since these firms are usually forced to operate in a context characterized by the development of joint projects and the establishment of narrow relationships with their customers. These firms' customers are not the end users of automotive vehicles but the large corporations that manufacture these vehicles (i.e., Renault, Peugeot, Ford, Citroen, etc.). In such context of close cooperation, ACMS companies may establish and reinforce strong ties with its customers, generating in turn a partnership relationship instead of the normal customer-supplier link. Hence, green innovation and relationship learning can be among the key strategies that should be encouraged at the managerial level in order to attain an enhanced customer capital.

However, this study is not deprived of limitations. First, we were able to provide just a snapshot of ongoing processes. Thus, we were unable to explore the subtleties of the processes over time. Further research should include a longitudinal study aimed at gathering measures at different points of time, which might allow us to verify the relationships proposed in our theoretical model. Second, the model in this study was general and it did not use control variables or other factors or variables, neither moderating effects. For this reason, for future studies we are planning to examine the moderating effect of environmental variables that we expect might influence the results. Finally, the study only considers the sector of automotive component manufacturing companies in Spain. It might be then interesting to change this particular geographical context (Spain) or this specific sector (ACMS) in further studies, in an attempt to generalize our insights and conclusions.

Appendix: Questionnaire Items

Relationship Learning (RL)

Relationship learning (RL): Information sharing (1 = high disagreement and 7 = high agreement). In my project team:

RL1 We exchange information on successful and unsuccessful experiences with products exchanged in the relationship with partners and suppliers.
RL2 We exchange information related to changes in end-user needs, preferences, and behavior.
RL3 We exchange information related to changes in market structure, such as mergers, acquisitions, or partnering.
RL4 We exchange information related to changes in the technology of the focal products.
RL5 We exchange information as soon as any unexpected problems arise.
RL6 We exchange information related to changes in the organizations' strategies and policies.

RL7 We exchange information that is sensitive, such as financial performance and know-how.

Relationship learning (RL): Joint sensemaking (1 = high disagreement and 7 = high agreement). In my project team:

RL8 It is common to establish joint teams to solve operational problems in the relationships with partners, suppliers and customers.
RL9 It is common to establish joint teams to analyze and discuss strategic issues in the relationship with partners, suppliers and customers.
RL10 The atmosphere in the relationship with partners, suppliers and customers stimulates productive discussion that encompasses a variety of opinions.
RL11 We have a lot of face-to-face communication in this relationship.

Relationship learning (RL): Knowledge integration (1 = high disagreement and 7 = high agreement). In my project team:

RL12 We frequently adjust our common understanding of end-user needs and behavior.
RL13 We frequently adjust our common understanding of trends in technology related to our business.
RL14 We frequently evaluate and, if needed, adjust our routines in order-delivery processes.
RL15 We frequently evaluate and, if needed, update the formal contracts in our relationship.
RL16 We frequently meet face-to-face to refresh the personal network in this relationship.
RL17 We frequently evaluate and, if needed, update information about the relationship stored in our electronic databases.

Green Innovation Performance (GIP) (1 = High Disagreement and 7 = High Agreement)

GIP1 The company chooses the materials of the product that produce the least amount of pollution for conducting the product development or design.
GIP2 The company chooses the materials of their products that consume the least amount of energy and resources for conducting the product development or design.
GIP3 The company uses the fewest amount of materials to comprise their products for conducting the product development or design.
GIP4 The company would circumspectly evaluate whether their products are easy to recycle, reuse, and decompose for conducting the product development or design.

GIP5 The manufacturing process of the company effectively reduces the emission of hazardous substances or wastes.
GIP6 The manufacturing process of the company effectively recycles wastes and emission that can be treated and re-used.
GIP7 The manufacturing process of the company effectively reduces the consumption of water, electricity, coal, or oil.
GIP8 The manufacturing process of the company effectively reduces the use of raw materials.

Green Customer Capital (GCC) (1 = High Disagreement and 7 = High Agreement)

GCC1 My firm designs its products or services in compliance with the environmental desires of its customers.
GCC2 My company's cooperative relationships about environmental protection with its upstream suppliers are stable.
GCC3 My company's cooperative relationships about environmental protection with its downstream clients or channels are stable.
GCC4 My company has stable and well cooperative relationships about environmental protection with its strategic partners.
GCC5 The customer satisfaction about environmental protection of my company is better than that of its major competitors.

References

Albort-Morant, G., Leal-Millán, A., & Cepeda-Carrión, G. (2016). The antecedents of green innovation performance: A model of learning and capabilities. *Journal of Business Research, 69*, 4912–4917.

Anderson, E., & Jap, S. D. (2005). The dark side of close relationships. *MIT Sloan Management Review, 46*(3), 75–82.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.

Barroso, C., Cepeda, G., & Roldán, J. L. (2010). Applying maximum likelihood and PLS on different sample sizes: studies on SERVQUAL model and employee behaviour model. In V. Esposito Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of partial least squares: Concepts, methods and applications* (pp. 427–447). Berlin, Germany: Springer.

Beise, M., & Rennings, K. (2005). Lead markets and regulation: A framework for analyzing the international diffusion of environmental innovations. *Ecological Economics, 52*(1), 5–17.

Buhl, A., Blazejewski, S., & Dittmer, F. (2016). The more, the merrier: Why and how employee-driven eco-innovation enhances environmental and competitive advantage. *Sustainability, 8*, 946.

Chan, A. L.-C., & Wang, W.-Y. (2012). The causal relationships between aspects of customer capital. *Industrial Management & Data Systems, 112*(6), 848–865.

Chang, A., & Tseng, C. (2005). Building customer capital through relationship marketing activities: The case of Taiwanese multilevel marketing companies. *Journal of Intellectual Capital, 6*(2), 253–266.

Chang, C. H. (2011). The influence of corporate environmental ethics on competitive advantage: The mediation role of green innovation. *Journal of Business Ethics, 104*(3), 361–370.

Chang, C. H., & Chen, Y. S. (2012). The determinants of green intellectual capital. *Management Decision, 50*(1), 74–94.

Chang, J. J., & Lin, M. J. J. (2014). Collaboration and performance of green innovation: Investigating the moderation effects of green knowledge integration mechanisms. In *Global Conference on Business & Finance Proceedings* (Vol. 9, No. 1, p. 344). Institute for Business & Finance Research.

Chen, C. C., Shih, H. S., Shyur, H. J., & Wu, K. S. (2012). A business strategy selection of green supply chain management via an analytic network process. *Computers & Mathematics with Applications, 64*(8), 2544–2557.

Chen, J., Zhu, Z., & Xie, H. Y. (2004). Measuring intellectual capital: A new model and empirical study. *Journal of Intellectual Capital, 5*(1), 195–212.

Chen, Y.-S. (2008a). The driver of green innovation and green image – Green core competence. *Journal of Business Ethics, 81*, 531–543.

Chen, Y.-S. (2008b). The positive effect of green intellectual capital on competitive advantages of firms. *Journal of Business Ethics, 77*, 271–286.

Chen, Y.-S., & Chang, C.-H. (2012). Enhance green purchase intentions: The roles of green perceived value, green perceived risk, and green trust. *Management Decision, 50*(3), 502–520.

Chen, Y.-S., & Chang, C.-H. (2013). The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of Business Ethics, 116*(1), 107–119.

Chen, Y.-S., Lai, S.-B., & Wen, C.-T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics, 67*(4), 331–339.

Chen, Y. S., Lin, M. J. J., & Chang, C. H. (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.

Cheung, M. S., Myers, M. B., & Mentzer, J. T. (2011). The value of relational learning in global buyer-supplier exchanges: A dyadic perspective and test of the pie-sharing premise. *Strategic Management Journal, 32*(10), 1061–1082.

Chin, W. W. (2010). How to write up and report PLS analyses. In V. Esposito Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of partial least squares: Concepts, methods and applications* (pp. 655–690). Berlin, Germany: Springer.

Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal, 34*(3), 555–590.

De Marchi, V. (2012). Environmental innovation and R&D cooperation: Empirical evidence from Spanish manufacturing firms. *Research Policy, 41*(3), 614–623.

Doz, Y. L., Olk, P. M., & Ring, P. S. (2000). Formation processes of R&D consortia: Which path to take? Where does it lead? *Strategic Management Journal, 21*(3), 239–266.

Duffy, J. (2000). Measuring customer capital. *Strategy & Leadership, 28*(5), 10–15.

Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital: Realizing your Company's true value by finding its hidden roots*. New York: Harper Collin Publishers.

Fang, S. R., Fang, S. C., Chou, C. H., Yang, S. M., & Tsai, F. S. (2011). Relationship learning and innovation: The role of relationship-specific memory. *Industrial Marketing Management, 40*(5), 743–753.

Fiol, C. M., & Lyles, M. A. (1985). Organizational learning. *Academy of Management Review, 10*(4), 803–813.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*, 39–50.

Griffith, D. A., & Myers, M. B. (2005). The performance implications of strategic fit of relational norm governance strategies in global supply chain relationships. *Journal of International Business Studies, 36*(3), 254–269.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks, CA: SAGE Publications, Inc.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice, 19*(2), 139–152.

Hallen, L., Johanson, J., & Seyed-Mohamed, N. (1991). Interfirm adaptation in business relationships. *The Journal of Marketing, 55*(2), 29–37.

Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review, 20*, 986–1014.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135.

Huang, X. X., Hu, Z. P., Liu, C. S., Yu, D. J., & Yu, L. F. (2016). The relationships between regulatory and customer pressure, green organizational responses, and green innovation performance. *Journal of Cleaner Production, 112*, 3423–3433.

Hull, C., & Rothenberg, S. (2008). Firm performance: The interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal, 29*, 781–789.

Leal-Millán, A., Roldán, J. L., Leal-Rodríguez, A. L., & Ortega-Gutiérrez, J. (2016). IT and relationship learning in networks as drivers of green innovation and customer capital: Evidence from the automobile sector. *Journal of Knowledge Management, 20*(3), 444–464.

Leal-Rodríguez, A. L., Roldán, J. L., Ariza-Montes, J. A., & Leal-Millán, A. (2014). From potential absorptive capacity to innovation outcomes in project teams: The conditional mediating role of the realized absorptive capacity in a relational learning context. *International Journal of Project Management, 32*(6), 894–907.

Leal-Rodríguez, A. L., Roldán, J. L., Leal, A. G., & Ortega-Gutiérrez, J. (2013). Knowledge management, relational learning, and the effectiveness of innovation outcomes. *The Service Industries Journal, 33*(13-14), 1294–1311.

Marcus, A., & Fremeth, A. (2009). Green management matters regardless. *Academy of Management Perspectives, 23*(3), 17–26.

Martelo-Landroguez, S., Barroso-Castro, C., & Cepeda-Carrión, G. (2011). Creating dynamic capabilities to increase customer value. *Management Decision, 49*(7), 1141–1159.

Martelo-Landroguez, S., Barroso-Castro, C., & Cepeda-Carrión, G. (2013). The use of organizational capabilities to increase customer value. *Journal of Business Research, 66*(10), 2042–2050.

Pérez-Valls, M., Cespedes-Lorente, J., & Moreno-Garcia, J. (2015). Green practices and organizational design as sources of strategic flexibility and performance. *Business Strategy and the Environment*. doi:10.1002/bse.1881.

Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing, 26*(4), 332–344.

Ringle, C. M., Wende, S., & Becker, J.-M. (2014). *Smartpls 3*. Hamburg, Germany: SmartPLS.

Roldán, J. L., & Sánchez-Franco, M. J. (2012). Variance-based structural equation modeling: Guidelines for using partial least squares in information systems research. In M. Mora (Ed.), *Research methodologies, innovations and philosophies in software systems engineering and information systems* (pp. 193–221). Hershey, PA: IGI Global.

Selnes, F., & Sallis, J. (2003). Promoting relationship learning. *Journal of Marketing, 67*(1), 80–95.

Snehota, I., & Hakansson, H. (Eds.). (1995). *Developing relationships in business networks*. London: Routledge.

Taylor, D. W., & Thorpe, R. (2004). Entrepreneurial learning: A process of co-participation. *Journal of Small Business and Enterprise Development, 11*(2), 203–211.

Tseng, M. L., Huang, F. H., & Chiu, A. S. (2012). Performance drivers of green innovation under incomplete information. *Procedia-Social and Behavioral Sciences, 40*, 234–250.

Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing, 68*(1), 1–17.

Wensley, A. K., Cegarra-Navarro, J. G., Cepeda-Carrión, G., & Leal Millán, A. (2011). How entrepreneurial actions transform customer capital through time: Exploring and exploiting knowledge in an open-mindedness context. *International Journal of Manpower, 32*(1), 132–150.

Williams, J., & MacKinnon, D. P. (2008). Resampling and distribution of the product methods for testing indirect effects in complex models. *Structural Equation Modeling, 15*(1), 23–51.

Wong, S. K. S. (2012). The influence of green product competitiveness on the success of green product innovation. Empirical evidence from the Chinese electrical and electronics industry. *European Journal of Innovation Management, 15*(4), 468–490.

Zaheer, A., Gulati, R., & Nohria, N. (2000). Strategic networks. *Strategic Management Journal, 21*(3), 203–215.

Zander, I., & Zander, U. (2005). The inside track: On the important (but neglected) role of customers in the resource-based view of strategy and firm growth. *Journal of Management Studies, 42*(8), 1519–1548.