The effects of the crisis on marketing innovation: an application for Spain

Abstract

Purpose: This study aims to identify the structural features of companies that have implemented marketing innovations at two different points, 2008 and 2010 (before and during the crisis).
Design/methodology/approach: The sample, obtained from the Technological Innovation Panel, consists of two subsamples of 9,415 enterprises each. The information was processed using a binomial logit model, parametric and non-parametric tests for independent samples, and a test of structural stability.
Findings: Differences were found in the results from 2008 and 2010: (1) enterprises in Spain were less likely to implement marketing innovations in 2010 than in 2008; (2) the effect of an enterprise's size on how likely it was to innovate in marketing decreased by more than half between the two periods; (3) the likelihood of innovating in marketing increased in enterprises that also pursued organizational innovations; and (4) in contrast to 2008, in 2010, the enterprises that were most likely to innovate in marketing were those that exported to countries outside the European Union. These findings show that innovation is part of the business ethos and that public policies that support exports can also foster innovation.
Originality/value: Marketing innovation has received little attention in the literature. We believe that marketing innovation can help to improve an organization's results, even in times of economic crisis.

Keywords: Marketing innovation, design innovation, promotion innovation, placement innovation, pricing innovation

Paper Type: Research paper

1. Introduction

In an economy where the only certainty is uncertainty, the one source of lasting competitive advantage is knowledge. Successful companies are those that consistently create new knowledge, companies whose sole business is continuous innovation (Nonaka & Takeuchi, 1995). Rapidly changing markets, technology, and consumer habits mean that the models companies once used are no longer sufficient. Intense competition is forcing companies to carry out innovative marketing activities in order to determine customers' needs and improve customer satisfaction and retention (Noori & Salimi, 2005). As a practical and scientific field of knowledge, the discipline of marketing cannot ignore these changes. However, there is a lack of empirical evidence related to marketing innovation (Bhaskaran, 2006; Geldes & Felzensztein, 2013; Medrano-Sáez & Olarte-Pascual, 2012; Rammer et al., 2009; Schubert, 2010).

This article will try to shed some light on marketing innovation. We seek to thoroughly study the marketing innovations implemented by companies as part of their strategy to better meet consumer needs. More specifically, this study arose from the need to identify the characteristics of companies that implemented marketing innovations at two different points: before and during the economic recession.

Consequently, our aim in this study is threefold. First, we will perform an analysis in order to identify which structural features of manufacturing and service enterprises were related to their propensity to pursue marketing innovations at two different points, 2008 and 2010, using data from the Technological Innovation Panel (PITEC). Second, we will determine whether there is a difference between the subsamples in how likely companies were to innovate in marketing. Finally, we will look at whether the structural characteristics of enterprises that innovated in marketing were stable over time.

The rest of this paper is structured as follows. First, we will discuss the concept of marketing innovation and how it is defined in the literature. Second, we will define the hypotheses and methodology used in the study. Finally, we will present the results and conclusions.

2. Literature review

2.1. Marketing innovation

Today, new ideas can completely transform any aspect of the value chain. Innovations in products and services are just the tip of the innovation iceberg (Birkinshaw et al., 2011). Consequently, the efforts and resources that enterprises dedicate to introducing new sales methods into their business are currently regarded as marketing innovations and as being just as important as technological innovations when it comes to boosting companies' competitiveness.

The Oslo Manual is a set of guidelines produced by the Organization for Economic Cooperation and Development (OECD) for collecting and interpreting data on companies' innovation activities. The third edition (2005) gives significantly more importance to marketing innovations. Whereas previous editions considered only technological innovations in products and processes when measuring innovation activity in general, the third edition gives equal importance to two additional types of innovation: marketing innovations and organizational innovations.

According to the OECD (2005), a marketing innovation can be defined as the implementation of a new method for selling a product or service involving significant changes in any of the following aspects: product design or packaging, product placement, product promotion, or pricing. This definition from the Oslo Manual is fairly similar to the main definitions found in the literature. Thus, for example, Utkun and Atilgan (2010) define innovation in marketing as the application of a new marketing method involving significant changes in a product's pricing, promotion, placement, or packaging. They also argue that the adoption by companies of a new approach including some of these practices is a marketing innovation.

Other authors, such as Vorhies and Harker (2000), Weerawardena (2003), and Lin et al. (2010), hold that marketing innovation refers to market research, pricing strategies, market segmentation, promotions, distribution channels, and marketing information systems.

As can be seen, the definitions found in the literature are quite similar. Nevertheless, the concept of "marketing innovation" is not always clear, since doubts can exist regarding the exact type of innovation in question. For something to be considered a marketing innovation, the marketing practices themselves do not need to be novel or original. They will more likely be adaptations of concepts or practices the company itself has developed. Alternatively, they may be marketing practices used by other companies that a company has integrated into its own marketing strategy.

Of these different definitions of marketing innovation, the most widely accepted is that given in the Oslo Manual, which provides the methodological basis for the manual's statistics on innovation. That definition is thus the one we will use in this study.

2.2. Previous research on marketing innovation

The literature on innovation has largely neglected non-technological innovations, i.e., innovations in marketing and organization. Although the literature on innovation is abundant, it mostly refers to product and process innovation. In recent years, research has also focused on organizational innovation, but marketing innovation has continued to receive little attention (Camisón & Villar-López, 2012; Ganter & Hecker, 2012; Naidoo, 2010; Augusto & Coelho, 2009; Chen, 2006; Shergill & Nargundkar, 2005). Despite the scarcity of literature, some authors have addressed the topic from different perspectives.

From a theoretical perspective, Ren et al. (2010) consider marketing innovation to be an appropriate method for companies to obtain a sustainable, competitive advantage. They further note that some businesses are so blinded by technological innovation that they fail to achieve competitive advantages through marketing innovation. O'Dwyer et al. (2009) also defend the idea of achieving a sustainable competitive advantage through marketing innovation, concluding that marketing innovation will most likely consist of continuous, complementary adjustments to current activities or practices that enable small and medium-sized enterprises to differentiate their product or service offers from those of big companies. Along the same lines, looking at the insurance sector, Epetimehin (2011) found that marketing innovation and creativity are crucial to a company's success, as innovation in services, prices, promotion, and distribution attracts clients and secures a competitive advantage. Similarly, Fabling (2006) found that companies are considered more innovative when they incorporate innovative marketing and organizational measures. Geldes and Felzensztein (2013) analyzed the characteristics of marketing innovations in the agribusiness sector.

In the literature on marketing, most authors consider marketing innovation to be a type of incremental innovation (Grewal & Tansuhaj, 2001; Naidoo, 2010). In keeping with this view, in an analysis of the shellfish market, Bhaskaran (2006) found that small and medium-sized enterprises that focus on incremental innovation, such as marketing innovation, are profitable and able to secure a substantial competitive advantage and to

successfully compete with big businesses. Likewise, Rammer et al. (2009) found that small and medium-sized enterprises that do not invest in internal R&D can, through such incremental innovation, achieve results that are just as successful as those achieved by companies that do invest in internal R&D. Halpern (2010) concluded that marketing innovation had a positive effect on performance in the airport industry.

In the tourism sector, Hjalager (2010) and Buhalis and Law (2008) emphasized that the development of the World Wide Web over the past decade has led to a complete series of marketing innovations that impinge on most tourism businesses and have already led to a far-reaching reduction in traditional marketing and sales intermediaries such as travel agencies. Hankinson (2004) argued that marketing innovations also include the co-production of brands, an activity found, for example, in the food and tourism industries.

A review of the literature on marketing innovation reveals two distinct approaches: the first deals with the concept of marketing innovation as such, whereas the second discusses the competitive advantages that businesses can achieve through the said innovation.

Whichever the case, as emphasized by Halpern (2010), marketing innovation should not be confused with what the literature calls "market innovation," which, according to Johne (1999), involves improving the target market mix and determining how these markets can be better served.

As Chen (2006) has noted, the development of new tools and marketing methods plays an important role in the evolution of industries. Therefore, it is of utmost importance for businesses to research innovation in these variables, including the concept of marketing innovation. Hsu (2011) found that Taiwanese computer and electronics firms incorporate design and marketing strategies into their design innovation because competition in the global market is so intense that only enterprises with advantages in design, innovation, rapid response, and flexibility can survive.

3. Research model and hypotheses

As mentioned above, our interest in this paper is threefold. To this end, we will present a series of hypotheses that will help us understand the importance of a variety of aspects in the decision to innovate in marketing.

Due to the apparent lack of empirical studies focusing on marketing innovation, we have had to justify some of our hypotheses with studies on technological and organizational innovation, which we have tried to transfer to marketing innovation. The hypotheses take as their reference point the variables highlighted in the literature (size, geographic scope, field of activity, membership in a group, and other kinds of innovation), to which we added the surrounding circumstances to reflect the fact that we are studying the phenomenon at two different points in time.

The hypotheses regarding the study's three proposed objectives are discussed below.

Different authors have found both positive and negative relationships between company size and innovation. Authors such as Schumpeter (1934), Damanpour and Schneider (2006) or Bellas and Nentl (2007) maintain that large enterprises have more resources, which both enables them to implement innovations and increases their capacity to withstand losses should they have to assume any kind of risk. They thus defend a positive relationship: the larger the size of the enterprise, the more likely it is to innovate. In contrast, authors such as Acs and Audretsch (1987) and Afuah (1998) claim that small enterprises are more likely to innovate due to the greater flexibility they enjoy compared to large enterprises as a result of their more wieldy structures. In keeping with the majority of the authors, we propose the following hypothesis:

Hypothesis 1. The larger the size of the enterprise, the more likely it is to innovate in marketing.

It is also necessary to differentiate between companies that export and those that only sell their goods or services domestically. In this regard, the literature says that exporting enterprises are more likely to innovate because they operate in more competitive environments than companies that operate only at the national level. According to Nelson (1959), companies that export also have a greater incentive to innovate since, because they are active in more than one country, they have more opportunities to take advantage of novel results (economies of scope). However, as noted by Ganter & Hecker (2012), it is not only whether a company exports that matters, but also the breadth of the geographical area in which it sells. A firm's geographic scope also positively correlates to the necessities and possibilities of introducing marketing innovations. In other words, the more a company internationalizes, the larger the number and size of its competitors will be. At the same time, participation in a growing number of

international markets affords access to more learning opportunities from innovative marketing practices. Therefore, a broader geographic scope both stimulates the need for innovation and creates favorable conditions for the adoption thereof (Geletkanycz & Hambrick, 1997; Kogut & Parkinson, 1993; Kogut & Parkinson, 1998). Consequently, in light of the literature on innovation, we propose the following hypothesis.

Hypothesis 2. The greater the geographic scope of the market in which a firm operates, the more likely it is to adopt marketing innovations.

With regard to the type of business activity, numerous studies, such as Gehrke et al. (2010), have analyzed innovation in enterprises in relation to the activity they perform. In this study, we are interested in the difference between manufacturing and service companies in terms of their likelihood to innovate in marketing. Slater and Narver (1995) argue that the best way for service companies to innovate is to develop new services or reformulate existing ones through the creation of new distribution channels or to identify new management approaches. Therefore, we propose the following hypothesis:

Hypothesis 3. An enterprise's tendency to innovate in marketing differs significantly depending on the activity in which it is engaged.

Many enterprises in the marketplace belong to a group of companies, understood as an umbrella organization linking legally independent companies by means of some sort of mechanism, such as shared ownership and/or coordination of the use of one or more resources, and integrating them under a common decision-making body in which they have vested part of their autonomy (Nieto, 2001). Enterprises that belong to a group are characterized as having a greater capacity to absorb the expenses involved in innovation activities and, consequently, a greater capacity to face the potential risks of innovating. In this sense, Geldes and Felzensztein (2013) propose a relationship between inter-organizational cooperation and marketing innovations in agribusiness. Accordingly, we propose the following hypothesis:

Hypothesis 4. Enterprises belonging to a group of companies are more likely to innovate in marketing.

Nelson (1986, 1990) and Cohen and Levinthal (1989, 1990) found that enterprises that innovate in any aspect of their value chain have an innovation culture and are thus more likely to engage in other kinds of innovation, too. Zollo and Winter (2002) found that firms adopt a mix of learning behaviors due to a semiautomatic accumulation of experience and deliberate investments in knowledge articulation and codification activities. More specifically, the term "innovation culture" refers to the values, beliefs, and assumptions shared by an organization's members that can facilitate the innovation process. In this regard, a firm's cultural and social context can greatly influence its innovation capability (Martín-de Castro et al., 2013; Nielsen & Nielsen, 2009). Considering the role of successful innovation in an organization's culture, we propose the following hypotheses:

Hypothesis 5. Enterprises that carry out product innovations are more likely to innovate in marketing.

Hypothesis 6. Enterprises that carry out process innovations are more likely to innovate in marketing.

Hypothesis 7. Enterprises that carry out organizational innovations are more likely to innovate in marketing.

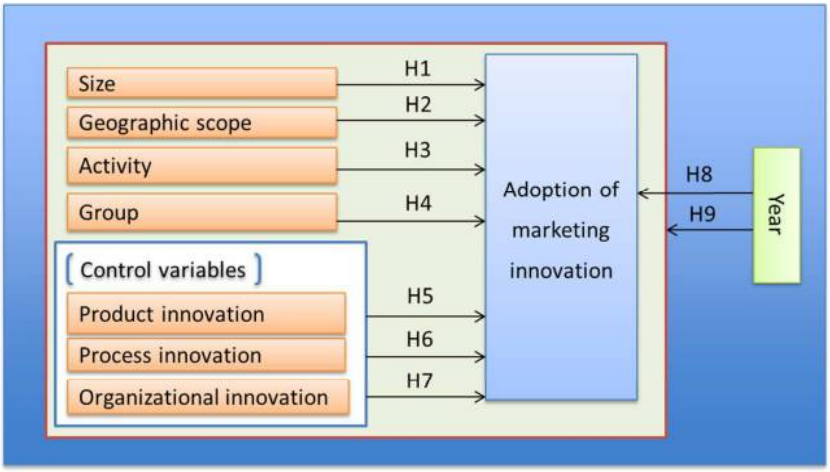
Improving competitiveness through innovation is the second of the five objectives proposed by the European Union (EU) for 2020 (European Commission, 2012). The importance that has thus been given to innovation by public authorities, organizations, and associations makes it possible for all enterprises to implement innovations. However, at present, the economic crisis is the most commonly cited obstacle to continuous growth in industry. Trends like these may be devastating in the short term, but they can also drive innovation (Hjalager, 2010). On the one hand, Nickell et al. (2013) found that during the recession, successful firms sought out innovative ways to address the downturn, for example, by experimenting with new marketing techniques such as social media and crowdsourcing. On the other, Brenčič et al. (2012) found that the crisis is affecting organizational performance because companies are deploying fewer innovation activities. This study aims to determine whether the current economic crisis affects the likelihood of adopting marketing innovations and whether the features of those enterprises most likely to implement marketing innovations changed between 2008 and 2010. We thus propose the following hypotheses:

Hypothesis 8. Enterprises' likelihood of innovating in marketing changed significantly between 2008 and 2010.

Hypothesis 9. The characteristics of companies that innovate in marketing were not the same in 2008 and 2010.

Having now defined all the hypotheses, we will proceed to test them using the following general analytical model:

Figure 1. Diagram of the aggregate model



4. Research method

4.1. Survey

The data used to conduct the research was obtained from the Technological Innovation Panel (PITEC). PITEC is a statistical instrument created to monitor technological innovation activities by Spanish companies. It was designed by the Spanish National Statistics Institute (INE), with the support of an advisory group made up of university researchers, and it is sponsored by the Spanish Foundation for Science and Technology (FECYT). It is a well-known survey of data in the field of innovation and has been widely used by other authors to analyze technological innovation. Nevertheless, it has rarely been used to study marketing innovation.

Table 1. Research specifications

Scope	Spanish companies
Sample size	Manufacturers and service companies, 2008: 10,416 Manufacturers and service companies, 2010: 9,578 Sample selected for the study: 9,415
Region of study	Spain
Information compilation system	Self-administered postal questionnaire
Organization responsible for the questionnaire	Spanish National Statistics Institute (INE)
Reference period	2008 and 2010
Statistical software	SPSS 15.0, STATA SE 10.0

Source: Prepared by the authors based on PITEC 2008 and 2010 data.

In order to conduct our research, we processed data from manufacturing and service companies from the year 2008 and the last available year (2010). The sample is composed of 9,415 enterprises and consists only of companies present in both years in order to enable comparisons between the 2008 and 2010 subsamples. Appendix 1 includes a description of the variables used for this study.

Table 2 shows the descriptive statistics of the companies comprising the sample in 2008 and 2010.

Table 2. Characteristics of the sample companies

		2008		2010	
		Frequency	%	Frequency	%
Marketing innovation	No	6,801	72.2	6,911	73.4
	Yes	2,614	27.8	2,504	26.6
Geographic scope	Local or regional	972	10.3	975	10.4
	National	2,677	28.4	2,564	27.2
	EU countries	1,793	19.0	1,700	18.1
	Other countries	3,973	42.2	4,176	44.4
Company activity	Services	4,205	44.7	4,216	44.8
	Manufacturing	5,210	55.3	5,199	55.2
Group company	No	5.682	60.4	5.615	59.6
	Yes	3,733	39.6	3,800	40.4
Product innovation	No	4,440	47.2	4,249	45.1
	Yes	4,975	52.8	5,166	54.9
Process innovation	No	4.287	45.5	4.047	43.0
	Yes	5,128	54.5	5,368	57.0
Organizational innovation	No	5,150	54.7	5,598	59.5
	Yes	4,265	45.3	3,817	40.5
Total		**9,415**	**100**	**9,415**	**100**

4.2. *Statistical methods*

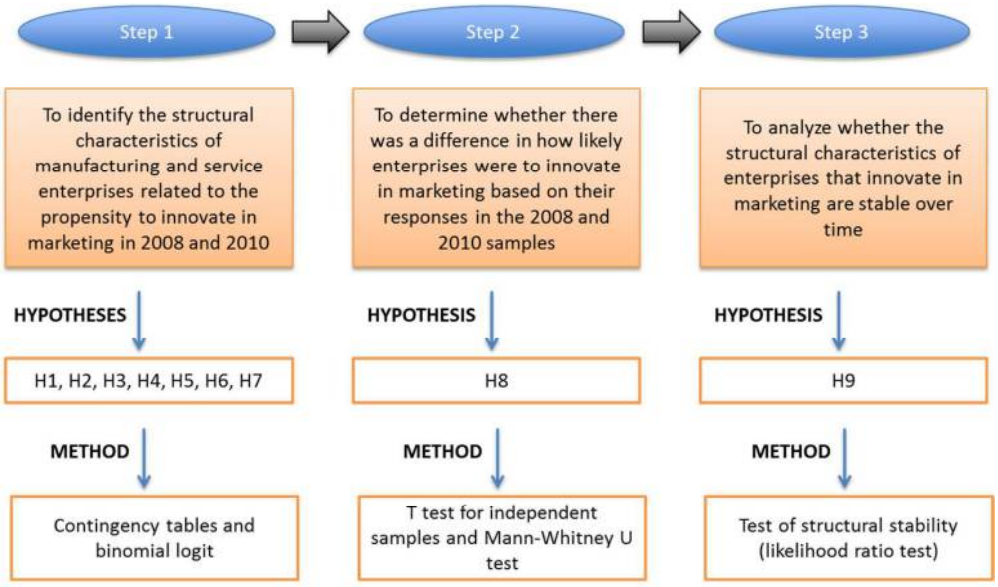
The first step was to determine whether the independent variables had any influence on the dependent variable, namely, marketing innovation. To this end, we carried out a bivariate analysis using contingency tables of the independent variables, which we believed were discriminatory, and the dependent variable (marketing innovation) in order to determine whether there was any relationship, dependent or independent, between them.

However, the first aim (Figure 2) was to determine which business characteristics influenced a company's likelihood of innovating in marketing and to what extent. We thus chose to use binomial logit discrete choice models, as they can be adapted to all kinds of independent variables (metric and non-metric) and do not require the supposition of multivariant normality (Hair et al., 1999). We also weighed the option of using probit models. Although the two models set out different probability distributions for random disturbance (logistics for logit and normal standard in probit), in most cases they yield similar results (Liao, 1994).

In order to prove whether or not enterprises' likelihood of innovating in marketing changed between 2008 and 2010, we used a T test for the independent samples and a non-parametric test, specifically, the Mann-Whitney U test.

Finally, to determine whether the structural characteristics of enterprises that innovate in marketing were stable over time, we carried out a test of structural stability, i.e., the likelihood ratio test (Hensher et al., 2005).

Figure 2. Research methodology



5. Results

5.1. Bivariate analysis using contingency tables

Table 3 shows the results of the bivariate analysis using contingency tables of the model's independent variables and marketing innovation. As can be seen in the Chi-square statistics, there were statistically significant differences between the various company characteristics and marketing innovation, as the significance level of the association was less than 5%. The results therefore show that marketing innovation was dependent on the chosen variables. There is thus a dependent relationship between the variables, and the hypothesis that held that the variables were independent can be rejected.

Table 3. Marketing innovation and company characteristics

		2008				2010			
		Marketing innovation		Pearson's Chi-square	Sig.	Marketing innovation		Pearson's Chi-square	Sig.
		NO	YES			NO	YES		
Geographic scope	Local or regional	9.4 %	0.9 %	307.016	<0.01	9.3 %	1.0 %	340.472	<0.01
	National	22.0%	6.4 %			21.8 %	5.4 %		
	EU countries	13.3 %	5.8 %			13.3 %	4.8 %		
	Other countries	27.6 %	14.6 %			29.0 %	15.4 %		
Company activity	Services	34.1 %	10.6 %	61.552	<0.01	34.3 %	10.4 %	42.072	<0.01
	Manufacturing	38.2 %	17.2 %			39.1 %	16.2 %		
Group companies	No	44.1 %	16.3 %	4.594	<0.05	45.0 %	14.7 %	28.534	<0.01
	Yes	28.2 %	11.5 %			28.4 %	11.9 %		
Product innovation	No	41.3 %	5.9 %	987.717	<0.01	40.0 %	5.1 %	928.429	<0.01
	Yes	30.9 %	21.9 %			33.4 %	21.5 %		
Process innovation	No	39.5 %	6.1 %	821.517	<0.01	37.8 %	5.2 %	765.792	<0.01
	Yes	32.8 %	21.7 %			35.6 %	21.4 %		
Organizational innovation	No	49.0 %	5.7 %	1,692.374	<0.01	53.8 %	5.6 %	2,075.007	<0.01
	Yes	23.3 %	22.0 %			19.6 %	21.0 %		

5.2. Binomial logit

The analysis of the association between the different independent variables did not reveal any significant relationships between them. *A priori*, this would seem to suggest an absence of multicollinearity. The logit model thus includes all the variables described thus far.

Table 4 shows the estimated coefficients of the independent variables obtained in the estimation of the logit model. The first column contains the results for marketing innovation. The subsequent columns show the results for each of the types of marketing innovation defined by the Oslo Manual, that is, innovations in product design, product promotion, product placement, and pricing. Table 4 also shows the marginal effects, since the variables' coefficients indicate only the direction of the change in the variables (through their sign). In logit models, the magnitude of the effect of the change in the variables has to be calculated through the marginal effects (Dunne, 1984). These marginal effects can be obtained via the following formula (Greene, 2008):

$$\frac{\partial E(Y \mid X)}{\partial X} = \Lambda(\beta' X)(1 - \Lambda(\beta' X)).\ \beta_j$$

Table 4 shows that there was a significant, positive relationship between marketing innovation and turnover in both periods. Therefore, Hypothesis 1, which held that the larger an enterprise is, the more likely it is to innovate, can be accepted. With regard to the geographical scope of each company's sales in 2008 and 2010, Hypothesis 2, which stated that the greater the geographical scope of a company's activity, the more likely it is to innovate in marketing, can also be accepted. As for a company's field of activity, the models for all four types of marketing innovation cited by the OECD (2005) show that an enterprise's activity is significant for each type of innovation. Consequently, Hypothesis 3, which states that an enterprise's tendency to innovate in marketing differs significantly depending on the activity in which it is engaged, can be accepted, too. Membership in a group of companies likewise proved to be significant; however, the relationship between the two variables was negative. Thus, Hypothesis 4, which posited a positive relationship between membership in a group of companies and the tendency to innovate in marketing, was rejected for both years. Finally, with regard to the control variables, Hypotheses 5, 6, and 7 were all satisfied: enterprises that carried out product, process, or organizational innovations were more likely to innovate in marketing.

Table 4. Determining factors for the adoption of marketing innovations in Spanish companies

	Marketing innovation		Innovation in design		Innovation in promotion		Innovation in placement		Innovation in pricing	
	2008	2010	2008	2010	2008	2010	2008	2010	2008	2010
Turnover	0.268***	0.138**	0.197***	0.169***	0.227***	0.132**	0.187***	0.197***	0.218***	0.106**
	(0.0440)	(0.0212)	(0.0186)	(0.0135)	(0.0197)	(0.0073)	(0.0132)	(0.0166)	(0.0122)	(0.0071)
Geographic scope										
National	0.743***	0.495***	0.693***	0.613***	0.605***	0.601***	0.726***	0.492***	0.851***	0.626***
	(0.1331)	(0.0817)	(0.0749)	(0.0555)	(0.0586)	(0.0377)	(0.0589)	(0.0454)	(0.0569)	(0.0477)
EU countries	1.018***	0.710***	1.030***	0.869***	0.738***	0.681***	0.883***	0.618***	0.795***	0.787***
	(0.1959)	(0.1248)	(0.1268)	(0.0881)	(0.0773)	(0.0460)	(0.0790)	(0.0612)	(0.0558)	(0.0658)
Other countries	1.004***	0.882***	1.124***	0.998***	0.722***	0.809***	0.969***	0.914***	0.742***	1.154***
	(0.1720)	(0.1404)	(0.1174)	(0.0855)	(0.0662)	(0.0473)	(0.0742)	(0.0814)	(0.0443)	(0.0842)
Company activity	-0.022	-0.068	0.482***	0.560***	-0.470***	-0.295***	-0.467***	-0.544***	-0.230***	-0.436***
	(-0.0036)	(-0.0105)	(0.0454)	(0.0441)	(-0.0417)	(-0.0165)	(-0.0337)	(-0.0470)	(-0.0130)	(-0.0298)
Group company	-0.215***	-0.150***	-0.212***	-0.139**	-0.190***	-0.166**	-0.144**	-0.164**	-0.237***	-0.099
	(-0.0348)	(-0.0230)	(-0.0200)	(-0.0110)	(-0.0162)	(-0.0090)	(-0.0100)	(-0.0135)	(-0.0130)	(-0.0066)
Product innovation	1.043***	0.984***	1.200***	1.178***	0.825***	0.600***	0.893***	0.810***	0.785***	0.906***
	(0.1683)	(0.1478)	(0.1147)	(0.0928)	(0.0712)	(0.0326)	(0.0627)	(0.0667)	(0.0438)	(0.0596)
Process innovation	0.604***	0.517***	0.647***	0.518***	0.608***	0.483***	0.462***	0.469***	0.609***	0.307***
	(0.0975)	(0.0780)	(0.0610)	(0.0405)	(0.0520)	(0.0260)	(0.0321)	(0.0385)	(0.0336)	(0.0202)
Organizational innovation	1.678***	1.969***	1.287***	1.674***	1.635***	2.074***	1.615***	1.890***	1.823***	1.925***
	(0.2863)	(0.3356)	(0.1326)	(0.1602)	(0.1579)	(0.1500)	(0.1281)	(0.1936)	(0.1194)	(0.1619)
Constant	-3.738***	-3.646***	-4.754***	-4.991***	-4.050***	-4.646***	-4.433***	-4.059***	-4.834***	-4.559***
No. Obs.	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415
Nagelkerke's R2	0.334	0.362	0.271	0.295	0.229	0.230	0.208	0.267	0.210	0.252
LR chi2(9)	2481.54***	2696.87***	1678.33***	1766.65***	1312.37***	1127.55***	1083.10***	1565.59***	1013.52***	1357.48***
% correct predictions	79.2	77.4	84.5	82.7	89.34	85.3	84.9	87.4	87.4	89.6

Significance coefficients: 1%***, 5%**, 10%*. The marginal effects (in parentheses) are evaluated in the sample average. For the dichotomy variables, the marginal effect corresponds to the step from 0 to 1.

5.3. Differences in likelihood depending on the period

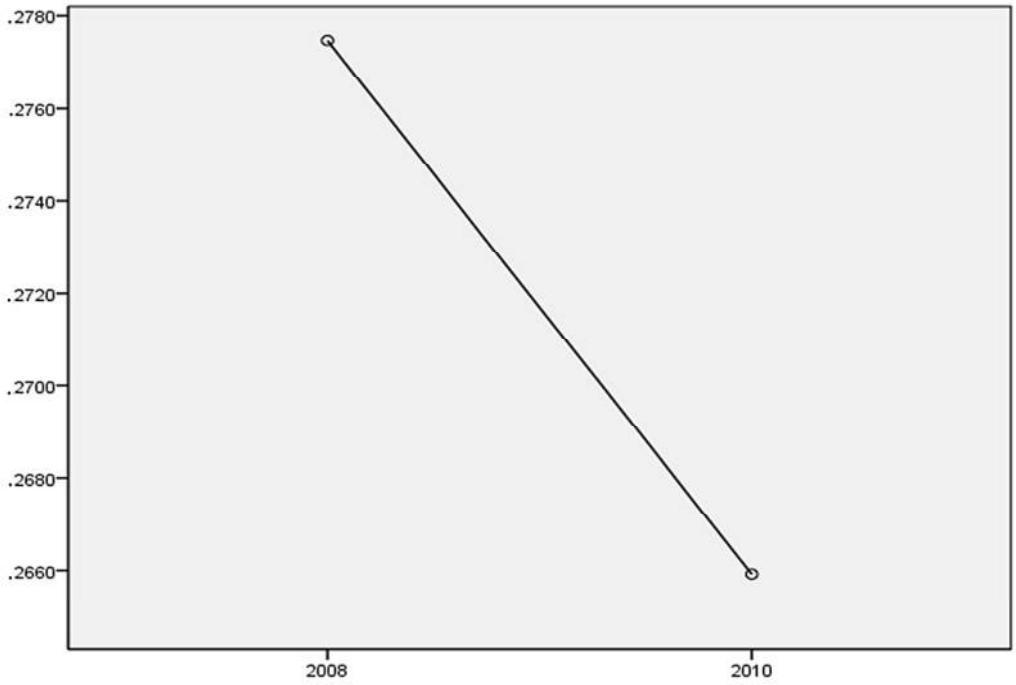
In order to test whether there were statistically significant differences in a company's likelihood of innovating in marketing in 2008 and 2010, a T test was performed for independent samples followed by a non-parametric test, namely, the Mann-Whitney U test.

The probability variable was created from the beta values of the logit analysis done for each year using the following formula (Greene, 2008):

$$P\,(Y=1) = (e^{\beta i})/\,(1 + e^{\beta i})$$

After conducting the two tests, we were able to reject the null hypothesis, with 99% probability. Consequently, we can state that statistically significant differences in the likelihood of innovating in marketing did exist between the two periods; we thus accepted Hypothesis 8. Figure 3 shows the decline in probability in 2010 in comparison with 2008.

Figure 3: Mean probabilities in the years 2008 and 2010



5.4. Structural changes over time

In order to determine whether the structural characteristics of enterprises that innovated in marketing were stable over time, we carried out a test of structural stability, specifically, the likelihood ratio test (Table 5).

Table 5. Results of likelihood ratio test

Dependent variable: Marketing innovation

Pooled Log likelihood function = -8437.0951

Variable	Coefficient	Std. Err.	z	P>z	[95% Conf.	Interval]
Turnover	.197442	.047666	4.14	0.000	.104018	.29086
National	.618939	.093125	6.65	0.000	.436417	.80146
EU	.869538	.096162	9.04	0.000	.681062	1.05801
Other	.942097	.092416	10.19	0.000	.760963	1.12323
Activity	-.043677	.043748	-1.00	0.318	-.129421	.04206
Group	-.181681	.039938	-4.55	0.000	-.259958	-.10340
Product innovation	1.013573	.044222	22.92	0.000	.926898	1.10024
Process innovation	.558769	.045090	12.39	0.000	.470394	.64714
Organizational innovation	1.825903	.041857	43.62	0.000	1.743863	1.90794
Constant	-3.69496	.093449	-39.54	0.000	-3.878117	-3.51180

2008 Log likelihood function = -4321.2033

Turnover	.26825	.069951	3.83	0.000	.131147	.405352
National	.74332	.132282	5.62	0.000	.484056	1.002595
EU	1.01762	.136463	7.46	0.000	.750158	1.285085
Other	1.00432	.132107	7.60	0.000	.745401	1.263254
Activity	-.02172	.060904	-0.36	0.721	-.141092	.097649
Group	-.21499	.056067	-3.83	0.000	-.324880	-.105100
Product innovation	1.04326	.060376	17.28	0.000	.924927	1.161598
Process innovation	.60393	.061654	9.80	0.000	.483092	.724773
Organizational innovation	1.67838	.058956	28.47	0.000	1.562828	1.793934
Constant	-3.69496	.093449	-39.54	0.000	-3.878117	-3.511802

2010 Log likelihood function = -4104.8602

Turnover	.13772	.061548	2.24	0.025	.017092	.25835
National	.49479	.131589	3.76	0.000	.236881	.75270
EU	.71027	.136027	5.22	0.000	.443662	.97688
Other	.88204	.129633	6.80	0.000	.627964	1.13612
Activity	-.06763	.063057	-1.07	0.283	-.191226	.05595
Group	-.15043	.057085	-2.64	0.008	-.262322	-.03855
Product innovation	.98400	.065187	15.09	0.000	.856242	1.11177
Process innovation	.51698	.066426	7.78	0.000	.386790	.64717
Organizational innovation	1.96888	.059723	32.97	0.000	1.851825	2.08593
Constant	-3.64568	.131193	-27.79	0.000	-3.902822	-3.38855

Chi squared [10] = -2 [-8437.0951 – [-4321.2033+ (-4104.8602)]] = 22.0632

95% of the critical value from the chi-squared table is 18.3070, so the null hypothesis (no structural change) can be rejected, and we can accept that there were structural changes over time. Therefore, Hypothesis 9 can be accepted.

Figure 4. Results

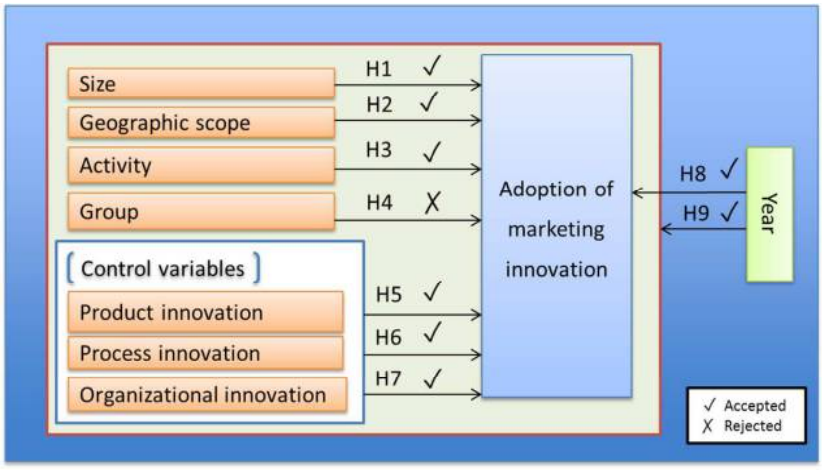


Table 6 shows some of the changes that occurred over time.

Table 6. Importance and direction of the variables affecting marketing innovation in enterprises

Marketing innovation					
2008			**2010**		
Direction of the effect	**Variable**	**Magnitude of the effect**	**Direction of the effect**	**Variable**	**Magnitude of the effect**
+	Organizational innovation	(0.2863)	+	Organizational innovation	(0.3356)
+	EU countries	(0.1959)	+	Product innovation	(0.1478)
+	Other countries	(0.1720)	+	Other countries	(0.1404)
+	Product innovation	(0.1683)	+	EU countries	(0.1248)
+	National	(0.1331)	+	Process innovation	(0.0780)
+	Process innovation	(0.0975)	+	National	(0.0817)
+	Turnover	(0.0440)	+	Turnover	(0.0212)
-	Group company	(-0.0348)	-	Group company	(-0.0230)

Table 6 provides a summary of all the relationships examined in the study taking into account the magnitude of the effect through the marginal effects. The independent variables are listed in descending order of the magnitude of their effect on the dependent variable (marketing innovation).

As the table shows, the weight of the turnover variable in 2010 dropped to less than half of what it was in 2008. With regard to the geographic scope of the enterprise's activities, the likelihood of innovating in marketing decreased in all cases; however, it dropped least among enterprises that exported to other countries. The likelihood of marketing innovation by enterprises that did not belong to a group of companies was also lower in 2010 than in 2008. Likewise, the effect of also innovating in products and processes was smaller in 2010 than in 2008. In contrast, the case of organizational innovation ran contrary to the others: enterprises that innovated in organization were more likely to adopt marketing innovations in 2010 than in 2008.

6. Discussion and conclusion

This research aimed to highlight the importance for companies of innovation in general and of marketing innovation in particular. At the same time, it aimed to make the effects of such efforts known to national and international organizations that are firmly committed to fostering innovation.

With regard to company size, we found that the larger an enterprise, the more likely it is to implement marketing innovations, as reported by other authors (Schumpeter, 1934; Damanpour & Schneider, 2006 Bellas & Nentl, 2007). However, the effect of size on the likelihood of innovating in marketing is decreasing, perhaps because in recent years Spanish public policy has placed particular importance on supporting small and medium-sized enterprises, since they constitute a very significant share of the country's business structure.

With regard to the geographic scope of an enterprise's sales, we were able to draw several key conclusions. In 2008, enterprises that conducted their business in the EU were more likely to innovate in marketing than those that also sold to the rest of the world. In contrast, in 2010, the companies most likely to innovate in marketing were those that also sold in other markets. This can be explained by the economic crisis in recent years, not only in Spain but also throughout Europe, which has forced Spanish companies to seek out new markets outside the EU and, thus, to make a greater effort with regard to marketing innovation in order to better meet the needs of consumers in the new countries. These findings underscore, first, the effect of public policies aimed at encouraging internationalization and, second, the need to sell abroad in order to survive due to stagnant consumption in the EU.

As for the tendency for marketing innovations to depend on an enterprise's activity, the differences between the two sectors – manufacturing and services – becomes significant when the variable is broken down into the four types of marketing innovation proposed by the OECD (2005). Specifically, manufacturing enterprises make products and, therefore, have a greater need to innovate in product design and packaging. In contrast, service companies are generally in closer contact with the end consumer and, thus, must embrace innovative strategies regarding product or service placement, promotion, and pricing. These findings show that there are statistically significant differences in an enterprise's likelihood of adopting marketing innovations, depending on its business activity.

Contrary to what might have been expected and to the innovation culture theory (Martín-de Castro et al., 2013; Nielsen & Nielsen, 2009), whether or not a company belongs to a group of companies was indirectly related to the tendency to innovate in marketing. Specifically, companies that are not members of a group are more likely to innovate in marketing. This may be because companies that belong to groups tend to be less flexible and depend more on the parent company, whereas independent enterprises have greater flexibility with regard to making decisions about marketing innovations. According to Felzensztein et al. (2010), cooperation on marketing activities varies depending on regional and national culture; therefore, each company operates independently. Finally, membership in a group of companies is constant over time, although it may be affected by public policies supporting innovation in all types of companies.

With regard to the control variables, as expected, the different kinds of innovation (product, process, and organizational) were found to correlate significantly with a greater likelihood of implementing marketing innovations. This is because any product, process, or organizational innovation an enterprise might make must be backed by marketing innovations in order to be presented and publicized innovatively to consumers, who, otherwise, will not perceive it as an innovation. However, attention must also be drawn to the notable increase between 2008 and 2010 in the tendency for companies that pursue organizational innovations to innovate in marketing as well, which suggests that the two kinds of innovation may be closely related.

Finally, this study found that the characteristics of enterprises that innovate in marketing undergo structural changes over time. This may be due to the huge efforts of various national and organizational bodies to foster innovation. On the one hand, the ability to innovate has become much more accessible to all kinds of companies. On the other, the current deep economic crisis has led many enterprises to concentrate their energy simply on surviving; as a result, they are not focusing on innovation in general, let alone on innovation in marketing in particular, since it is usually the marketing department that suffers the deepest cuts in times of crisis. This point was clearly reflected in Hypothesis 8, which revealed statistically significant differences between the two periods in terms of companies' likelihood of innovating in marketing and, specifically, showed that companies were much less likely to do it in 2010 than in 2008.

6.1. Implications for management

Marketing innovation is currently still in its early stages and may even have suffered setbacks in recent times due to the economic crisis. Companies should thus take advantage of this early stage and innovate in marketing as a way of differentiating themselves from their rivals and to become more competitive. This is particularly true given that marketing innovations need not involve an excessively high cost for enterprises.

It is also worth noting that continued investment in innovation is the best way to achieve economic development. This raises the question of the need to promote business programs that encourage innovation, albeit adapted to different types of innovation and firm characteristics.

In keeping with Noori and Salimi (2005), we also recommend that, as part of the process of designing a marketing strategy to meet the challenges of environmental change, firms analyze their active customers in order to identify opportunities for marketing innovation.

6.2. Limitations and future research

This study has opened up various paths for future research.

First, it would be interesting to conduct an analysis over a longer time span, something that could not be done in this study, as the chosen database did not begin to provide data on the marketing innovation variable until 2008.

In addition, the study could be broadened by breaking down the "geographical scope" variable more precisely. The term "other countries" covers a very wide range of countries with completely different cultures. Examining this aspect in greater depth could thus yield very interesting conclusions.

Further research into the concept of "marketing innovation" would also be interesting, since it is not entirely clear what companies understand by the term. To this end, an *ad hoc* measuring system could be designed to provide greater insight into the latest developments in marketing as a result of the possibilities afforded by new technologies, including a multitude of new customer relations systems that provide companies with much more insight into their customers.

Another key finding was the link between marketing innovation and other types of innovation, such as organizational innovation. We believe that the model should thus include internal variables related to the people running the enterprises, such as their attitude, motivations, or expectations, which may be very closely related to the decision to tackle innovation.

The effects of innovation on company performance have been studied by many authors, and the results normally show a direct, positive correlation between innovation and performance (Hult et al., 2004). Therefore, once the concept of marketing innovation has been defined and a measuring scale designed, future work could research the relationship between marketing innovation and company performance.

The published literature about marketing innovation also discusses competitive advantages. When a strategy cannot be satisfactorily implemented, imitated, or copied by a potential competitor, it is said to provide the company with a sustainable, competitive advantage (Ren et al., 2010). The literature suggests that marketing innovation practices can give companies a competitive advantage. We thus suggest analyzing this aspect.

Finally, this study was subject to certain limitations due to the use of a pre-prepared database (PITEC). We were thus unable to work with all the variables we would have liked. We were likewise unable to measure marketing innovation in what we consider to be the ideal way, but instead had to adapt our work to how marketing innovation is measured in the chosen database, which was designed for national statistics and consequently does not afford in-depth information about marketing innovation.

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Appendix A. Variable definition

Variable	*Category*	*Levels*
Dependent variables		
Marketing innovation	Binary	In keeping with the OECD's (2005) methodological guidelines, assigned a value of 1 if the firm adopted marketing innovations of any type (design, promotion, placement, or pricing) and a value of 0 otherwise.
Design innovation	Binary	Assigned a value of 1 if the firm adopted design innovations and a value of 0 otherwise.
Promotion innovation	Binary	Assigned a value of 1 if the firm adopted promotion innovations and a value of 0 otherwise.
Placement innovation	Binary	Assigned a value of 1 if the firm adopted placement innovations and a value of 0 otherwise.
Pricing innovation	Binary	Assigned a value of 1 if the firm adopted pricing innovations and a value of 0 otherwise.
Independent variables		
Turnover	Continuous	Numerical value (in billion euros)
Activity sector	Binary	Assigned a value of 1 if the firm was engaged in manufacturing and a value of 0 if it was a service company.
Geographic scope	Continuous	This variable refers to the full scope of locations that make up a company's sales market. If the scope was only local or regional, the study assigned it a value of 1. If it was limited to Spain, the variable was assigned a value of 2. If the sales markets included EU, EFTA, or EU candidate countries, a value of 3 was assigned. Finally, when a firm crossed a threshold mark of sales in "other countries," it was assigned a value of 4.
Group	Binary	Assigned a value of 1 if the firm belonged to a group of companies and a value of 0 otherwise.
Product innovation	Binary	Assigned a value of 1 if the firm adopted product innovations and a value of 0 otherwise.
Process innovation	Binary	Assigned a value of 1 if the firm adopted process innovations and a value of 0 otherwise.
Organizational innovation	Binary	Assigned a value of 1 if the firm adopted organizational innovations and a value of 0 otherwise.