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Editorial

Frontiers in research in business: Will you be in?

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How did you research 18 years ago? Certainly your current type of research is better, but not necessarily updated. This editorial tries to review the major drivers of such change and more interestingly to draw the type of research for the coming years.

There is no single view of research, but most of the research is based on a quantitative approach. This approach was developed on data that come from surveys, transactions, stock prices, company data and profile, among others. Once data are gathered from one or multiple sources, researchers attempt to figure out relationships based on numbers or codes (i.e. in surveys) in order to test hypothesis or build up more elaborated models using structural equation modelling, econometric models or artificial neural networks to name a few options. These types of approaches based on gathering data from formal sources, both reported and self-reported data, are still valid and constitute a fruitful path for management discoveries. However, during the last 18 years three main trends have changed the research landscape that offer new opportunities and rooms for improvement in management research.

Firstly, *numbers and codes are only part of the landscape*. Internet brings a new source of data where numbers are one type of data. A clear manifestation of the change was the Google's browser launched 18 years ago. At that time, the potential use of searching "a thing" had no value. Nevertheless, nowadays searching activities can be retrieved and analyzed. As a result, companies are looking for a new type of consumer, adopting retargeting strategies (Lambrecht & Tucker, 2013) or website morphing (Hauser, Urban, Liberali, & Braun, 2009). Other units of valid information, to name a few, are websites, pictures, videos, social media content, online reviews, searching routines and browsing activities that are available for researchers and must change the way of gathering data. Furthermore, data are available at a high volume, with velocity and variety. The efforts of increasing sample size are naive in comparison with the so-called Big Data.

Some examples may reinforce this new scenario. An interesting research by Vu, Li, Law, and Ye (2015) showed the most visited places, visitors' paths and tourist activities in a destination through pictures uploaded to Flickr. Another fresh perspective is shown by Bollen, Mao, and Zeng (2011), who analyzed the relationship between sentiment analysis of Tweets feeds and the value of the Dow Jones Industrial Average.

Secondly, physical associations are no longer exits; rather a new scenario featured by *omni connection* driven by smartphones, a multi-connected context and ecommerce is becoming usual in the market place. New ICTs, such as mobile phones have been spread everywhere and somehow are substituting traditional computers locked into a single and physical place. As a result, users are continuously connected in terms of time and place that overcomes physical distance and single-task settings. Nowadays, multitasking, new ways of communicating between people (e.g. sms or whatsapp) and product substitution of cameras, calculators or payment methods by smartphones are affecting manufacturers and retailers.

Omni connection reflects a new consumer who is connected everywhere and with many peers through social media platforms. The new concept of omni channel is part of this new omni connection scenario, fostered by virtual reality and augmented reality. The traditional flow from a powerful sender is being replaced by a peer-to-peer influence, which has its major manifestation in social media and online comments where user-generated content challenges the traditional communication path from the company to the consumer. This is of particular interest in services such as tourism, where consumers adopt comments (e.g. TripAdvisor) as a valuable source of information and also as a key driver for buying decisions. Even more, online aggregators such as Google Shopping or Kayak diminish the cost of searching for information that allows consumers to expand their sources of information.

Ecommerce is a growing channel for buying decisions that connects companies and consumers from many places. Brick and mortar retailers are expanding their close markets favoring sales everywhere. In that context, speed delivering (i.e. Amazon serves some areas in less than 1 h) is becoming critical and new companies for logistics are emerging as new intermediaries. Consumers do not need to move to the stores, neither carry the products. New agents, both online retailers and delivering services are replacing these two functions typically done by consumers. Interestingly enough, companies are no longer sole providers. The peer-to-peer scheme fosters some commercial relationships that challenge the traditional flow from companies to consumers. Consumer-to-consumer ecommerce is emerging with clear examples such as Airbnb or Ubber, deriving into new social tensions. This is just the iceberg of a new business orientation where consumers drive the initiative where companies must provide the institutional and technological marketplaces in order to make exchanges possible.

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In sum, this omni connection driven by multiple ICTs, mobile technologies, software for social media and ecommerce augmented and virtual reality are fostering a new scenario featured by a new what, when, where and how products and services are bought and delivered where consumer empowerment is a real change.

Thirdly, *research technologies are becoming friendly and cheaper*. Neuroscientific tools are becoming popular in management research. A myriad of techniques from eye tracking, face reader, galvanic skin conductance, electroencephalogram signals (EEG), positron emission tomography (PET) to functional magnetic resonance imaging (fMRI) are expanding the way of researching in entrepreneurship, marketing, investment (Frydman, Barberis, Camerer, Bossaerts, & Rangel, 2014) or tourism (Bigné, 2015a). Time, attention, emotions, associations, movements, rewards, risks, aversion, avoidance and some other implicit measures are now the focus of research. Just think about time. How much time do consumers spend choosing a product? How does it affect further choosing behavior? How much time is needed for evaluating a website? These and other related issues are addressed through neuroscientific tools and deriving into publications (see Bigné, Llinares, & Torrecilla, 2016; Lindgaard, Fernandes, Dudek, & Brown, 2006).

A new paradigm shift is knocking on the door of researchers (Bigné, 2015b), featured by multidisciplinary-based groups, blurred and mixed frontiers of disciplines, knowledge dissemination taking place not only in managerial journals and mixed research methods (see Molina-Azorín, 2016). Interestingly enough, new and fresh research will drive our research in the coming years. Why would endocrinology and genetics not be part of our research as Bagozzi and Verbeke (2014) posit? The future is not always predicted by the past. Just a final reflection for all of us, how did you research 18 years ago?

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Article

Return on capital in Spanish tourism businesses: A comparative analysis of family vs non-family businesses

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ABSTRACT

The analysis of the keys to competitiveness in the tourism sector has an unquestionable justification for its importance in the Spanish economy and its global growth prospects. The need for a better understanding of the keys to the competitiveness of the tourism firm is also fuelled by the magnitude of the challenges that it faces and by the sector structure, characterised by a notable weight of family-owned businesses. The objective of this research lies precisely in developing a diagnosis of the return on capital of the tourism sector and the determinants of its evolution in the family business (FB) vs non-family business (NFB). Specifically, this study focuses on the analysis of both firm's economic and financial profitability. The objective indicators of the results can come either from the company itself or from two secondary sources: SABI (Iberian Balance Sheet Analysis System) and INFORMA D&B. The economic and financial analysis of the Spanish tourism firm with objective data developed in this study is based on a sample of 738 firms (from an initial sample of 1019 organisations).

Introduction

Ample justification for an analysis of the keys to competitiveness in the tourism sector can be found in its importance to the Spanish economy (Vacas & Landeta, 2009; Vera & Marchena, 1996) and its prospects for growth at world level (Lee & Brahmasrene, 2013; Su & Lin, 2014). The need for better knowledge of the keys to the competitiveness of tourism businesses is all the greater because of the size of the challenges they face and the structure of the sector, combining the presence of chains with a considerable international profile (Mariz-Pérez & García-Álvarez, 2009; Rufín, 2006) with a fragmented segment of supply dominated by small establishments (Hernández-Maestro, Muñoz-Gallego, & Santos-Requejo, 2009) with a great deal of expertise in their activity but management falling short of the parameters of professionalisation and best practice. Family-owned businesses are clearly predominant in both segments of supply.

Family tourism businesses have often passively watched increasing competition and failed to meet new challenges arising from the emergent competition, technological change and the remodelling of demand (Aramberri, 2009), making few strategic movements to respond to the process of change. Stagnation and the absence of a well-defined strategic approach could, then, considerably damage the future prospects of Spanish family tourism businesses, putting them in an inferior position to competitors in the form of chains and other organisations with a corporate ownership structure.

The diagnosis of the performance of Spanish tourism businesses and the factors determining their progress are also vital for helping private agents to develop strategies generating economies of scale, sufficient synergies and the differentiation capacity to put their competitive position on a level with the competition. However, despite the importance of family businesses in tourism in Spain, research in this area has been carried out only incidentally (Getz & Carlsen, 2005).

The aim of this research lies precisely in determining the competitiveness of the tourism sector based on an analysis of its economic-financial results, comparing family businesses (FB) with non-family businesses (NFB). We consider that a family business is a firm where a family exerts power over the organisation and its strategic direction through ownership, management, or board positions (Pieper, Klein, & Jaskiewicz, 2008).

This study represents a considerable advance on the existing literature because of the lack and controversial nature of empirical studies of the growth and business profitability of FB (Astrachan, 2010; Benavides Velasco, Guzmán Parra, & Quintana García, 2011;

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Garcia-Castro & Aguilera, 2014), and most specifically tourism FB (Andersson, Carlsen, & Getz, 2002), despite their importance over the past decade.

Two streams of research can be identified in the family business literature. One stream compares and contrasts family and non-family firms in terms of performance implications. Along these lines, prior empirical research has found positive (e.g. Allouche, Amann, Jaussaud, & Kurashina, 2008; Block, Jaskiewicz, & Miller, 2011; Chu, 2009; Lindow, Stubner, & Wulf, 2010; Miralles-Marcelo, Miralles-Quirós, & Lisboa, 2014; Wagner, Block, Miller, Schwens, & Xi, 2015), negative (Cucculelli & Micucci, 2008; Sacristán-Navarro, Gómez-Ansón, & Cabeza-García, 2011), insignificant (Chrisman, Chua, & Litz, 2004; Miller, Le Breton-Miller, Lester, & Cannella, 2007; Westhead & Howorth, 2006) and even quadratic (De Massis, Kotlar, Campopiano, & Cassia, 2013; Kowalewski, Talavera, & Stetsyuk, 2010; Poutziouris, Savva, & Hadjielias, 2015) relationships between family involvement in business and firm performance. Another stream of research investigates how the specific characteristics of family business affect firm performance, especially those related to ownership, governance structure, management and succession (Block et al., 2011; De Massis et al., 2013; Garcia-Castro and Aguilera, 2014; Mazzi, 2011; Miralles-Marcelo et al., 2014; Villalonga & Amit, 2006). The results are also highly inconsistent (see e.g. Garcia-Castro and Aguilera, 2014; Mazzi, 2011; Poutziouris et al., 2015; Sacristán-Navarro et al., 2011). To this inconsistency in the literature is added the scarcity of empirical studies of FB in the tourism sector (Getz & Carlsen, 2005).

These contradictory results can be explained by a number of interplaying factors, including the differences in the definition of family firms, sampling techniques, definition of variables, methodologies, study periods and institutional settings considered by researchers (Miller et al., 2007; Sacristán-Navarro et al., 2011; Wagner et al., 2015). To these factors are added the difficulties in collecting data on this group from secondary public sources (Benavides Velasco et al., 2011).

The interest in this research is not merely descriptive, given that the idea is to make use of the knowledge extracted to improve the understanding of the strategic tools deployed by FB and to suggest lines of action which both tourism authorities and Spanish family tourism businesses themselves might develop to improve their medium- and long-term performance.

The desire for better knowledge of FB based on the theoretical framework offered by strategic management, following the pioneering call of Sharma, Chrisman, and Chua (1997), and later widely reaffirmed (e.g. Chrisman, Chua, & Sharma, 2005; Chrisman, Steier, & Chua, 2008) is the starting point inspiring the research on the competitiveness of FB in a good part of the current literature constituting the initial theoretical framework.

This study focuses, then, on the *expost* dimension of competitiveness involving the development of a sustainable competitive advantage that maintains or improves participation in the market at the same time as achieving better financial results (Camisón, 2014). Specifically, this study focuses on analysing the economic and financial profitability of the company.

The objective indicators of results used can come either from the company itself or from two secondary sources: the SABI (Iberian Balance Sheet Analysis System) and INFORMA D&B. The analysis of the indicators from the primary study involved working with a sample of 1019 businesses, which was reduced to 738 businesses when the objective data from the secondary sources indicated was used.

The profitability study is carried out based on a comparative analysis of the average FB and NFB, both weighted by relative size. This comparative analysis is implemented at different times to find out how the businesses represented develop over time. For this purpose, the years 1998, 2001, 2004, 2007 and 2008 have been chosen as cut-off points. This longitudinal analysis will provide an initial approach to the sensitivity of the economic-financial situation and the profit and loss accounts of Spanish family and non-family tourism businesses to changes in the economic cycle.

A second analysis of the economic-financial indicators is drawn up based on individual data from FB and NFB from the sample intended to reveal the statistically significant differences in the selected variables between the two groups. The differences in economic-financial return between the two types of firms will be analysed. The *expost* analysis of competitiveness is completed in this way with indicators based on self-assessment by management in relation to competitiveness, captured through the same primary study.

Importance and singularity of family businesses

The FB model plays an important role in most capitalist economies due to its contribution to the creation of jobs and wealth (Bhattacharya & Ravikumar, 2001; Carrigan & Buckley, 2008). The leading role played by FB in the economy has led to a growing interest in researching them. Along these lines, a considerable volume of studies have analysed their impact on economic performance (e.g. Garcia-Castro and Aguilera, 2014; Mazzi, 2011; Poutziouris et al., 2015; Sacristán-Navarro et al., 2011). However, the empirical evidence on the better performance and competitiveness of FB compared to NFB is controversial.

A first line of research focuses on examining the influence of family ownership and/or management on performance. Despite the growing literature in this respect, the results on its impact are confused. On one hand, some studies have reported a positive relationship between family involvement and performance (e.g. Allouche et al., 2008; Block et al., 2011; Chu, 2009; Lindow et al., 2010; Miralles-Marcelo et al., 2014; Wagner et al., 2015). Allouche et al. (2008), based on a sample of 1271 listed companies in Japan, demonstrate that family firms outperform non-family firms in terms of financial indicators (Return On Assets – ROA, Return On Equity – ROE, Return On Invested Capital, ROIC). Chu (2009) found that the influence of family ownership on performance (measured with ROA and Tobin's q) is positive for SMEs in Taiwan. Lindow et al.'s (2010) study based on a sample of 171 German family firms also shows that family firms play an important role in the achievement of strategic fit and, in turn, superior financial performance (measured with the ROE, ROA and subjective measurement). Although it is a weak effect, Wagner et al. (2015) also found that family firms show superior financial performance compared to non-family firms, on the basis of a meta-analysis. These authors also find size and conceptual definitions as important moderators of the relationship. The importance of controlling the definition of family firm and the nature of the sample is also pointed out in the study by Miller et al. (2007). Block et al. (2011), using a panel dataset of 419 firms, state that family and founder ownership are associated with superior performance (measured by Tobin's q). However, they did not find significant support for the effect of family and founder management on performance. Miralles-Marcelo et al. (2014), using a panel dataset of Spanish and Portuguese firms, show that family control has a positive impact on firm performance (measured using Tobin's Q and ROA), which is positively moderated by firm's size and age.

Some studies have also demonstrated a negative relationship between family involvement and financial performance. Cucculelli and Micucci (2008), using a sample of 3548 Italian manufacturing firms, find that keeping management in the family has a negative impact on the firm's performance (ROA and ROS). Sacristán-Navarro et al. (2011), using a panel of 118 non-financial Spanish companies, show that family management hampers profitability

(measured as a proxy of firm performance defined as the profitability ratio ROA). However, these authors did not find any influence of family ownership on performance.

To these two types of effect are added other studies that found no statistically significant associations between family ownership and performance in terms of sales growth (Schulze, Lubatkin, & Dino, 2003); short-term sales growth (Chrisman et al., 2004), considering several performance indicators as growth sales revenues, number of people employed, firm's exported sales, total gross sales exported, profitability, and a subjective measure of average performance (Westhead & Howorth, 2006), and in terms of sales, sales growth and Tobin's q (Miller et al., 2007). Sciascia and Mazzola (2008) ran regression analyses on data drawn from 620 privately owned family firms in Italy finding no association between family ownership and performance, captured through a self-reported measure taking into account the firms' sales growth, revenue growth, net profit growth, return on net asset growth, reduction of debt/equity ratio, return on equity growth, and dividend growth. Instead, these authors found that family involvement in management has a negative quadratic (inverted U-shaped) effect on performance. This effect points out that performance decreases as family involvement increases and that the decrease is greater at higher levels of involvement. Kowalewski et al. (2010), using a panel data of 217 public companies, also found an inverted U-shaped relationship between the proportion of family ownership and financial performance (measured with the ROE and ROA). De Massis et al. (2013) also confirm these results by conducting an empirical analysis on 494 small-to-medium size private family firms in Italy. Specifically, they find support for the existence of a U-shaped relationship between the degree of family ownership dispersion and firm performance, measured as ROA. Using a panel dataset of UK companies listed on the London Stock Exchange (LSE), Poutziouris et al. (2015) also demonstrate an inverted U-shaped relationship between family ownership and firm performance (measured with accounting ratios and Tobin's q). Specifically, their results show that performance increases until family shareholding reaches thirty-one percent.

The lack of homogeneity in the result of previous studies suggests that the relationships between family business and corporate performance are complex and even moderated or mediated by factors not included in previous analysis. In this vein, some of these studies highlight positive aspects of family firms within the stewardship and agency perspectives, whereas others emphasise negative ones.

The positive aspects include the culture transmitted in the organisation, the reputation of the business based on the track record of the family over generations, long-term orientation or greater trust between members and stakeholders (Audretsch, Hülsbeck, & Lehmann, 2013; Gallo & Amat, 2003; Miller & Le Breton-Miller, 2005; Whiteside, Aronoff, & Ward, 1993).

On the other hand, the potential negative effects of family influence refer to altruism and family nepotism (Bloom & Van Reenen, 2007; Pérez-González, 2006; Schulze et al., 2003), entrenchment (Gomez-Mejia, Nuñez-Nickel, & Gutierrez, 2001), free-riding (Schulze et al., 2003), the consumption of unearned perks (Chrisman et al., 2004) and expropriation of minority shareholders (e.g., Miller et al., 2007), that can lead to agency problems that damage performance. Equally, some studies highlight certain behaviour and characteristics of FB which would be incompatible with entrepreneurial orientation. These might include more conservative behaviour, lack of differentiation, low levels of innovation and a high level of risk aversion (Naldi, Nordqvist, Sjöberg, & Wiklund, 2007; Ward, 1986; Zahra, 2005). Although FB initially show entrepreneurial behaviour (Nordqvist, Habbershon, & Melin, 2009), maintaining this entrepreneurial orientation is a real challenge as time goes on (Casillas, Moreno, & Barbero, 2010; Cruz & Nordqvist, 2012; Kellermanns, Eddleston, Barnett, & Pearson, 2008; Naldi et al., 2007). There are also studies that indicate that FB have serious problems that lead to their average life expectancy being cut short (Craig & Moores, 2006; Neubauer & Lank, 1998, p. 44), finding it difficult to achieve a third generation of family control.

In order to shed light on these conflicting findings, and considering that differences in performance among family firms are even higher than those between family and non-family business (Chua, Chrisman, Steier, & Rau, 2012), another strand of the literature focuses on analysing which of the specific explanatory variables defined by the structure of ownership and control and management of FB, and internal and external moderating variables, influence economic performance. This body of research fits in with the main foundations of the Resource Based View (RBV), that define the specific resources and capacities of FB deriving from family-business interaction as a result of the involvement in the business of the owner family – its capital, governance structure and management system. This involves the interaction of systems between the family as a whole, the people who make it up and the business (Habbershon & Williams, 1999).

On the basis of RBV, agency theory and stewardship theory studies like those by Anderson and Reeb (2003), Westhead and Howorth (2006) and Maury (2006) find that family involvement is an effective form of control, providing incentive structures resulting in fewer agency conflicts, and costs, leading to better financial and market value performance by family businesses. Specifically, Anderson and Reeb (2003), using the Standard & Poors 500 firms, show that when a family member serves as CEO, performance (measured with ROA and Tobin's q) is better than with an outside CEO. Westhead and Howorth (2006), analysing data from privately held family firms in the United Kingdom, show that firms with high levels of family ownership and management were not significantly associated with superior performance indicators. However, their research provides evidence that the family firms with larger teams of directors and managers have greater levels of growth in sales and revenues. Maury (2006), analysing a sample of 1672 non-financial firms in Western Europe, also found that active family control increases profitability (measured with ROA and Tobin's q) compared to non-family firms. Lee (2006), based on a sample of 403 firms, confirms that family businesses tend to obtain higher employment and revenue growth when founding family members are involved in management. The findings obtained by Barontini and Caprio (2006) and Sraer and Thesmar (2007) are also consistent with these results, highlighting the benefits of the family's involvement in management.

Other studies, like that by Barth, Gulbrandsen, and Schøne (2005), analysing 438 Norwegian firms, have found that family-owned and managed firms are less productive in terms of added value than non-family firms. However, they show that family-owned firms managed by a person hired from outside the owner family are just as productive as non-family-owned firms, not finding support for the hypothesis that concentrated ownership necessarily affects productivity. This study points out that professional managers hired in the market are more efficient in operating the firm. On the basis of a panel data from 180 of publicly traded Chilean firms from 2000 and 2003, Silva and Majluf (2008) show that family ownership does have an impact on performance, which may be positive or negative depending on voting rights concentration. At higher concentration, family ownership subtracts value from the firm and their contribution is more negative when they become highly involved in management. The opposite is true when concentration is low. Villalonga and Amit (2006), using proxy data on all Fortune-500 firms, demonstrate that the presence of descendants as CEOs has a negative impact on performance (using Tobin's q) and conflicts with minority shareholders.

Meanwhile, O'Boyle Jr, Pollack, and Rutherford (2012), using a meta-analysis, find that there is no direct, significant relationship between family involvement and a firm's financial performance. Instead, they analyse the effects of potential moderators. The conceptual moderators they include are: public vs private, firm size and cultural context. They also include the following methodological moderators: family involvement, firm performance, publication and publication quality, and year of publication. Their analysis of potential moderators provided no evidence that these moderators were statistically or practically significant. Garcia-Castro and Aguilera (2014) use data from the OSIRIS database to carry out methods from set theory. Their results also confirm that the effects of family involvement in business (measured as industry-adjusted ROE) are not direct but rather subject to substantial complementarity and substitution effects among the components of family involvement related to governance (family board and family chairman), ownership (family ownership), management (family CEO) and succession (succession). Craig, Dibrell, and Garrett (2014), using a sample of 359 firms, found evidence that the family effect on performance (measured through sales growth, market share growth and return on sales) is mediated by culture, strategic flexibility and innovativeness.

Finally, there are studies profiling non-linear relationships between the features of governance and the corporate structure of the business and its financial results. Specifically, Naldi, Chirico, Kellermanns, and Campopiano (2015), using a sample of 128 Swedish family firms, predict an inverted U-shaped relationship between the number of family advisors and family firm performance (measured through ROA). They also found that the generation which controls the firm moderates this effect so that family advisors have a positive relationship with performance in first-generation family firms and an inverted U-shaped relationship with performance in later-generation family firms.

It is therefore appropriate to wonder whether the FB model is a guarantee of competitiveness and growth in the modern tourism sector, characterised by a high level of competition, internationalisation and the development of new commercial, technological, human, organisational and management requirements.

Table 1 presents a summary of the empirical studies analysed. The table gathers, on the one hand, the papers related to the differences in performance between FB and NFB and, on the other hand, the papers that analyse the specific characteristics of FB affecting its performance. This second block of papers posits that there may be important differences among FB due to the specific characteristics of each FB, regarding their ownership and governance structure, family involvement in management and control-enhancing mechanisms. Some of these studies also point out some internal and external moderating variables that influence economic performance of FB.

The characteristics of family businesses in the tourism sector

Although there are few studies dealing with the analysis of FB in the area of tourism (Andersson et al., 2002; Getz & Carlsen, 2005), investigating it in this context is particularly relevant, and possibly even more so in the case of Spain. The Spanish tourism sector has traditionally been dominated by this type of business. Despite the fact that the growth experienced by this sector has led to the appearance of businesses and chains without family links, family-owned individual establishments and chains continue to be very important, and they are a key element in all segments of the Spanish tourism market. This fact contrasts with the situation at international level, where the big corporate chains are becoming increasingly important.

The tourism sector offers great opportunities for FB; for example, the fact that a tourism FB incorporates host-guest interaction can generate unique customer experiences and satisfaction (Andersson et al., 2002; Getz & Carlsen, 2005). In this way, families can form part of the tourism experience (Wanhill, 1997, 2000), increasing the value of this service. Equally, the connection between tourism activity and free time, specific lifestyles or the fact that a location is desirable for a person can lead to a family establishing a tourism business (Ateljevic & Doorne, 2000; Getz & Carlsen, 2000).

Despite the considerable importance of FB in the tourism sector, the literature on the topic is scarce if compared with studies in other industries (Getz & Carlsen, 2000; Chrisman et al., 2008). It must also be recognised that the bulk of this literature on tourism FB is not exclusively based on research into issues related to family businesses as such, but rather as a secondary element associated with small businesses (Getz, Carlsen, & Morrison, 2004). This small size of tourism FB is noted as one of the factors explaining the lack of studies related to economic performance and business growth. In addition, empirical research on tourism FB seems to focus on analysing the business owners' characteristics and attitudes (Andersson et al., 2002; Getz & Carlsen, 2000; Getz & Peterson, 2005), managerial strategies (Craig & Lindsay, 2002), and other non-economic objectives of the owners more related to lifestyle, socioeconomic wealth and diversification in other businesses (Getz & Carlsen, 2000; Getz & Peterson, 2005) as well as location and legacy goals (Andersson et al., 2002).

According to Getz et al. (2004) these differences between research on the tourism sector and other economic sectors is explained above all by the lack of entry barriers preventing new entrepreneurs and business people with little business preparation or training investing in the tourism sector (Getz et al., 2004). The small size of certain tourism businesses (cafes, bars, restaurants, etc.) implies low levels of capital and operating costs and the possibility of them being run by few people, which can encourage the creation of an FB (Getz & Carlsen, 2000). We can therefore consider that in tourism FB the business is more focused on the family than on economic objectives.

The concept of family businesses

It is difficult to define the term FB because, rather than a universally adopted definition, a wide variety of concepts and measurements have emerged in this respect (Miller et al., 2007). Sometimes, this conceptual disparity may be the result of the researcher's aims while on other occasions it may be caused by the restrictions of the empirical source used (e.g. Galve & Salas, 2003).

Some authors have tried to determine common characteristics of the different definitions of FB. Along these lines, Handler (1989) identified three dimensions: a family share in the ownership, the consideration of the family and the business as interdependent subsystems, and the family group's desire for continuity taking the form of generational transfer. Based on these three dimensions, Shanker and Astrachan (1996) proposed classifying FB in three levels representing increasing family involvement in the organisation. In this way, FB could be defined with a broad, intermediate or restrictive concept:

- Broad concept: considering only the "ownership structure" dimension. In this case, a business with the founder or his/her descendants holding majority ownership and controlling strategic decisions is understood to be an FB. This concept requires part of the share capital to be family capital and, in addition, a majority of the capital with voting rights must be in the hands of

Table 1
Summary of the analysed empirical studies.

Reference	Location	Theoretical roots	Main variables and results	
BLOCK 1. Influence of family ownership and/or management on performance (differences between family and non-family firms)				
Allouche et al. (2008)	Japan	Agency theory	*Dependent variables*: - Firm performance: items related to profitability indicators and financial structures *Independent variables:* - Nature of the business: family or non-family (s., family) - Degree of family control (n.s.)	Positive effects
Chu (2009)	Taiwan	Stewardship and agency theories	*Dependent variable:* - Firm performance: ROA and Tobin's *q* *Independent variables:* - Family ownership *Moderating variables:* - Firm size - Family management - Family control (chairman)	
Lindow et al. (2010)	German	Contingency theory and family systems theory	*Dependent variable:* - ROE, ROA and subjective measurement *Independent variable:* - Family influence - Strategy (mediating variable) - Organisational structure (mediating variable) - Strategic fit (mediating variable) *Moderating variables:* - Family influence	
Block et al. (2011)	United States	Agency theory	*Dependent variable:* - Firm performance: Tobin's *q* *Independent variables:* - Ownership: ownership by founder vs ownership by family - Management: management by founder vs management by family	
Miralles-Marcelo et al. (2014)	Spain and Portugal	Behavioural and agency theories	*Dependent variable:* - Firm performance: financial performance (Tobin's *q* and ROA) and stock market performance *Independent variables:* - Family vs non-family firms *Moderating variables:* - Type of family firm: CEO is the founder/other family member vs otherwise - Age and size of the firm	
Wagner et al. (2015)	Several countries (41)	Agency theory	*Dependent variable:* - Firm performance: ROA, ROE, ROS, sales growth and market-to-book value *Moderating variables:* - Family classification: Family ownership, family management, a combined measure of the two, and self-reported family business - Conceptual moderators: a firms' listing on the stock market, firm size, and cultural dimensions - Study-specific moderators: publication status, year of publication, and journal quality	
Cucculelli and Micucci (2008)	Italy	Agency theory and succession literature	*Dependent variable:* - Firm performance: ROA and ROS *Independent variable:* - After succession vs before succession *Moderating variables:* - Heir-managed vs unrelated-managed - Good performers vs poor performers - Strong competition sector - Medium-high tech sector vs medium-low or low tech sector	Negative effects
Sacristán-Navarro et al. (2011)	Spain	Stewardship and agency theories	*Dependent variable:* - Profitability: proxy of firm performance defined as the profitability ratio ROA) *Independent variables:* - Firm ownership - Family ownership - Family control - Family CEO - Family Chairman	
Schulze et al. (2003)	United States	Agency theory and household economics and altruism literatures	*Dependent variable:* - Firm performance: sales growth *Independent variables:* - Family pay incentives - Non-family pay incentives - Firms that pay dividends *Moderating variables:* - Firms that will be "sold to outside investors" vs "transfer to family" - Firms where the share transfer intentions remain unknown vs firms where the share transfer intentions are known - Firms whose CEO intends to retire within the next 5 years vs whose CEOs have no such intention	No statistically significant effects

Table 1 (*Continued*)

Reference	Location	Theoretical roots	Main variables and results	
Chrisman et al. (2004)	United States	Agency theory	*Dependent variable:* - Firm performance: short-term sales growth *Independent variable:* - Family business *Moderating variables:* - Agency cost control mechanisms: strategic planning and board	
Westhead and Howorth (2006)	United Kingdom	Stewardship and agency theories	*Dependent variable:* - Firm performance: growth sales revenues, number of people employed, firm's export sales, total gross sales exported, profitability, and a subjective measure of average performance *Independent variables:* - Ownership structure - Management structure - Company objectives	
Miller et al. (2007)	United States	Stewardship and agency theories	*Dependent variable:* - Firm performance: sales, sales growth, and Tobin's *q* *Independent variables:* - Family firm - Family generation - Lone founder's involvement - Family or lone founder firm - Family or lone founder is the largest shareholder in the firm - Family or lone founder is the largest shareholder in the firm and also serves as the firm's CEO - Shares owned (%) - A family member or the lone founder is the CEO - A family member or the lone founder is the chairman - A family member or the lone founder is the CEO and the chairman	
Sciascia and Mazzola (2008)	Italy	Stewardship and agency theories	*Dependent variable:* - Firm performance: self-reported measure taking into account the firm's sales growth, revenue growth, net profit growth, return on net asset growth, reduction of debt/equity ratio, return on equity growth, and dividend growth *Independent variables:* - Family involvement in ownership (FIO) - Family involvement in management (FIM) *Moderation variable:* - Interaction effects between FIO and FIM	Quadratic relationships
Kowalewski et al. (2010)	Poland	Agency theory and RBV	*Dependent variable:* - Financial performance (ROE and ROA) *Independent variables:* - Family ownership - Family share (%) - Family voting rights (%) - Family CEO - Family chairman - Family owned companies cutoffs - Outside investors	
De Massis et al. (2013)	Italy	Agency theory	*Dependent variable:* - Firm performance: ROA *Independent variable:* - Family ownership - Family ownership dispersion *Moderating variables:* - Family ratio in the TMT	
Poutziouris et al. (2015)	United Kingdom	Agency and stewardship theories	*Dependent variable:* - Firm performance: accounting ratios and Tobin's *q* *Inependent variables:* - Family firm - Young/old family - Family board representation - Founder as the controlling shareholder - Duality (CEO is also the Chairman) - Family executive (CEO) - Family/non-family succession - Family ownership (%) *Moderating variables:* - The role of a family CEO at the helm, family board representation - The role of duality where the family CEO is also the Chairperson	
Block 2. Specific characteristics of family business affecting its performance				
Anderson and Reeb (2003)	United States	Agency theory and economic approach	*Dependent variable:* - Firm performance: ROA and Tobin's *q* *Independent variables:* - Family firm - Family ownership - CEO: founders, founder descendants or hired (outsiders)	Positive effects

Table 1 (*Continued*)

Reference	Location	Theoretical roots	Main variables and results	
Westhead and Howorth (2006)	United Kingdom	Stewardship and agency theories	*(See first block of the table)*	
Maury (2006)	Western Europe	Agency theory	*Dependent variable:* - Firm performance: ROA and Tobin's *q* *Independent variables:* - The largest controlling shareholder holding at least 10% of the voting rights is a family, an individual, or an unlisted firm - The family controlling shareholder is an unlisted firm - The largest controlling shareholder is an identified family or individual - The controlling shareholder is a family or an individual who holds the CEO, Honorary Chairman, Chairman, or Vice Chairman position - Widely held dummy - Ownership (measures the proportion of cash-flow rights held by the largest shareholder) - Control minus ownership (difference between the control rights and the cash-flow rights held by the largest shareholder) - Multiple blockholders - Antidirector rights	
Lee (2006)	United States	Agency theory	*Dependent variable:* - Firm performance: employment, revenue growth, gross income (before taxes) growth, and net profit margin *Independent variables:* - Family ownership - Family management	
Barontini and Caprio (2006)	Continental Europe	Agency theory	*Dependent variable:* - Firm performance: Tobin's *q* and ROA *Independent variables:* - Family firm - Ownership concentration - Family control *Moderating variables* - Family CEO vs Family non-executive-directors - Founders vs descendants	
Sraer and Thesmar (2007)	France	Economic approach	*Dependent variable:* - Firm performance: ROA, ROE, market to book, dividend to profit *Independent variables:* - Family firm - Founder-controlled - Heir-controlled - Professionally managed	
Audretsch et al. (2013)	German	Agency theory	*Dependent variable:* - Financial performance: profit per employee and return on investment *Independent variables:* - Family monitoring - Family ownership - Family management	
Barth et al. (2005)	Norway	Agency theory	*Dependent variable:* - Productivity: added value *Independent variables:* - Family firm - Family ownership - Family management	Negative effects
Silva and Majluf (2008)	Chile	Agency theory and institutional theory	*Dependent variable:* - Performance: proxy of Tobin's *q* and ROA *Independent variables:* - Family affiliation - Family involvement - Firm external linkages *Moderating variables:* - Ownership concentration	
Villalonga and Amit (2006)	United States	Agency theory	*Dependent variable:* - Firm performance: Tobin's *q* *Independent variables:* - Family firm - Family ownership - Family ownership stake - Control-enhancing mechanisms - Family excess vote holdings - Presence of a family CEO	
Schulze et al. (2003)	United States	Agency theory and household economics and altruism literatures	*(See first block of the table)*	

Table 1 (*Continued*)

Reference	Location	Theoretical roots	Main variables and results
Pérez-González (2006)	United States	Agency theory	*Dependent variable:* - Firm performance: operating return on assets, net income to assets, and market-to-book ratios *Independent variables:* - Management: family successions vs unrelated successions *Moderating variables:* - CEO Selective college vs - CEO less selective college
Bloom and Van Reenen (2007)	United States, France, Germany and the United Kingdom	Agency theory	*Dependent variable:* - Firms' management scores *Independent variables:* - Family largest shareholder - Family largest shareholder and family CEO - Family largest shareholder, family CEO, and primogeniture
Gomez-Mejia et al. (2001)	Spain	Agency theory	*Dependent variable:* - Firm performance: volume of circulation (performance trend and performance changes) - Business risk - Length of survival *Independent variable:* - Family status - Relational agency contract - Executive tenure - CEO succession *Moderating variables* - Executive Level: CEO's vs Editors
Chrisman et al. (2004)	United States	Agency theory	*(See first block of the table)*
Miller et al. (2007)	United States	Agency and stewardship theories	*(See first block of the table)*
Zahra (2005)	United States	Agency theory	*Dependent variable:* - Entrepreneurial risk taking: use of domestic alliances, use of alliances in foreign markets, entering new domestic markets, entering new foreign markets, Investment in emerging radical technologies, fadical product innovation and introduction *Independent variables:* - CEO is also the founder - CEO tenure - Family ownership - Number of family generations
Naldi et al. (2007)	Sweden	Agency theory and entrepreneur-ship	*Dependent variable:* - Firm performance: self-assessment *Independent variables:* - Entrepreneurial orientation - Innovativeness - Proactiveness - Risk taking
Kellermanns et al. (2008)	United States	Entrepreneurship	*Dependent variable* - Employment growth: measured via a subjective self-reported assessment *Independent variables:* - Entrepreneurial behaviour (mediating variable) - Tenure - Age - Number of generations currently working in the family firm.
Casillas et al. (2010)	Spain	Configurational approach and RBV	*Dependent variable* - Firm growth: percentage of growth in sales over a 4-year period *Independent variables:* - Entrepreneurial orientation *Moderating variables:* - Environment (dynamic and hostile) - Generational involvement
Cruz and Nordqvist (2012)	Spain	Agency theory and entrepreneur-ship	*Dependent variable:* - Entrepreneurial orientation: Proactiveness, Risk taking and Innovativeness *Independent variables:* - Environment dynamism - Technological opportunities - Industry Growth - Non-family managers - Non-family investors *Moderating variables:* - Generation in Control of the Family Firm

Table 1 (*Continued*)

Reference	Location	Theoretical roots	Main variables and results	
Craig and Moores (2006)	Australia	Contingency theory	Dependent variable: - Innovation *Independent variables:* - Perceived environmental uncertainty - Technoeconomic uncertainty - Competition and constraints - Scope of information - Timeliness of information - Centralization - Formalisation - Age	
O'Boyle et al. (2012)	Several countries	Agency theory	*Dependent variable:* - Firm performance *Independent variable:* - Family involvement *Moderating variables:* - Conceptual moderators: public vs private, firm size and cultural context - Methodological moderators: family involvement, firm performance, publication and publication quality and year of publication	Other effects
Garcia-Castro and Aguilera (2014)	Several countries	Contingency theory	*Dependent variable:* - Firm performance: ROE *Independent variables:* - Family ownership - Family board - Family Chairman - Family CEO - Succession	
Craig et al. (2014)	United States	RBV	*Dependent variable:* - Firm performance: sales growth, market share growth and return on sales *Independent variables:* - Family influence - Family business culture (mediating variable) - Flexible planning systems (mediating variable) - Firm innovativeness (mediating variable)	
Naldi et al. (2015)	Sweden	Agency and stewardship theories	*Dependent variable:* - Firm performance (ROA) *Independent variables:* - Family member advisors *Moderating variables:* - Generation in control	

Source: Own compilation.

the family, so the members linked by family relationships have enough voting power to decide the organisation's strategy.

- Intermediate concept: in this case, firms simultaneously meeting two criteria are considered as FB: firstly, their majority ownership must be in the hands of the family, which means its members have the voting power to control strategic decisions (this requirement also defines the broad concept of FB). Secondly, the family owners must have a degree of direct participation in the implementation of the strategy and the running of the business, which requires at least one member of the family to belong to senior management.
- Restrictive concept: this considers that FB must meet the two above requirements while there must be different generations of the family coexisting within the organisation.

The three concepts have their own advantages and disadvantages, so it is difficult to choose between them. For example, the broad concept – the most open one – can fail to take into account other characteristic features of FB, as it is limited to a single dimension. Meanwhile, the intermediate concept is more restrictive, as it would exclude businesses that have opted to separate control of ownership from management control. Finally, unlike the restrictive concept, these two concepts – broad and intermediate – allow first-generation FB in their definition with the idea that a desire for continuity does not necessary require generational change.

The evaluation of FB has been developed based on the typology we have mentioned, constructed by Shanker and Astrachan (1996). Specifically, the measurement of FB adopted in this study for exploiting the results is based on the broad concept. Given the difficulty when it comes to adopting a clear criterion for conceptualising FB, some authors opt to leave it to the judgement of the person answering a questionnaire to decide whether or not the business is a family one (e.g. Dibrell & Moeller, 2011; Gallo, Tàpies, & Cappuyns, 2004; Neubaum, Dibrell, & Craig, 2012). This criterion is also used in studies on FB in tourism: specifically, Getz and Carlsen (2000) champion this method and use it in their study for its advantages because it is easy for the person answering the question to understand and so as not to impose a restrictive definition.

Despite the level of subjectivity inherent in this form of discriminating between FB and NFB, it seems reasonable that an affirmative response to the question whether the business is a family one implies that the family participates in the business either in a formal or informal way, which would, in most cases, correspond to the broad definition. This form of differentiation would include all businesses conducting themselves and behaving as FB. Along these lines, Chua, Chrisman, and Sharma (1999) maintain that it seems more reasonable to use inclusive definitions than exclusive ones. These authors believe it is quite unreasonable to use a definition that excludes a large number of FB when the businesses themselves insist, or a large group of academics believe, that they are FB. Recent studies like those by Sabah, Carsrud, and Kocak (2014), Basco and Voordeckers (2015) or López-Delgado and Diéguez-Soto (2015) also use broad concepts of FB, preferring less exclusive definitions.

Data and descriptive analysis

Sample and data

The database consists of a total of 1019 tourism businesses, of which 748 are FB and 271 NFB. The data is obtained using the questionnaire technique, a tool regularly used in studies of competitiveness (Camisón, 1997, 2001), through personal interviews, subsequently completed with data from the SABI (Iberian Balance Sheet Analysis System) and INFORMA D&B databases.

The first questionnaire was designed in August 2009. This final questionnaire was subjected to a progressive perfection process to make it easier to understand and more effective in collecting the desired information, as well as shorter and quicker to apply. After four successive versions, the design of the questionnaire was finally completed at the end of October 2009. Meanwhile, before beginning the application of the final questionnaire to collect data, its design was pre-tested between five academics specialising in the fields of tourism and strategy. This pre-test took place in the first two weeks of November 2009. The resulting questionnaire was also administered to eight managers from businesses of different sizes and segments in the tourism sector and their comments and improvement proposals were considered in the final design of the questionnaire.

To avoid the risk of automatic, unconsidered answers, the order of the answers was varied so that, in some cases, the order of desirability was descending and in others ascending; control items were included where the sense of affirmation was contrary to the rest of the scale, and questions on the same topic were included in different formats and locations to check the reliability of the response.

Concerning the interviewees, it was considered that business owners and company chief executives or managing directors were the ideal people to answer the questionnaire. To correct the recognised problems suffered by questionnaires as a means of obtaining data and seeking to raise the response rate and the quality of the information, a set of recommended procedures for research with questionnaires was used, involving a modified version of Dillman's "total design method" (Dillman, 1978). This method has a long tradition in the field of strategy (Conant, Mokwa, & Varadarajan, 1990). The fieldwork continued from December 2009 to March 2010.

The sample can be considered an acceptable reflection of the Spanish tourism sector at an overall level. Concerning the size, the sample design was distributed as follows: 62.71% microbusinesses (including 54.8% microbusinesses where there is at least one employee as well as the owner and another 7.9% forms of self-employment); 25.22% small businesses, 9.62% medium-sizes businesses and 2.45% large businesses. By the type of tourist activity carried out, 30.03% are accommodation businesses, 37.88% catering companies, 11% intermediary firms (travel agencies, tour operators, etc.), 3.93% transport organisations and 17.17% make up what is known as the complementary offer. As for geographical location, although the tourism offer is dispersed, it is distributed asymmetrically over Spanish territory, concentrated in the strongest tourism centres. Our sample has considered the following zones around which the largest tourism offer is concentrated. In terms of importance, our database is divided as follows: Balearic Islands (19.63%), Canary Islands (19.33%), Andalusia (19.23%), Catalonia (16.58%), the Valencian Community (10.30%), Madrid (8.15%) and the other regions (6.78%).

Variables and measures

The objective indicators of results used can come either from the business itself or from two secondary sources: The SABI (Iberian Balance Sheet Analysis System) and INFORMA D&B. As not all businesses deposit their annual accounts with the Companies Register and a certain number of others did not agree to provide precise data directly, the economic-financial analysis of Spanish tourism businesses with objective data from external sources developed in this study refers to a sample of 738 businesses (from an initial sample of 1019 organisations). Of these 738 businesses, 73.44% are FB, while 26.56% are NFB.

The profitability study is carried out based on a comparative analysis of the average FB and NFB, both weighted by relative size. This comparative analysis is executed at different times to find out how the businesses represented develop over time. For this end, the years 1998, 2001, 2004, 2007 and 2008 have been chosen as cut-off points.

A second analysis of the economic-financial indicators is drawn up based on individual data from FB and NFB from the sample intended to reveal the statistically significant differences in the selected variables between the two groups. Specifically, the differences in the gross profit per service unit, economic performance, financial performance and return on sales (see Table 3) between both types of firm will be analysed. These indicators gathered in Table 3 are the ones derived from the primary study using the questionnaire technique. The *expost* analysis of competitiveness is completed, in this way, with indicators based on self-assessment by management in relation to competitiveness captured through the same primary study. Self-assessment based on management perception is a common procedure in strategic research. Although this procedure is not without its risks, including the overestimation by management of their action and the position of the organisation they run, so we might consider this data as an upper limit possibly above the actual figures (De Vries, 1987; Jackall, 1988), the literature has empirically shown the convergence of objective and subjective measurements both on aspects of organisational performance and concerning other internal and external business variables.

Results

Return on capital indicators

Return on capital or investment is often the indicator used to assess the efficiency of the management of a business. As a first approach, it can be defined as the relationship (normally expressed as a percentage) between the company's profits and the corresponding investment or capital invested.

Table 2 includes the values of some of the most common indicators of return on capital, applied to the empirical study. As can be seen, the return on capital from FB is significantly higher in all ratios calculated in 1998 and 2004, while in 2001 and between 2004 and 2008, NFB outperform them in all these indices. The differences are not related to the point in the economic cycle or the magnitude of the ratios. Although the comparison in the two most recent years seems to point firmly towards better economic-financial performance by NFB, showing greater competitiveness, the variability of the results means it is advisable to interpret them prudently, developing a deeper analysis of their development and the factors that determine it.

The assessment of economic-financial performance from the perspective of management self-assessment confirms the conclusions already anticipated based on the analysis of objective data. The gross profit per service unit and return on turnover, as well as return on (economic and financial) capital, are significantly better in NFB (Table 3).

Despite this variety of indicators, the two most commonly used indices for discovering operational efficiency are economic return and financial return. The two indices are necessary because they complement the information on different facets of the business: while economic return reflects the operational efficiency of the

Table 2
Development of return on capital (%) in family and non-family tourism businesses (1998–2008).

	1998		2001		2004		2007		2008	
	FB	NFB	FB	NFB	FB	NFB	FB	NFB	FB	NFB
Economic return	10.24	0.78	4.95	8.31	3.28	1.21	2.91	3.95	1.53	2.32
Financial return before tax	25.68	7.49	6.69	10.57	3.89	0.49	3.85	8.47	1.43	2.53
Financial return after tax	26.87	9.92	8.13	12.26	5.14	1.39	4.77	9.48	0.95	2.54
Return on capital used	21.21	9.27	8.11	11.75	5.13	2.60	5.87	8.54	3.55	5.19
Profit margin	7.02	5.74	5.70	8.89	3.94	0.95	3.48	4.91	0.75	1.84

Source: Own compilation based on SABI and INFORMA data.
Economic return = EBIT/TA.
Financial return = ordinary profit/pre-tax loss/own funds.
Financial return after tax = ordinary profit/loss after tax/own funds.
Return on capital used = (Ordinary profit/pre-tax loss/+financial costs)/(own funds + fixed assets).
Profit margin = ordinary profit/loss before tax/operating revenues.

Table 3
Economic-financial performance of Spanish tourism businesses: family vs non-family businesses – a comparative analysis.[a]

	FB	NFB	*t* Student[b]
Gross profit per service unit	3.86	4.03	1 < 2*
Economic return	3.85	4.03	1 < 2*
Financial return after tax	3.77	3.96	1 < 2*
Return on sales (profit before interest and tax/turnover)	3.88	4.06	1 < 2*

Source: Own compilation based on information provided by the business itself (questionnaire).
[a] Evaluation of average performance of the business in the last three years compared to the average for its competitors, considering a 1–7 strength scale, where 1 is much worse and 7 much better and depending on the perception and information the person surveyed has available.
[b] Comparison of statistically significant differences between the averages of the two groups – FB and NFB – based on the Student *t*.
* $p \leq 0.05$.

business as a whole, financial return evaluates how it is translated into profits for shareholders.

Economic return

Economic return (ER) is that generated by the business using its financial resources on productive assets, regardless of its financial structure. Economic return comes from a quotient between the profit generated by the business and the investment committed to it. Broken down it can be expressed as follows:

$$ER = \frac{EBIT}{TA} = \frac{Sales(S)}{TA} \times \frac{EBIT}{Sales(S)}$$

The first conclusion (Table 4) is that, during the first decade of this century (with a few interruptions) significant differences appear in economic return between FB and NFB, destroying the solid advantage that FB seemed to have at the end of the nineties. In any case, the trend of this indicator is generally downward and with fluctuations; this points to a deterioration in the capacity of both groups to transform resources profitably. Although the economic cycle has had much greater effects on the FB group, leaving its economic return at 1.5%, while NFB exceed this by more than half (2.3%), both are small percentages that are below the risk-free rate for Europe.

The comparison of the economic results of FB and NFB results not only gives information about the value of the economic return but also the origin of the differences and whether they lie in dissimilarities in margin or rotation. In expressing the calculation of economic return, the first factor of the product is sales rotation and the second return on sales. Economic return is therefore determined by two indirect effects: the rotation effect *r* and the margin effect *m*. Asset rotation is a measure of the productivity of capital – effectiveness in the use of assets determining the revenues obtained for each monetary unit of investment. Margin is a valuation of organisational and technological efficiency determining costs and, consequently, return on sales: the profit achieved per monetary unit sold.

The analytical breakdown of the components of economic return, for which precise information is provided in Table 4, sheds more light on the causes of these differences. This judgement cannot be homogenised for the whole period studied, because the records show an unequal development of these components within the FB group during this time. In the first year of the cycle, the FB generated a margin on sales significantly greater than the NFB (14.6 points difference), which, combined with an asset turnover 6 points lower, is translated into a notably higher economic return (10.24% compared to 0.78%). This situation changes for the rest of the decade under study. The FB maintained their advantage on margin, with ups and downs, although the distance was notably reduced due to their falling margin, as it did not exceed 7.4% again, ending at 2.6% in 2008. However, this greater margin is not now translated into better economic return because the asset rotation for NFB becomes quite high (with the distance ranging between 10 and 26 points), more than compensating for the disadvantage in margin. The internationalisation of more activities leads to a growth of investment in fixed assets, the denominator of the rotation ratio, which explains the lower productivity of the FB's capital. It must also be noted that in 2008 the margin on sales for FB remains below that for NFB, a scenario not seen since the beginning of the century reflecting the considerable punishment inflicted by the change in economic situation on the first group's profit and loss accounts.

The importance of the differences in margin and rotation is also explained in Table 4, where the figure achieved for economic return for FB is expressed with the same asset rotation as for NFB, preserving the advantage in margin (difference explained by *r*), along with the difference between the economic return of FB and that of NFB if the former had the margin of the latter and the rotation level was maintained (difference explained by *m*). We can see that, instead, FB's lower economic return obeys the difference in productivity of capital; even in the years (1998 and 2004) when FB's economic return is greater, this is due exclusively to the margin and capital rotation partially cutting this advantage.

Economic return is affected by the capital intensity required by the business (Cuervo, 1993, p. 366). Businesses requiring great

Table 4
Development of economic return (%) in family and non-family tourism businesses (1998–2008).

	1998		2001		2004		2007		2008	
	FB	NFB	FB	NFB	FB	NFB	FB	NFB	FB	NFB
Economic return	10.24	0.78	4.95	8.31	3.28	1.21	2.91	3.95	1.53	2.32
Margin on sales	15.66	1.08	7.40	9.54	5.39	1.71	4.95	4.65	2.60	3.12
Net asset rotation	65.43	71.56	66.82	87.10	60.84	70.83	58.76	84.95	58.95	74.46
Differences										
Economic return	9.47[a,b]		−3.36[a,b]		2.07[a]		−1.04[a]		−0.79[a]	
Margin on sales	14.57[a]		−2.13[a]		3.68[a,b]		0.30		−0.52	
Asset rotation	−6.13		−20.28[a]		−9.99		−26.20[a,b]		−15.52[a,b]	
Differ. explained by *r*	−0.07		−1.94		−0.17		−1.22		−0.48	
Differ. explained by *m*	10.43		−1.86		2.61		0.26		−0.38	
Interactive effect	−0.89		0.44		−0.37		−0.08		0.07	

Source: Own compilation based on SABI and INFORMA data.
$p \leq 0.05$.
[a] *t* Student.
[b] *U* Mann–Whitney.

investment taking a long time to mature (normally classed as capital-intensive activities) generally show low rotation and big margins. Because of this, their strategy usually focuses on margin. Automation slows the rotation speed of the available capital. As technical progress increases the productivity of work by replacing labour with capital, the need for capital expands, with two consequent effects: an increase in fixed costs damaging elasticity in the cost structure and higher growth in the overall value of the balance sheet in the expansion capacity of sales. On the other hand, businesses positioned in non-capital-intensive activities – strongly competitive and with low margins – usually focus their strategy on rotation. The nature of the competitive strategy is equally reflected in the economic return curve in the sense that businesses with cost leadership strategies show low margin and high rotation, while businesses with differentiation strategies maintain themselves by increasing margin and improving their return (Cuervo, 1993, p. 366).

Therefore, this analysis of the determinants of economic return suggests that the FB in the Spanish tourism sector are more orientated towards differentiation strategies and the NFB towards minimum cost strategies. However, the average FB in the tourism sector does not appear to be close to any of these models because of its lack of relief in the two aspects. The sustainability of a differentiation strategy in FB is questionable due to their low margin on sales, which also shows a downward trend. The low return on sales shows that tourism FB have little market power and do not translate their desire for differentiation into imposing high prices on their customers. Nor does the productivity of FB's capital induce much optimism. Spanish tourism FB currently have an average investment of almost double their turnover. By contrast, NFB appear better positioned to exploit cost advantages with high rotation, although they also surpass FB for year-on-year average margin, so their differential potential cannot be ignored.

Figs. 1 and 2 make it possible to analyse the homogeneity of both groups around the average value of the factors driving economic return based on the dispersion limits that include 50% and 80% of businesses.

Concerning FB, Fig. 1 indicates that the worsening of margin has been accompanied by a significant reduction in dispersion and the lowering of its limits. While in 2001 50% of FB had an economic return ranging between 0.48% and 12.03% (a difference of 12.51 points), in 2008 the range narrowed to 9 points (ranging between −1.88% and 7.13%); for 80%, the contraction is less notable (4 points) and occurs due to the reduction in businesses with higher economic return. Rotation underwent fewer changes in its dispersion, with a consistent slight reduction in the index.

NFB show more varied behaviour (Fig. 2). The dispersion limits at 50% have narrowed from a distance of 15.6 points in 2001 (0.5–15.1%) to 7.1 points in 2008, with the contraction greater due to the upper limit falling from 15.1% to 6.1%. If we focus on the 80% limits, the narrowing is even stronger (26 points), although in this case the variation is reduced at both extremes. Concerning rotation, as with the FB, the lower reduction has also meant that less dispersion is lost. While 80% of NFB lay in a band of 8.5 points in 2001 (0.23/8.30), in 2008 the range was reduced to 6.5 points (0.17/6.35), particularly because of the fall in cases with high rotation. At the moment, an approximate practical rule for Spanish tourism businesses wishing to have a reasonably profitable position in the sector would consist of achieving a margin on sales of 3.5–10.4% combined with an asset rotation between 1.9 and 3.3. These limits have been fixed based on the central values of the dispersion bands at 50% and 80% of both components.

Although the variation band for margins on sales and asset rotation has narrowed, it is wide enough to show heterogeneous strategic behaviour between FB and NFB, although the thrust during the period under study has been towards greater homogeneity. In fact, if we look at the dispersion of economic return (Figs. 3 and 4), we see that the range of variation has hardly changed: 50% of FB lie between zero and 9.85%, a band narrowing slightly from −1.1% to 6% in 2008; as for NFB, half the group has remained in a band of 11–12 points (between −1% and 11%). If we look at the dispersion of 80% of the family and non-family offer, the band is wider, as might be expected, and has narrowed slightly (from 24 to 20 points, approximately).

Although only slight, the contracting trend in the dispersion range, accompanied by the reduction in its maximum and minimum limits, is a sign of the worsening of economic return during the period analysed. The fact that the percentage of businesses with negative economic return has risen from 24.8% to 31.2% in FB and 18.8% to 33.3% in NFB between 2001 and 2008, strongly increasing in the last financial year after a decade of reduction, points to the same conclusion. The difference in the relative size of this group of firms with such low operating efficiency between FB and NFB is not relevant (Fig. 5).

We can say, then, that a return on total assets above 10.8% is excellent for FB, while NFB should aspire to exceed 16.2%. At a more modest level, the minimum acceptable level of achievement in this dimension of performance for each of these two groups should move above 3.6% in FB and 5.6% in NFB. These limits have been fixed based on the central values of the dispersion band at 50%.

Financial return

The financial or own funds return (FR) is obtained as the quotient between the ordinary profit or loss after tax and own funds.

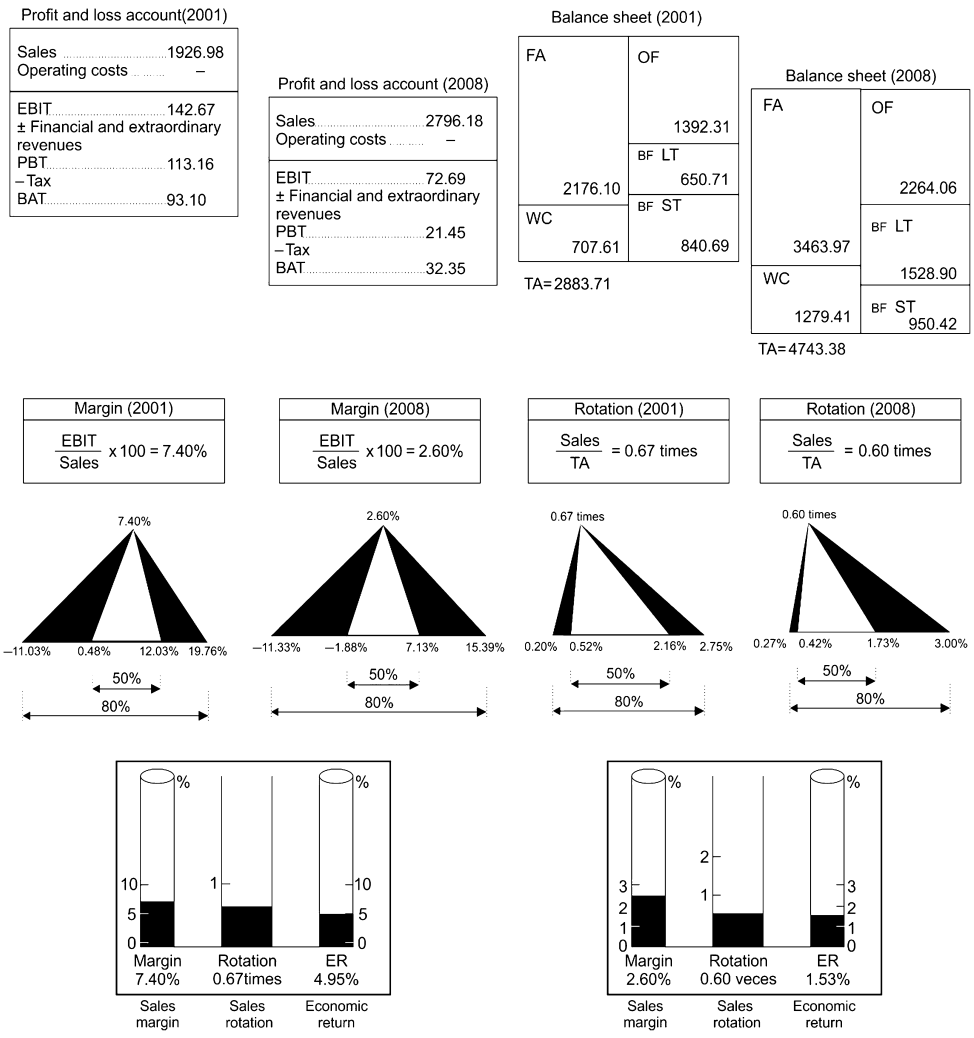

Fig. 1. Economic return for family businesses 2001–2008: dispersion of impulse factors.

Source: Own compilation based on SABI and INFORMA data.

Financial return, then, relates the return the business obtains to its financial structure, a measure which, like economic return, is translated into profits for shareholders.

As there is a positive relationship between financial return and share price, which makes it possible to consider this (maximisation of the market value of shares) as the first indicator of the business's objective, changes in it should be watched carefully.

Financial return is influenced by the business's level of leverage (L), which is measured by the quotient between borrowed funds with cost (BF) and own funds (OF).

The pre-tax financial return for a business whose own funds amount to a sum OF, with borrowed funds (BF), whose average cost is *i*, and assuming an economic rate of return on assets of ER would be:

$$FR = \frac{ER \times (OF + BF) - (BF \times i)}{OF} = ER + (ER - i) \times \frac{BF}{OF} = ER + (ER - i) \times L$$

The leverage effect has two components: the leverage margin and the leverage factor. The leverage margin depends on value and the sign of the brackets ($RE-i$). The leverage factor is the product of the leverage margin and the debt level and determines whether the effect of the leverage margin on FR is strengthened or attenuated by multiplying it by the debt level.

The final shareholder return is limited by the fiscal effect, as it is reduced by the tax burden affecting the final profit for the financial year (k). So, financial return after tax would be:

$$FR = \frac{ER \times (OF + BF) - (BF \times i)}{OF} \times (1 - k)$$
$$= \left\{ ER + (ER - i) \times \frac{BF}{OF} \right\} \times (1 - k) = \left\{ ER + (ER - i) \times L \right\} \times (1 - k)$$

Table 5 shows the values of the variables determining the financial return and the differences between FB and NFB. Although both groups have suffered periods when they have been incapable of making a profit on investment financed by debt, NFB have managed to maintain a positive financial return during the period under study except for the very beginning, while the FB have suffered the reverse process and their performance has worsened towards the end of the period, with negative financial return after tax of 1.5% compared to a positive 1.03% for NFB. However, incapability of making profits on investment financed with debt also negatively affects return on own funds, which has led to this problem persisting for FB over the last two years.

Financial return for family or non-family Spanish tourism businesses has deteriorated still more notably than economic return. Three components have contributed to this unfavourable development. The first negative factor has been the fall in economic return itself. It has not been possible to compensate for the fall in this index with an appreciable reduction in the cost of debt. This has generated a constant reduction in the return achieved on financial investment with debt (above all in FB), making this negative. The

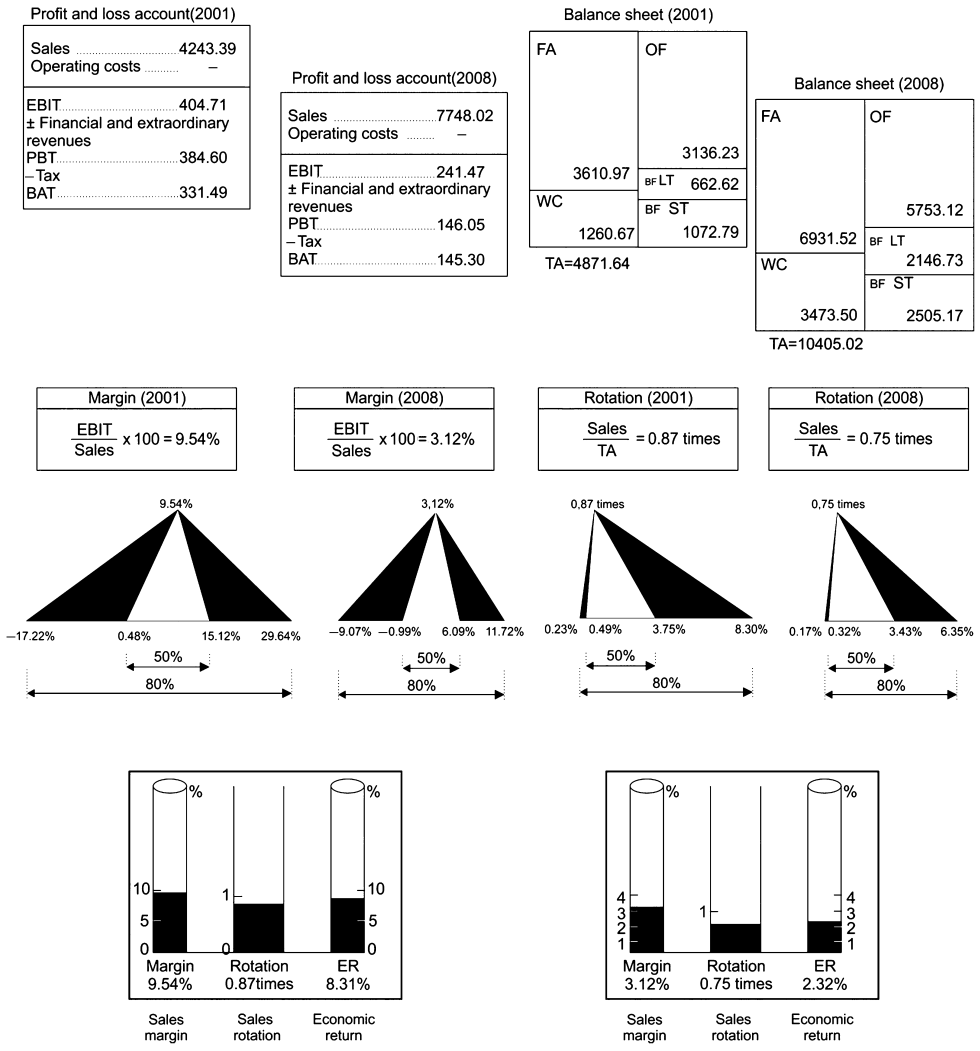

Fig. 2. Economic return for non-family businesses 2001–2008: dispersion of impulse factors.
Source: Own compilation based on SABI and INFORMA data.

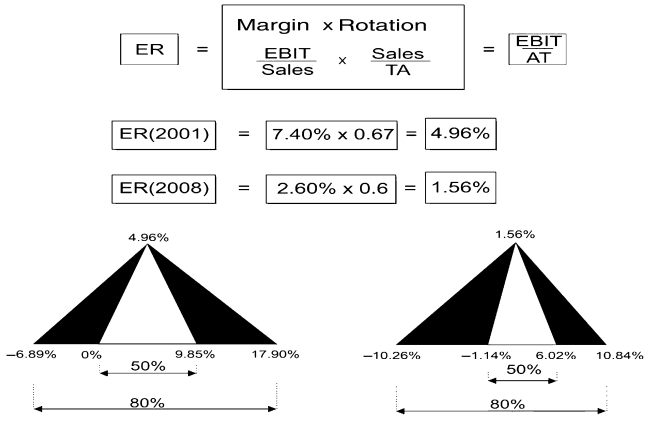

Fig. 3. Dispersion of economic return for family businesses 2001–2008.
Source: Own compilation based on SABI and INFORMA data.

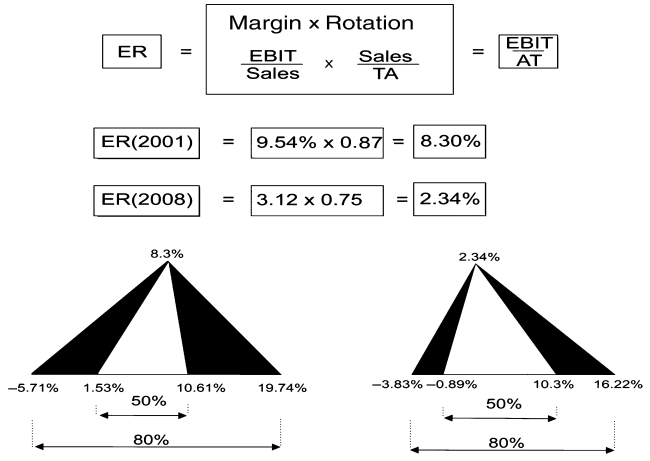

Fig. 4. Dispersion of economic return for non-family businesses 2001–2008.
Source: Own compilation based on SABI and INFORMA data.

third negative factor alludes to the dynamic of the financial leverage effect. In situations where the business manages achieving a greater return on its assets than the cost of its debt, it is positive to increase this leverage, because positive values increase financial return. But, in contexts like the one typifying Spanish tourism, businesses with a narrowing gap between economic return and the cost of debt, finally becoming negative, the multiplier effect is achieved by reducing the debt index in order to achieve a financial leverage effect of less than one. This appears to have been understood by NFB in 2008, while FB continued along the same lines.

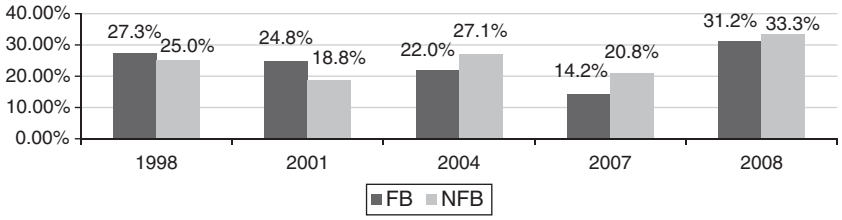

Fig. 5. Percentage of businesses with positive and negative economic return (1998–2008): comparison between family and non-family businesses.
Source: Own compilation based on SABI and INFORMA data.

Table 5
Development of financial return (%) in family and non-family tourism businesses (1998–2008).

	1998		2001		2004		2007		2008	
	FB	NFB	FB	NFB	FB	NFB	FB	NFB	FB	NFB
Economic return (ER)	10.24	0.78	4.95	8.31	3.28	1.21	2.91	3.95	1.53	2.32
Interest rate (i)	6.98	6.21	3.52	3.57	2.56	2.24	3.74	2.96	4.57	3.67
ER – i	3.26	−5.44	1.43	4.74	0.72	−1.03	−0.83	0.98	−3.03	−1.35
Debt level L	146.97	134.79	107.12	55.33	106.71	101.24	122.66	121.01	109.51	80.86
Average effective tax	24.80	9.90	22.37	9.09	31.80	45.53	25.13	14.16	16.38	16.40
Pre-tax financial return	15.03	−6.55	6.48	10.93	4.05	0.17	1.88	5.14	−1.79	1.23
Financial return after tax	11.30	−5.90	5.03	9.94	2.76	0.09	1.41	4.41	−1.50	1.03
Differences										
Economic return (ER)	9.47[a,b]		−3.36[a,b]		2.07*		−1.04*		−0.79*	
Interest rate (i)	0.77*		−0.05		0.32*		0.78[a,b]		0.90*	
ER – i	8.70[a,b]		−3.31*		1.75*		−1.82*		−1.68*	
Debt level L	12.18[b]		51.78[a,b]		5.47		1.64		28.65*	
Average effective tax	14.90*		13.28*		−13.72[a,b]		10.97*		−0.02	
Pre-tax financial return	21.58[a,b]		−4.45*		3.88*		−3.26[a,b]		−3.02[a,b]	
Financial return after tax	17.20[a,b]		−4.91*		2.67*		−3.00[a,b]		−2.53*	

Source: Own compilation based on SABI and INFORMA data.
$p \leq 0.05$.
[a] t Student.
[b] U Mann–Whitney.
Economic return (ER) = EBIT/total net assets.
Interest rate (i) = Financial costs/total debt with cost.
Debt level (L) = total debt with cost/own funds.
Effective average tax = Corporation tax/Ordinary pre-tax profit.
Pre-tax financial return = $ER - (ER - i) \times L$.
Pre-tax financial return = $\{(ER - i) \times L\} \times (1 - k)$.

Comparing FB with NFB, the figures indicate that the net return achieved by the owners of FB with investment financed with debt is notably lower than that reported for NFB (except for the initial situation and a slight turning point half way through the period). This disadvantage must be largely attributed to the economic return differential in favour of NFB, because the cost of debt does not show a great difference between the two. This negative effect is intensified by the greater level of debt among FB, which punishes pre-tax financial return; and by effective average taxation which, in general terms, is also greater, further expanding the differential in return on own funds after tax.

Figs. 6 and 7 illustrate the variation in financial return between 2001 and 2008. In them, a narrowing of the band grouping 50% of the businesses can be seen. The explanation of this, attenuating the dispersion shown in economic return, lies in the greater homogeneity of the sample concerning the cost of debt and the financial leverage effect.

A reduction of the group in the positive band can also be seen (Fig. 8). The percentage of FB with positive financial return has shrunk, from 81.6% to 68.8%. Among NFB, the quota of firms capable of achieving a return on own funds is significantly greater, although it has fallen from 83.3% to 68.7%. This percentage of businesses capable of achieving a return on own funds, which was greater than those with positive economic return, has ended up at the same level due to the punishment resulting from negative financial leverage.

Determinants of the development of return on capital and productivity

The isolated analysis of economic return based on its two driving factors (margin and rotation) and productivity is not enough to discover the most deep-seated reasons for the changes in return and productivity on capital. Both factors are more deeply explained by a series of rotation and cost ratios based on more specific elements from the balance sheet and profit and loss account. Knowledge of these subsidiary ratios is important, so that management can identify sources for improving the effectiveness of the business, setting targets for each ratio, delegating responsibilities for achieving them and controlling the behaviour of the different functional areas under their supervision. In addition, based on simulation with alternative quantification for each area, it allows the calculation of the effect of the variation in any of the known ratios on the overall result, so the most effective decisions can be made.

The most usual system for identifying and quantifying this set of operating factors is the pyramid structure for analysing return on capital, whether this is the Du Pont version with absolute figures or the ratio version first offered by Ingham and Harrington. Figs. 9 and 10 include the application of this analysis to the FB and NFB from the Spanish tourism sector.

The right-hand part of these diagrams identifies four main cost elements which together form total operating costs: materials (purchasing), staff, financial costs and depreciation. Each cost element

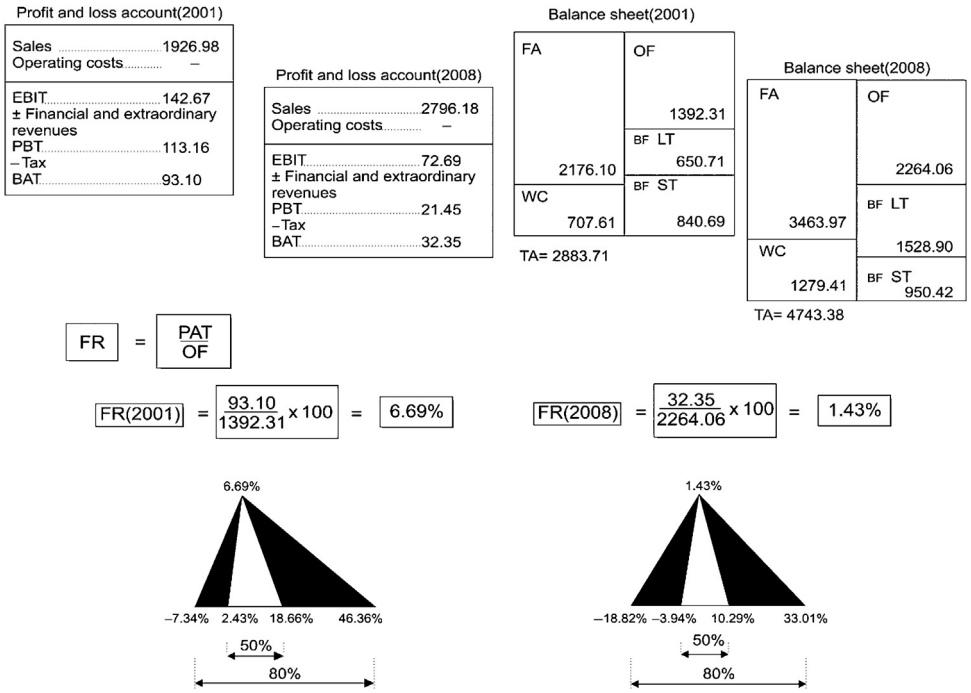

Fig. 6. Financial return of family businesses: driving factors.

Source: Own compilation based on SABI and INFORMA data.

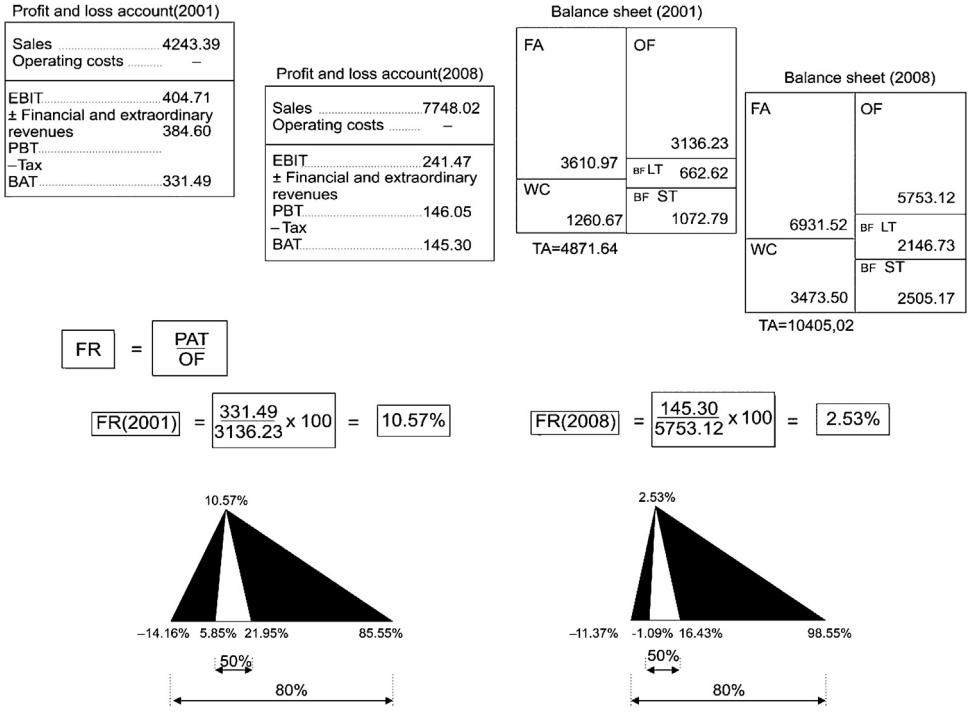

Fig. 7. Financial return of non-family businesses: driving factors.

Source: Own compilation based on SABI and INFORMA data.

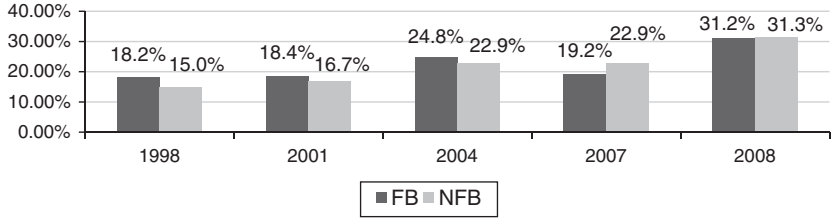

Fig. 8. Percentage of businesses with negative financial return (1998–2008): comparison between family and non-family businesses.

Source: Own compilation based on SABI and INFORMA data.

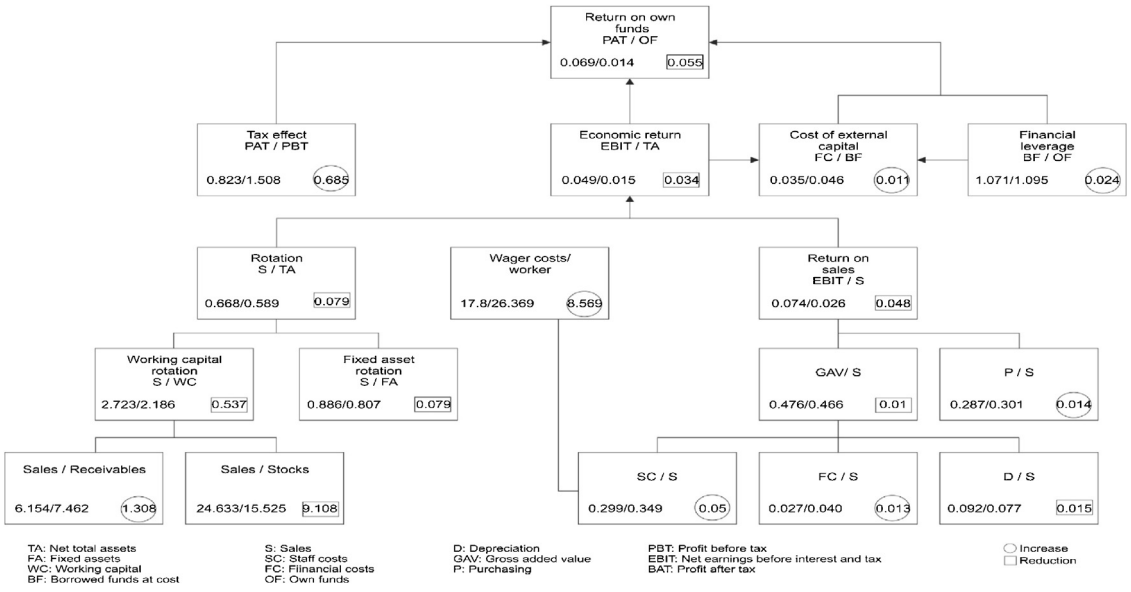

Fig. 9. Pyramid analysis of the return on capital structure of Spanish family tourism businesses: components, determinants and development 2003–2008.
Source: Own compilation based on SABI and INFORMA data.

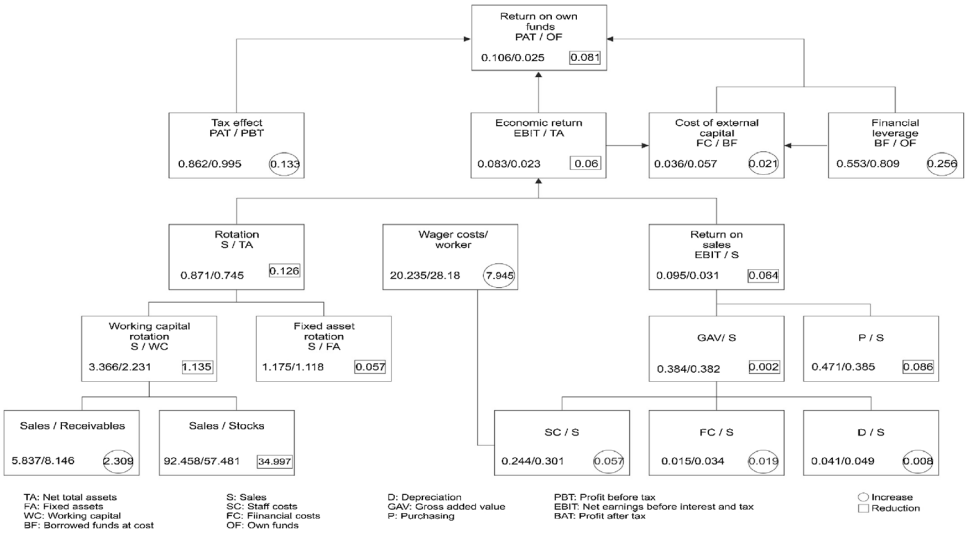

Fig. 10. Pyramid analysis of the return on capital structure of Spanish non-family tourism businesses: components, determinants and development 2003–2008.
Source: Own compilation based on SABI and INFORMA data.

is expressed as a percentage of sales. In FB, the total of the different cost items is 92.6% in 2003 and 97.4% in 2008, leaving margins on sales of 7.4% and 2.6% respectively. In the case of NFB, in the two years of reduction, the costs absorb 90.5% and 96.9%, leaving a margin on sales of 9.5% and 3.1% respectively.

This fall in return on sales has three sources in FB: an increase in material costs of 1.4 points, staff costs of 5.0 points and financial costs of 1.3 points. The expansion of staff costs is justified by the important increase in average annual cost per employee, which, between 2004 and 2008 increased by 8.6 points, moving from 17.8 to 26.4 thousands euros per worker. This increase in labour costs has not been compensated by an equivalent increase in labour productivity, which, in the period analysed, increased by only 4.75 points, remaining at 35.16 thousands euros per worker. This resulted in an increase in labour unit costs from 0.68 to 0.75. The increase in raw material costs has been lower, at 1.4 points, but it shows up a lack of progress in the improvement of the organisation and service provision. The third item contributing to increased costs is financial costs, driven up by the 2.4-point increase in financial leverage; a 1.1-point increase in the average cost of debt and the reduction in the rotation rate of working capital, together with the increase in working capital to be financed. The reduction in remunerated liabilities in favour of debt without explicit cost is unable to compensate for these. The only cost item halting the relative expansion is provision for depreciation, falling by 1.5 points from 9.2% to 7.7%.

The picture for NFB shows some significant differences explaining their greater return on sales, although it also undergoes a notable reduction. The first difference takes the form of the relative development of material costs, falling by 8.6 points to 38.5% of sales. It is interesting to highlight the fact that the cost for consumption of raw materials by NFB continues to be greater than that for FB by 8.4 points, but the trend of both groups is completely different and, as a result of this, the distance has reduced by 10 points in barely 5 years. This figure shows the improvement in technological efficiency and the organisation of working processes at

NFB determining cost levels. This reduction originates in the technological renewal of the means of production, making it possible to achieve a saving in the labour factor and reduce material consumption based on better ways of working, cutting waste, defects and by-products. NFB have also suffered an increase in the other cost items included in Fig. 10, but their final efficiency continues to be greater. Staff costs have grown by a similar amount as at FB (5.7 points), but their share in sales is 4.8 points lower (30.1%), reflecting the slowdown in the expansion of the average annual cost per employee (less than 2 points). In the same way, financial costs grow by 1.9 points, but the amount relative to sales (3.4%) remains below FB.

The pyramid analysis developed in these diagrams shows that rotation in FB has fallen by 0.079 points to 0.59, significantly below the figure for NFB, which maintain a rate of 0.75 (after a fall of 0.126 points). The analysis of sales rotation points to the essential origin of the worsening of efficiency in production costs. The left-hand part of Figs. 9 and 10 locates four factors determining asset rotation: fixed assets, financial accounts, receivables and stocks.

A comparison of the development of these items between FB and NFB points to the same focuses, but with some differences. Working capital rotation has fallen by 0.54 points at FB during the period 2003–2008, leaving a ratio of 2.19. This rotation continues to be less than for NFB (2.23), although this group suffered a considerable reduction of 1.14 points, which must largely be attributed to the increase in the relative weight of stocks in assets (increasing from 12.56% to 15.04%, while in FB it has remained at around 10.5%). Despite this reduction in efficiency, NFB have maintained a clear advantage in management of working capital, above all through preserving very high stock rotation 57.48 times compared to just 15.53 at FB and more competent purchasing management translated into a sales/receivables ratio of 2.31 compared to 1.31 for FB. The overall effect, added to the improvement in management of payment collection from customers (for which NFB have an average period of 69 days compared to 144 for FB) must also have helped to halt the increase in financial costs for NFB, reducing the locking up of resources to be financed. In fact, the need for finance for the revolving fund continues to be approximately 5 points lower than for FB.

To the advantage in working capital rotation, NFB add another positive differential in capital productivity. Although in the sample analysed, fixed asset rotation at NFB has fallen by 0.06 points to 1.12, it continues clearly above FB (0.81), where the figure has fallen even more due to the combined effect of the slowdown in sales and the growth of fixed asset investment. The consequences of the lower rotation of fixed assets in FB are unused capacities, low turnover for their capacities and the uncontrolled growth of unit costs. This problem is reflected in the arrangement of all the production factors. So, while staff costs over sales at FB are almost 35%, in NFB they remain at 30%. In other words, even when labour costs in nominal terms are lower in FB (wages costs per worker are 26.37 thousand euros compared to 28.18 at NFB), the cost of staff incorporated in the production process is higher due to their underuse, which swells unit costs.

Conclusions

This study analyses the development of comparative return on capital between FB and NFB in the Spanish tourism sector over the period 1998–2009. During this period of time, the Spanish economy has moved from a recovery phase at the beginning (after undergoing a deep crisis in activity in the preceding years) to the final stage of an expansion cycle and the beginning of a new depression cycle with the large-scale destruction of jobs and the business fabric. Comparing averages, the central years saw considerable sustained growth.

Specifically, this study focuses on competitiveness analysis shown through return on capital. Whether we measure return on capital by economic return or financial return, Spanish tourism companies lack the capacity to achieve economic margin from investments or resources committed. Incapability to generate income shown in the level and development of the usual ratios measuring the organisational economic performance reveal an inferior competitive position. The below-normal economic return and frequency of negative financial returns appear to be endemic problems for Spanish tourism businesses (Becerra, 1998).

Significant differences are also detected in the comparison of results between FB and NFB in the different indicators. The longitudinal analysis seems to show a changing situation in which, at the beginning of the period studied, FB enjoyed higher capital return, while, at the end, the advantage is inverted and NFB enjoy significantly better economic-financial performance. In other words, although the declining trend of these indicators points to a deterioration of the capacity to profitably transform resources, the problem is more accentuated in the FB and, on top of this, they have also felt much less effect from the change in macroeconomic cycle.

Economic return is a measurement of effectiveness in the use of assets, depending on sales rotation and organisational-technological efficiency determining costs and, consequently, return on sales. The behaviour of the population under study has been unequal during the period studied. The underlying trend is that FB have generally tended to adopt a differentiation strategy focused on margin, with low sales rotation, typical of businesses with high capital intensity and consequently contradicting the nature of the majority of tourism businesses. The greater capital productivity of NFB is consistent with the propensity of FB towards vertical integration and centralisation (Lindow et al., 2010). The dynamic of return on total assets at FB has been driven by return on sales, although the advantage in this margin was diluted during the previous decade to the point of disappearing in 2008, suggesting that their market power to translate differentiation into higher prices is low. This contradiction is not surprising considering the typical portrait of FB, revealing the persistence of important competitive disadvantages in key intangible assets for differentiation (Casillas, Moreno, & Barbero, 2011; Cooper, Upton, & Seaman, 2005; Kontinen & Ojala, 2010; Miller, McLeod, & Oh, 2001; Westhead, 1997), related to the lack of intellectual capital, knowledge (Block et al., 2011; Le Breton-Miller, Miller, & Lester, 2011) and innovation (Block, 2012; Chin, Chen, Kleinman, & Lee, 2009; Chrisman & Patel, 2012), and lower search breadth (Classen, Van Gils, Bammens, & Carree, 2012). As pointed out by Comi and Eppler (2014), family businesses lose their competitiveness as family managers are averse to taking entrepreneurial risks, over-exploiting existing competences and preventing the firm developing dynamic capabilities.

In addition, during the decade FB have not improved their capacity to increase effectiveness in the use of assets. By contrast, NFB have been inclined towards low-cost, low-price strategies focusing on rotation, combined with an improvement in return on sales.

As a result of the differentials in competitiveness explained, the economic results of FB and NFB show substantial discrepancies, breaking with the evidence reported in other studies that did not find significant differences between them (Chrisman et al., 2004; Galve & Salas, 2003; Miller et al., 2007; Westhead & Howorth, 2006) or pointing to superior performance by FB (Allouche et al., 2008; Anderson and Reeb, 2003; Block et al., 2011; Chu, 2009; Lindow et al., 2010; Miller & Le Breton-Miller, 2005; Miralles-Marcelo et al., 2014; Wagner et al., 2015).

The deterioration in economic return for Spanish tourism businesses has led, together with the increase in the cost of debt and

the debt index, to a more than proportional reduction in financial return. The return on own funds continues to be very low, far from the average for all non-financial businesses and aggregated services and has often been in the red during the period under study. The net return obtained by the owners of FB with financial investment with debt is notably less than that reported for NFB (except for the initial situation and a slight turning point in the middle of the period) moving into negative values in 2008. In the case of FB, this development is explained from 2007, not so much because of the cost of debt, which is not significantly different between the groups, but due to the persistence of negative financial leverage as a result of their incapability to achieve a return greater than the cost of debt despite the maintenance of a low interest rate scenario. The negative effects of this leverage have been intensified by the greater debt level of FB.

FB have the tough challenge of managing to create more wealth for their owners with methods that allow them to grow without losing their family identity and without aggravating the problem of financial solvency they already have. The strengthening of the now scarce capacity to generate funds through self-financing through the improvement of economic return is reaffirmed as a key factor in the economic-financial balance of this group. Achieving this means acting on the *exante* competitiveness factors which are the levers moving the business's results.

These conclusions must be considered bearing in mind the limitations of the work. In fact, the validity of the results obtained in this study depends on a series of issues related to the design of our research. Specifically, our measurements are based on a broad definition of FB extensively used in previous studies (e.g. Dibrell & Moeller, 2011; Gallo et al., 2004; Neubaum et al., 2012) and even the tourism sector itself (Getz & Carlsen, 2000). However, it would be interesting to expand this design by analysing whether there are differences between the profitability of FB depending on their classification into different types referring to specific characteristics of the ownership and control structure and their management and corporate governance, following the line of research noted by studies like those by Mazzi (2011) and O'Boyle Jr et al. (2012). In line with these authors, it would also be interesting to introduce new moderating variables into the model relating to the size and characteristics of the FB, such as generation, shareholding complexity and management discretion. The replication of this study in other countries and sectors would allow control over the generalisation of the results obtained in other institutional contexts (Miller et al., 2007; Sacristán-Navarro et al., 2011). Finally, this study makes it possible to lay the basis for investigating the resources and capacities on which the competitive advantage of NFB over FB is based and, ultimately, their economic-financial results.

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Article

How does the online service level influence consumers' purchase intentions before a transaction? A formative approach☆

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ABSTRACT

The present paper tries to study the impact of online services level in contexts where transactions have not been done yet, through the adoption of a formative approach. In this scene, the present research considers two main dimensions of online services (pre-purchase services and transaction-related services) in a context of clothing purchasing process. Before defining the research and determining the sector to be analyzed, 7 focus groups were conducted. From the obtained conclusions, this study was carried on in the textile sector. A survey with 370 effective respondents was carried out. To measure the different concepts in the model, several scales were used based on literature proposals. Our model was estimated through partial least squares with SmartPLS (Ringle, Wende, & Will, 2005). Empirical findings provide that both transactions related services and pre-purchase services are determinants of the navigation experience. At the same time, navigation experiences affect attitude to the web, which affects purchase intention. All of this in the SME clothing e-retailing industry.

Introduction

The Internet provides a marketplace where buyers and sellers develop transactions directly, interactively, and in real-time beyond the physical limitations of traditional brick and mortar retailers (Kiang & Shang, 2015; Yun & Good, 2007). As Kiang and Shang (2015) state, a recent survey projects a 3-fold boom in the number of Internet users from today's 300 million to more than a billion by 2003, and new technologies coming online, such as wireless-application-protocol-enabled phones and digital TV. Despite the overwhelmed statistics regarding Internet development, both successful and unsuccessful cases of Internet marketing have been reported.

According to Kiang and Shang (2015), we argue that the purchasing behaviours of on-line shoppers play an important role in the success of e-retailers. If we can identify the factors that influence the consumer's buying decision, e-retailers will be able to design their marketing strategy accordingly to maximize customer experience and increase total sales. Customer service is not a new concept but nowadays companies can use the new technologies to improve e-service experiences (Brohman, Parasuraman, Watson, & Piccoli, 2015).

Not in vain, companies are increasingly providing services online either as a replacement for or as an adjunct to traditional offline services (Pujari, 2004); maybe because of that, businesses that deliver superior value derived from excellent services and quality products are likely to win customer loyalty (Otim & Grover, 2006). This explains the rapid increase in transaction-based e-services and the need to find out what services mix should firms offer to satisfy consumers while realistically considering operational and financial constraints (Zlqbal & Baran, 2003).

As Lai (2014) states, the speedy development of information communication technology (ICT) and electronic commerce (e-commerce or EC) has allowed consumers to purchase products and services online. At the same time, the huge growth of online shopping has driven intense competition among e-commerce sellers, who increasingly see the customer experience as vital (Lai, 2014).

The mediocre success of many online service offerings suggests that there is still much to understand about consumer behaviour in the emerging and increasingly important field of online services. The Marketing Science Institute (2013) establishes the study of understanding customers and their customer experiences as TIER 1 (research priority 1) for the period 2014–2016. More specifically, how do digital technology change customer experiences and the consumer path to purchase? As Hackman (2006, p. 145)

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underlines, "rigorous empirical research in this area remains inadequate. This is because it remains unclear whether the antecedent factors of behavioural intentions established in offline settings will adequately explain consumers' stated and actual behaviours when adapted to the online context". As Otim and Grover (2006) summarize, thestudy of web-based service delivery is in its early stages, so that more investigation in this field is needed. Even more, maybe, and although the post-purchase services are important, companies need to think in previous stages of services level that can help consumers to improve their navigation experience and make consumers conditional on their attitude to the web and their purchase intention.

So and although there is abundant research examining the growing complexity of customer experience with online services, most of it has adopted a simplified view of examining the effect of individual factors (Hung, Chen, & Huang, 2014). According to Yang, Jun, and Peterson (2004), most of these studies use traditional scales, as SERVQUAL scale or some of these dimensions. But, as the authors state, it may not be sufficient for measuring service quality across industries and situations, not to mention online service quality. The instrument does not consider unique facets of online service quality. Based on this, and following Otim and Grover (2006)'s proposal, the present paper has been built up to study the impact of online services levels in contexts where transactions have not been done yet. To do this, two main dimensions of online services have been taken as a starting point: pre-purchase services and transaction-related services. As both authors explain (Otim & Grover, 2006, p. 528), "service delivery through websites pertains to the extent to which a website facilitates efficient and effective shopping, purchasing, and delivery of products and services".

So, the present paper will concentrate on the effects of pre-purchase services and transactional services. This distinction has used by recent papers as the research carried out by Hoekstra, Huizingh, Bijmolt, and Krawczyk (2015). Additionally, and following the Buil, Martínez and De Chartony (2010)'s proposal, the paper defends these online service dimensions in a formative way. In the research of online service, the studies adopt a reflective perspective in the conceptualization of this construct and use of first-order models where online service is measured through different indicators. However, various studies advise the use of models of higher order when the constructs analyzed are complex (Podsakoff, Shen, & Podsakoff, 2006), as well as its use allows to treat each dimension as a major component thereof, improve the representation of construct and provide the best evaluation mode (Mac Kenzie et al., 2005). In sum, through this conceptualization of online services using a formative approach, this work overcomes limitations of previous studies, in which the dominant paradigm of measurement in marketing is followed, that is, the focus reflective, and have conceptualized the online service as a construct of first order.

It is important to underline that post-purchase services do not appear in this study because, and according to Cao and Gruca (2004), this service level is less important to determine the consumers' attitudes and behaviours in the short term. This service level can become a major factor on loyalty strategies. In sum, as the Boston Consulting Group (2000) report points out, e-retailers are very likely to compete on the basis of pre purchase service, and less on the basis of post-purchase services.

In sum, through this research some contributions can be reached. According to Van Riel, Liljander, and Jurriens (2001), it is relevant for academics and practitioners to have a better understanding of the way consumers evaluate these two services components in virtual environments. That is, although diverse papers have already developed models explaining user satisfaction and behaviour in different virtual environments, little empirical research has been carried out to investigate pre-purchase services and transactional services effects. In other words, following Hackman (2006), a comprehensive empirical test of the links between main constructs (such as service dimensions, satisfaction, attitudes and behavioural intentions) in the context of online services is missing. For this reason, and in line with Boshoff (2007), a first contribution is that this paper tries to measure customers' perceptions of electronic service in a comprehensive model in order to better understand their effects in terms of satisfaction, attitudes and intentions. At the same time, and as a second contribution, this paper proposes the distinction between two main services levels: transactional related services and pre-purchase services. The main contribution of this paper is the distinction between transaction and pre-purchase services, which have been defined in a formative way.

Third, and as Lederer and Maupin (2015) underline, the World Wide Web offers small businesses the opportunity to reach a wider customer base. However, before deciding to launch a web site, a small business manager needs an understanding of the web and how to use it to achieve business goals. In this sense, the use of Internet in small companies has received little attention from the literature (Grandon & Pearson, 2004). This is partly due to the fact that the way these companies use the Internet is a reflection of the general manager's (usually the owner) personality and desire to innovate (Al-Qirim, 2006). Many studies (Peet, Brindley, & Ritchie, 2002), however, show that the use of Internet by SMEs is mostly merely testimonial, with only a few interactive websites and even fewer offering online sales. In short, it can be said that traditionally, SMEs use the web basically to present, advertise and promote company products, rather than to sell them. In contrast, large companies, especially in the financial sector, have already experienced the advantages of the web as a sales tool. So, the third contribution of this paper is the focus on the study of a SME young clothing manufacturer that has been virtually built for this study: Resaka. In this scene, the present research considers a broad set of web-based services in the context of a clothing purchase process. In doing so, empirical findings provide relevant managerial implications based on the actual experience of customers.

The remaining sections of this paper are organized as follows. Firstly, a revision of relevant literature and a proposal of a conceptual model for examining the antecedent factors of behavioural intentions for online services are developed. Secondly, a discussion of the data collection procedure and the research method applied are done. Finally, a presentation of the results from data analysis is showed. The paper is concluded with a discussion of the research findings and guides for future research

Online service level before the transaction

The results demonstrate that overall, consumer preferences for features of transaction-based e-services differ between offline and online consumers (Zlqbal & Baran, 2003). The reason is that online consumers identify and value the advantages of online services. So, although there are certainly challenges shared by both traditional retailers and e-retailers, e-retailers face a set of specific demands in the online environment, including the fact that on the Internet a competitor is only a click away (Yun & Good, 2007). This large and rapid competition justifies the relevance of developing online services to capture the attention of surfers. That is, e-business requires more than offering a website, "even though many companies naively hope that just being online would be enough to generate interest and improve business" (Suh, 2005, p. 309).

In this context, a critical topic to win in the virtual world is the ability to offer better online services. As Zeithaml, Parasuraman, and Malhotra (2002) and Hung et al. (2014) point out, service quality delivery through websites is an essential strategy to success, possibly more important than low price and web presence.

These authors discovered that some services (i.e. those related to navigability, flexibility, efficiency, site aesthetics, and price knowledge) were critical in the online environment, in addition to several dimensions that were also important in offline shopping (i.e. reliability, responsiveness, access, assurance, and customization/personalization).

This relevance of online sales services offered has led us to develop a proposal for an integrative model to explain all the effects that such services are able to concatenate, reaching stimulation of online purchase intentions. As Lee and Kwon (2011) state, to date, quite of theories have been proposed to explain why and how consumers are motivated to continue to use web-based services. Most of them add determinant constructs to traditional models (i.e. Lee & Kwon, 2011 that add familiarity and intimacy into the expectation-confirmation model). Studies of e-service quality have consistently used adaptations of service-quality measurement tools that have been adopted and extended from traditional service-quality frameworks (Kiran & Diljit, 2012). However, a fresh insight into the investigation of key determinants of Web-based service quality (Kiran & Diljit, 2012), with an emphasis on how customers perceive service quality before the transaction, has much to offer.

In this sense, following Otim and Grover (2006), the present paper is based on the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). As both authors explain, this theory supports the proposition that an individual's behaviour is determined by behavioural intention to perform that behaviour (Fishbein & Ajzen, 1975). Behavioural intention is a function of some determinants (i.e. online services, satisfactory navigation experiences and favourable attitudes) that will finally lead to certain outcomes, which may be either favourable or unfavourable (to buy or not to buy. In sum, through the offer of services online, direct and indirect effects lead to stimulation of the online purchase intention. This concatenation of effects occurs in a reasoned manner to trigger the final action of purchase.

In this context, web designers try to build websites where the surfer can find satisfactory navigation experiences and e-services can explain this effect. In fact, customers' overall satisfaction is influenced by their satisfaction with the core service and supplementary services (Van Riel et al., 2001). So, and according to Otim and Grover (2006), both pre-purchase services (support of product search and evaluation, web appearance/aesthetics and product pricing) and transactional services (delivery arrangements, privacy/security policy and billing and payment mechanism) affect positively on the development of satisfactory navigation experiences. So, and as Hung et al. (2014) state, personalized customer services are another important attribute of e-service quality for the success of online stores. In this sense, understanding customer characteristics (e.g. online shopping attitude, perceived convenience, perceived risks, customer innovativeness, and impulse purchase) can help them enhance the quality of their personalized services (Hung et al., 2014).

In sum, this paper defends that online services can be measured following the Otim and Grover (2006)'s proposal (pre-purchase and transactional services dimensions). But, also the paper defends a formative approach to a better understanding the online service conformation.

Related to pre-purchase services, it has been proved that consumers prefer using media that can accurately portray the characteristics of the specific products they are intending to buy. Specially, consumers like using the Internet to find out about and search for information on products such as music, films, books, and consumer electronics, presumably because of the detailed information that is available online (Burke, 2002). In these product categories, those web pages with attractive appearance, that provide a clear and complete products and price information, produce more satisfying surfing experience (Burke, 2002). That is, pre-purchase services positively impact on navigation (Szymanski & Hise, 2000; Wolfinbarger & Gilly, 2003).

Related to transactional services, navigation experience also improves when aspects such as security and privacy are clearly exhibited. Several studies state that certain security attributes can help to make the website user's experience more agreeable. Also, the presence of other transactional services – like billing and payment facilities or delivery arrangements – improves navigation experience (Szymanski & Hise, 2000; Tamimi, Sebastianelli, & Rajan, 2005).

In general terms, those companies that offer a broad range of services during the buying-selling process are named customer-orientated companies. They identify and anticipate the needs and desires of consumers and deliver services with superior value in order to satisfy customers' needs (Suh, 2005). That is, online satisfaction is affected by online service value and quality (Hackman, 2006; Hoekstra et al., 2015). Both online service value and quality, are obtained through pre-purchase services and transactional services developed to get e-satisfaction (Hoekstra et al., 2015; Szymanski & Hise, 2000). As Hoekstra et al. (2015) demonstrated in their study based on an empirical study of 380 companies across a wide range of industries, both pre-purchase and transactional related services affect customer performance (satisfaction). In this sense, the following hypothesis could be stated:

H1. Transactional related services positively affect navigation experience (satisfaction)

H2. Pre-purchase related services positively affect navigation experience (satisfaction)

Attitude to the website is another desired effect related to service level because of its repercussion on behavioural aspects. In this sense, several authors have examined the attitudes which various online communication actions awaken in consumers; understanding that these attitudes predispose or distance the consumer from product purchase. This justifies the interest in studying customers' attitudes to a web.

Among the most important determinants of consumers' attitudes to a website, the amount and diversity of the services level is especially significant. Specifically, regarding pre-purchase services, aspects such as those concerning web content (amount and variety of product information) have been analyzed. That is, it seems that those webs that include greater product and price information would lead to better attitudes (Koufaris, 2002); contrary poorer webs with worse appearances would lead to inferior attitudes. In the same line, Thatcher and George (2004) found that some pre-purchase services (web aesthetics and appearance) have an indirect effect on customer loyalty, mediated by commitment attitudes towards a web. That is, items related to pre-purchase services are able to affect attitudes (Wolfinbarger & Gilly, 2003).

But not just pre-purchase services affect attitudes and intentions. Some studies have focused deeply on pre-purchase assessments (Wolfinbarger & Gilly, 2003); also the attitudinal effects of transactional services (like billing and payment mechanism, delivery arrangements and security and privacy policies) have been considered. The reason is that a higher presence of these kinds of services will also improve favourable attitudes towards the web (Koufaris, 2002; Yang et al., 2004). However, Lim and Dubinsky (2005) report that transactional services do not always report favourable attitudes. These authors found no significant relationship between security and privacy norms and the attitude created to a website. In spite of this, the general opinion supports the idea that a website will cause negative feelings when it is preceded by unsure statements, billing and payment difficulties and complex delivery arrangements. From this point of view, a website is agreeable and arouses pleasurable feelings if it is able to provide

updated information, to identify errors fast and to solve them and to ensure correct operation during the transaction process (Liu and Arnett, 2000).

In sum, according with Hoekstra et al. (2015)'s results, informational and the transaction-related website functions have a significant positive impact on website success in terms of customers attitudes. So firms can improve website performance through providing relevant website functions throughout the entire customer purchase process (transactional and pre-purchase stages). Then, the following hypothesis could be stated:

H3. Transactional related services positively affect attitude to the web

H4. Pre-purchase related services positively affect attitude to the web

But besides the services offered, navigation experience is another determinant of positive attitudes to a website. In general terms, E-commerce businesses are particularly concerned about keeping customers satisfied so that they keep coming back. Belanger, Hiller, and Smith (2002) state that certain website attributes can help to make the Internet user's experience of the website more pleasant, developing favourable attitudes towards it. In the same line, authors such as Agarwal and Venkatesh (2002) also analyze affective responses aroused by a website that satisfies certain key design elements developed to satisfy customers. For example, Cappel and Huang (2007) study the close link between users' feelings and website navigability, so websites, which function well and are perceived as appropriate, will be liked more/better accepted than other less usable websites that generate frustration and confusion. More recently, Ha and Janda (2014) or Visinescu, Sidorova, Jones, and Prybutok (2015), among others, confirm this relationship. Then, it could be stated that:

H5. Satisfactory navigation experience positively affects attitude to the web

Finally, the identification of variables influencing repeat purchasing behaviour and word-of-mouth recommendation is a crucial area of virtual research (Hackman, 2006; Srinivasan, Anderson, & Ponnavolu, 2002). The reason is that as Yun and Good (2007) review, loyal customers visit their favourite websites twice as often as non-loyal customers, and loyal customers spend more money.

So, in a context where the transaction is not done, enterprises want to know if after the consumers' navigation experience, they will agree to buy on this website in the future (purchase intention). In this sense, and according to Floh and Treiblmaier (2006), the attitude to the website is one of the antecedents of the purchase intention. Exactly, the attitude that a website evokes is a key aspect in the stimulation of online shopping and in the future recommendation of the website, the firms and its products (Floh & Treiblmaier, 2006). This link between attitudes and purchase intention has been widely analyzed in the literature (Curran, Meuter, & Surprenant, 2003; Dabholkar, 1996; Otim & Grover, 2006). Not surprisingly, many studies have tried to explain the importance of building pleasant websites that awake feelings of affection, due to the behaviours that these webs are able to unleash in virtual transactions (Floh & Treiblmaier, 2006; Ha & Janda, 2014; Visinescu et al., 2015). This explains the stronger relationship between attitude-behaviour in the virtual context than in the real context. In effect, empirical studies comparing customer feelings and loyalty in online and offline environments show substantial differences in terms of customer attitudes and behaviour connexion (Shankar, Urban, & Sultan, 2002). So, the following hypothesis could be stated:

H6. Favourable attitudes to a web positively affect purchase intention

Methodology

Sector selection and research planning: a qualitative study

Before defining the quantitative research and determining the sector to be analyzed, 7 focus groups were conducted (n1 = 6 participants; n2 = 6 participants; n3 = 6 participants; n4 = 6 participants; n5 = 6 participants; n6 = 6 participants; n7 = 8 participants). The aim of this prior analysis is to identify key design variables that small and medium enterprises (SME) should carefully observe to construct successful transactional websites. Traditionally, the literature has taken a quantitative approach to this topic, ignoring the fact that the interaction of individuals in focus groups can contribute enormously towards transactional website design for SMEs that often lack the resources required to carry out large quantitative studies (Küster & Vila, 2011). At the same time, a secondary objective of this analysis is to determine the suitability of the sector analyzed (cloth retailing) in the population under study.

So, and following Wong and Sohal (2003), several focus group sessions were held in different contexts in order to guarantee the highest possible participation. Groups 1 and 2 were mainly formed by females over 45 years old, most of them with higher studies. Group 3 was a middle aged (30–45 years old) male group, mainly without higher studies. Group 4 was a younger cluster of participants comprising males and females with higher studies. Group 5 was formed by young females (under 30 years old) with higher studies. Group 6 was a mixed male and female cluster, between 30 and 45 years old, and most of them with university studies. Finally, group 7 was a miscellaneous group both, in terms of gender and in terms of higher studies. All the members in this last group were over 30 years old.

After this qualitative study was done, two main conclusions were obtained. More information of this qualitative study can find in a previous work (Küster & Vila, 2011). Firstly, usability emerged as a key design variable for building successful transactional SME websites, together with security and product and price information. This result corroborated our decision to work with diverse service items, related both with pre-purchase phase (i.e. product and price information) and transactional services (i.e. security and usability).

Secondly, the focus groups showed that clothing is one of the easiest products to sell online. Compared to traditionally successful articles for online sales (plane and train tickets, books, CDs and leisure), online banking, cinema tickets and clothes emerged as three interesting options for online shopping.

From these two conclusions, this present study was carried on in the textile sector. The sector has been under growing pressure for decades, especially from Asia which is forcing small and medium-sized textile companies offering design, brand and label to seek alternatives which allow North American and European companies to recover lost competitiveness. So, a fictitious website was designed for a non-existent clothing company directed at the segment of middle class consumers. Two graphic designers produced the website and the content structured in 6 sections shown horizontally on a menu bar, which appeared on all the pages.

Sample

Our sample consisted of 370 respondents who participated in exchange for a pen-drive (USB) valued at 15 euros. They were recruited in two different underground stations. They were invited to participate in the research. If they accepted, they were taken to an office with a specially prepared room so they could navigate around the fictitious website of an invented company Resaka. The reached sample size makes not possible to generalize results to the global population but can provide us an idea about the analyzed environment.

Total sample composition was 57% women and 43% men, 40% had 3 year university studies and 48% had a secondary education. More than 50% of the interviewees said they earned more than 2000 euros a month. The age range varied between 18 and 25 years.

The interviewees were exposed to the website. They were all told that they had a fictitious cheque for 200 euros that they could spend shopping on the website. After 30 min they were given a questionnaire to provide their impressions after navigation.

Measures: reliability and validity assessment

To measure the different concepts in the model, several scales were used based on proposals in the literature. Appendix 1 shows the items considered in detail.

Purchase intention

The literature review by Lee and Lin (2005) suggests that purchase intention provides a fairly acceptable approach to online shopping behaviour. Therefore, to use the terminology in Blackwell, Miniard, & Engel (2001), *purchase intention* represents what we think we will buy. Therefore, to construct the scale "purchase intention" we contemplated 4 items. The first 3 items have already been used by Belanger et al. (2002) and the final item came from the proposal by Lee and Lin (2005). These authors used the items shown in Table 2, following the scales proposed by Gefen (2000) and Jeong et al. (2003), respectively.

Attitude to the web

To measure *attitudes*, 5 out of the 6 items proposed by Ko, Chang-Hoan, and Roberts (2005) were used to approximate attitude towards a website. This scale is based on the work by Chen and Wells (1999), since the traditional brand attitude scales cannot be used to measure attitude towards a medium such as Internet. The item not considered in the initial proposal is satisfaction with the service received as satisfaction was measured independently.

Navigation experience (satisfaction)

User satisfaction with a website was measured with the 4 items from Flavian, Guinaliu, and Gurrea (2006). So, in the present study satisfaction was evaluated by considering it as a process which ranges from taking the decision to use the website, continuing with the experience and transaction and finishing with the service provided until the entire cycle has concluded. Also it was considered Zhu and Kraemer (2002)'s proposal to include consumer global satisfaction through a single item.

Online services: pre-purchase services and transactional services

Otim and Grover (2006) consider that customer service-related success factors include pre-purchase, during and post-purchase service. Following this proposal, two scales were used to measure transaction related services and pre-purchase services. The first one is adapted from Ting-Peng and Hung-Jen (2002), Torkzadeh and Dhillon (2002), Rodgers, Negash, and Suk (2005), and Otim and Grover (2006). It adds 9 items related to delivery arrangements (4), security (3) and billing and payment (2). The second one is adapted from Lee and Lin (2005), Rodgers et al. (2005), and Otim and Grover (2006). It adds 14 items related to support product search and evaluation (8), web appearance (4), and product pricing (2).

The constructs used in our study were adapted from previous studies and measured by multiple item 5-point Likert-type scales, as shown in more detail in Appendix 1. Transaction related and pre-purchase services have been measured as formative constructs. According to Buil et al. (2010) and Diamantopoulos and Papadopoulos (2010)'s arguments, we defend the use of formative constructs to measure transaction and pre-purchase services because this is a valid and generalizable procedure to proceed with second order factorial structures, not only between indicators and the dimensions of the first order, but also between the dimensions of the first order and second-order construct. At the same time, these models do not require measurement indicators to be correlated, and measure models include an error term which is not associated with the individual measurements, but with the whole construct (Diamantopoulos, 2006).

Our model was estimated through Partial Least Squares with SmartPLS (Ringle, Wende, & Will, 2005). According to Hair, Ringle, and Sarstedt (2011), PLS-SEM is a promising method that offers enormous potential for SEM researchers especially in the marketing and management information systems disciplines. "PLS-SEM is, as the name implies, a more "regression-based" approach that minimizes the residual variances of the endogenous constructs. Compared to CB-SEM, it is more robust with fewer identification issues, works with much smaller as well as much larger samples, and readily incorporates formative as well as reflective constructs. Simulation studies show that the differences between CB-SEM and PLS-SEM estimates are at very low levels. Thus, the extensively discussed PLS-SEM bias is often of minor relevance for practical applications because estimates will be asymptotically correct under consistency at large conditions (i.e., both a large sample size and large numbers of indicators per latent variable) (Jöreskog and Wold, 1982)" (Hair et al., 2011, p. 143). In sum, and according to Wetzels, Odekerken-Schröder, and Van Oppen (2009), we defend the use of PLS in our study because online services are considered formative second order factors. This same methodology can be found in the study of Bruhn, Georgi, and Hadwich (2008).

It must be noticed that transaction and pre-purchase related services represent second order constructs. Other works, as Kiran and Diljit (2012)'s one, use similar methodology. Kiran and Diljit (2012) carried out an exploratory factor analysis and confirmatory factor analysis using structural equation modelling was carried out in order to develop and validate a measurement model for Web-based service quality, which included three second-order dimensions and eight first-order dimensions.

In these cases, and following Cepeda-Carrión and Roldán-Salgueiro (2004) proposal, the method followed in PLS to pass from a second order model to a first order one is based on two stages or phases. In the first stage, the model with indicators prime factors was estimated by adding all the above indicators as indicators of factor (construct) also second order. This method is the hierarchical component model, proposed by Wold (1982). Although the method of hierarchical components reused indicators, its advantage is that thanks to this, the model with second-order factors can be estimated using the normal algorithm PLS. In a second step, the PLS analysis model was estimated using the scores calculated by the programme for each of the first-order components, rather than the data. The scores of the first-tier component are the average loads of items of each component weighted with loads estimated in the first stage. After this procedure, the theoretical model was estimated.

As evidence of convergent validity, results indicate that all items are significantly ($p < .01$) related to their hypothesized factors, and the size of all the standardized loadings are higher than .60 (Bagozzi & Yi, 1988) and the average of the item-to-factor loadings are higher than .70 (Hair, Anderson, Tatham, & Black, 1998). According to Hair, Hult, Ringle, and Sarstedt (2014), we have followed the criterion of keeping a formative indicator when its weight is not significant if its corresponding loading is significant, as in this case of delivery ($t = 1.30$).

Table 1
Validation of the final measurement model. Reliability and convergent validity.

Variable	Indicator	Factor loading	Factor weight	*t*-Value (bootstrap)	CA	CR	AVE
Transaction related services	Billing	–	0.42**	3.29	N/A	N/A	N/A
	Delivery	–	0.16**	1.30			
	Security	–	0.62**	7.73			
Pre-purchase services	Pricing	–	0.17**	2.00	N/A	N/A	N/A
	Search	–	0.73**	9.96			
	Appearance	–	0.24**	2.80			
Navigation experience	NAV1	0.78**	–	24.08	0.91	0.93	0.73
	NAV2	0.88**	–	46.91			
	NAV3	0.79**	–	29.52			
	NAV4	0.90**	–	87.58			
	NAV5	0.92**	–	118.22			
Attitude to the web	ATT1	0.88**	–	63.28	0.90	0.93	0.72
	ATT2	0.92**	–	88.33			
	ATT3	0.88**	–	72.90			
	ATT4	0.78**	–	23.91			
	ATT5	0.79**	–	29.65			
Purchase Intention	INT1	0.87**	–	55.33	0.86	0.90	0.70
	INT2	0.84**	–	37.97			
	INT3	0.85**	–	47.15			
	INT4	0.79**	–	26.35			

Source: Own elaboration.
Note: CA: Cronbach's alpha; CR: composite reliability; AVE: average variance extracted.
* $p < .05$.
** $p < .01$.

Table 1 also demonstrates the high internal consistency of the constructs. In each case, Cronbach's alpha exceeded Nunnally & Bernstein's (1994) recommendation of .70. Composite reliability represents the shared variance among a set of observed variables measuring an underlying construct (Fornell & Larcker, 1981). Generally, a composite reliability of at least .60 is considered desirable (Bagozzi & Yi, 1988). This requirement is met for every factor. Average variance extracted (AVE) was also calculated for each construct, resulting in AVEs greater than .50 (Fornell & Larcker, 1981).

Evidence for discriminant validity of the measures is provided in Table 2. The shared variance between pairs of constructs was always less than the corresponding AVE (Fornell & Larcker, 1981). On the basis of these criteria, we concluded that the measures in the study provided sufficient evidence of reliability, convergent and discriminant validity.

Results

Fig. 1 and Table 3 summarize the results, showing the key role of transaction related services information in the web as they improve both the attitude to the web ($\beta = .10$; $p < .05$) and the navigation experience of the customer ($\beta = .29$; $p < .01$). So, H1 and H3 can be accepted.

Pre-purchase services do not directly improve consumer attitude to the web ($\beta = .07$; $p > .05$) but do it indirectly by improving the navigation experience ($\beta = .45$; $p < .01$) which has a significant correlation with the attitude to the web ($\beta = .60$; $p < .01$). In this sense, H4 is rejected but H5 is accepted.

The formative configuration of this construct allows us to state that the role of the different services is not equivalent. In this sense, firstly, and related to transaction related services, security and privacy statements and billing and payment mechanisms play a more significant role in transaction related services than information regarding delivery arrangements (positive and non-significant relationship). Secondly, and related to pre-purchase services, the support of product search and evaluation has an stronger influence on pre-purchase services than web appearance and product pricing; even if all the influences are positive and significant.

Finally, our results show that the attitude to the web is significantly related to the purchase intention ($\beta = .69$; $p < .01$). So, H6 is accepted.

Table 2
Validation of the final measurement model. Discriminant validity.

	1	2	3	4	5
1. Attitude to the web	**.72**				
2. Purchase intention	.47	**.70**			
3. Navigation experience	.49	.42	**.73**		
4. Pre-purchase services	.26	.20	.39	**n/a**	
5. Transaction related services	.23	.29	.31	.37	**n/a**

Note: Diagonal represents the average variance extracted; while below the diagonal the shared variance (squared correlations) are represented.

Conclusions and managerial implications

This study has tried to underline the importance of e-service level before the transaction has been done in a. These results must be considered taken into account the sample size limitation and the industry analyzed.

Four main conclusions can be underline. First, our results show that both; transaction related services (billing and payment mechanism, and security and privacy) and pre-purchase services (product pricing, support of product search and evaluation, and web appearance) are determinants of the navigation experience. These results are consistent with previous research (Hoekstra et al., 2015; Szymanski & Hise, 2000). So, and as Szymanski and Hise (2000), Wolfinbarger and Gilly (2003), Tamimi et al. (2005) or Hoekstra et al. (2015) state, these services levels positively impact on navigation experience.

Second, the formative configuration of pre-purchase and transactional services offers useful information. As the results show, the role of the different services is not equivalent. Not in vain, Hung et al. (2014) underline the importance of knowing what consumers desire and value with the aim to build customized webpages with appropriated service levels.

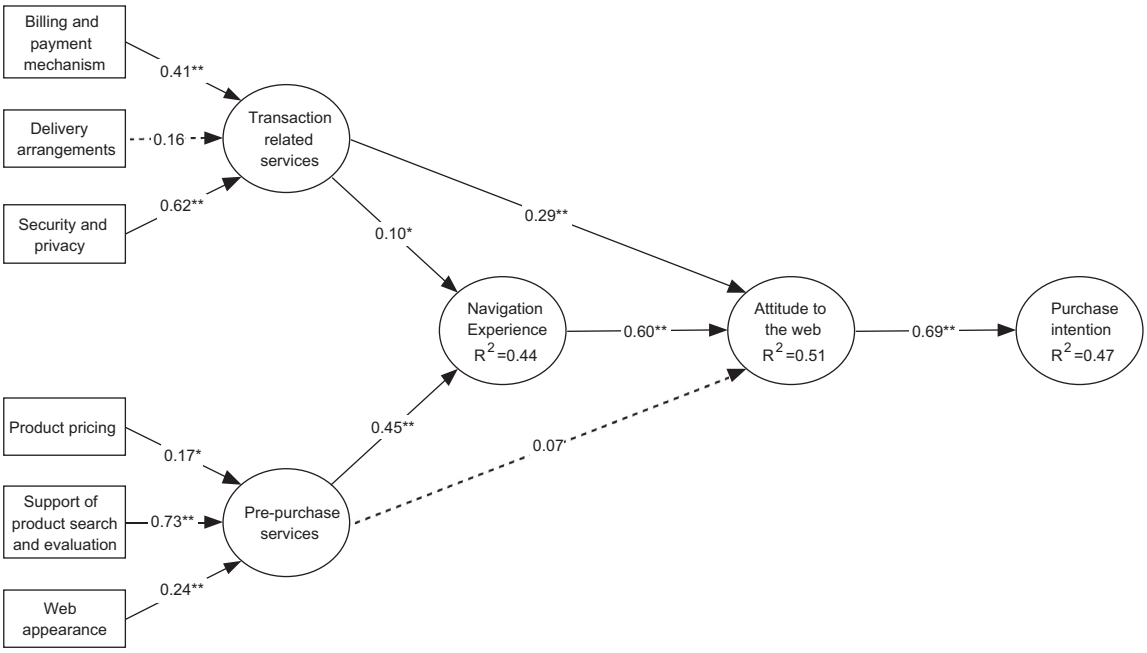

Fig. 1. Final model.

Source: Own elaboration.

Third, transaction related services are significant and positively related to the attitude to the web. Contrary, the absence of a significance relationship between pre-purchase services and attitude to the web could be explained by the indirect effect between these concepts. Additionally, and as Ha and Janda (2014) found, results can be different among countries. The authors analyzed the relationships among customized information, attitude towards web site and purchase intentions in two different countries (South Korea and UK). And not all the relations can be supported due to countries' differences.

Finally, and in line with previous studies, our results show that the attitude to a web is significantly related to the purchase intention. In this line, Visinescu et al. (2015) have recently proven this relationship in websites using 3D environments, although dimensionality cans difficulty the navigation experience, the attitude to the web, and purchase intention.

Based on these conclusions, the following managerial implications may be inferred. First, companies must pay attention to this services level, before they start to think in other themes. Nowadays business experts and academics emphasize the loyalty and relational strategies as the unique way to maintain sustainable competitive advantage. But, well, to reach it, companies must pay attention in the early stages to the customer service they offer. Brohman et al., 2015 or Peng, Wang, He, and Tang (2015) underline the need to offer good levels of e-services. So, and due to the increasing number of web services and the diversity of service consumers' requirements, companies need to spend time and resources to know how to select and customize service models to satisfy consumers' personalized (Peng et al., 2015).

Second, in the sample analyzed, companies must consider that all the aspects of e-service can be important for the customer experience. In this scene, removing any of them should change the customer perceptions and affect future behaviours. So, and related to transactional related services, security and privacy statements and billing and payment mechanisms play a more significant role than information regarding delivery arrangements (positive and

Table 3
Hypothesis testing.

Hypothesis	Path	Standardized path coefficients	*t*-Value (bootstrapping)
H1	Transaction related services → Navigation experience	.29**	5.11
H2	Pre-purchase services → Navigation experience	.45**	8.57
H3	Transaction related services → Attitude to the web	.10**	2.02
H4	Pre-purchase services → Attitude to the web	.07**	1.45
H5	Navigation experience → Attitude to the web	.60**	10.55
H6	Attitude to the web → Purchase intention in this web	.69**	21.48
Formative constructs	Billing and payment → Transaction related services	.41**	3.28
	Delivery arrangements → Transaction related services	.16**	1.28
	Security and privacy → Transaction related services	.62**	7.72
	Product pricing → Pre-purchase services	.17**	1.99
	Support of product search → Pre-purchase services	.73**	9.95
	Web appearance → Pre-purchase services	.24**	2.79
R^2 (Navigation experience) = 0.44		Stone–Geisser Q^2 (Navigation experience) = 0.26	
R^2 (Attitude to the web) = 0.51		Stone–Geisser Q^2 (Attitude to the web) = 0.31	
R^2 (Purchase intention) = 0.47		Stone–Geisser Q^2 (Purchase intention) = 0.28	

Source: Own elaboration.
* $p < .05$.
** $p < .01$.

non-significant relationship). Related to pre-purchase services, the support of product search and evaluation has a stronger influence on pre-purchase services than web appearance and product pricing; even that all the influences are positive and significant.

Finally, web designers and companies must take into account that in the industry analyzed, the navigation experiences affect positively and significantly the attitude to the web; and these attitudes influence on purchase intention. So, consumers must feel satisfied with their website experiences, as a way to reach positive attitudes to the website and a positive predisposition to buy one product in this website. In this sense, companies must focus on developing appropriated websites where both the appearance and contents are carefully analyzed. The customer services must be included in this design; customer services that start before the transaction has been done.

In sum, in limited budget scenarios, in mature industries such as the industry analyzed here, where companies are competitive and fragmented into many small and medium-sized companies, the results show that pre-purchase services do not directly improve consumer attitude to the web but do it indirectly by improving the navigation experience and that transaction related services should be paramount over pre-purchase services. In other environments, the managerial implications may be different. So, the limitations of this study include the fact that it concentrates on the Spanish textile sector which is a mature sector, and so the conclusions cannot be generalized to other sectors with other characteristics.

It must be noticed that the importance of some aspects of the shopping experience varied by product category (Zeithaml et al., 2002). So, future studies could be developed for testing other product categories to compare the obtained results in the present study. And, secondly, online shoppers certainly are not homogeneous. While there is controversy about the role that services will play in the purchase process online, alternative customer segments could be analyzed to test the impact that services play on each segment.

Appendix 1.

Measurement scales

Construct	Construct dimensions	Item coding	Item descriptions	Source
Transaction related services	Delivery arrangements	DA1	The delivery arrangements are clear and detailed	Adapted from Ting-Peng and Hung-Jen (2002), Otim and Grover (2006), Rodgers et al. (2005), Torkzadeh and Dhillon (2002)
		DA2	The delivery time is clear and detailed	
		DA3	Changes and refunds information is wide and complete	
		DA4	The web seems responsible towards changes in the delivery time and faulty products	
	Security	SEC1	I found secure to buy in this web	
		SEC2	I think the secure information in this web is proper	
		SEC3	I feel that to buy in this web is not risky	
	Billing and payment	BP1	I found easy to buy in this web	
		BP2	Billing and payment conditions are clear and detailed	
Pre-purchase services	Support product search & evaluation	SP1	I found the website fast and dynamic	Adapted from Rodgers et al. (2005), Lee and Lin (2005), Otim and Grover (2006)
		SP2	On this website, everything is easy to understand	
		SP3	It is easy to use this website right from the start	
		SP4	It is easy to find the information I need on this website	
		SP5	The structure of contents of this site is easily understandable	
		SP6	It is easy to move around this website	
		SP7	This website is organized in such a way that I know where I am when I navigate its pages	
		SP8	When I navigate on this website, I feel in control	
	Web appearance	WA1	This website offers a global and completed information about all the products sold	
		WA2	Each product is well described	
		WA3	Information is visually easy to understand	
		WA4	Diversity of colour and patrons infomation is offer	
	Product pricing	PP1	Price information is clear	
		PP2	Promotions and special offers are properly emphasized	
Navigation experience (satisfaction)		NAV1	I think I have taken the correct decision to use this website	Adapted from Flavian et al. (2006)
		NAV2	Experience of this website has been satisfactory	
		NAV3	In general terms, I am satisfied with the way this website has managed the transactions	
		NAV4	In general, I am satisfied with the service provided by this website	
		NAV5	In general, I am satisfied with the online experience	
Attitude		ATT1	This website connects with me	Adapted from Chen and Wells (1999), Ko et al. (2005)
		ATT2	I would like to visit this website again	
		ATT3	I feel comfortable navigating this website	
		ATT4	This site is a good place to spend my time	
		ATT5	I consider this website to be a good site for fashion	
Purchase intention		INT1	I would buy from this website	Adapted from Belanger et al. (2002), Lee and Lin (2005)
		INT2	I would create a personalized account with this website	
		INT3	I would use my credit card to shop on this website	
		INT4	I would recommend this website to othe r people	

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Article

The integration of CSR management systems and their influence on the performance of technology companies

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ABSTRACT

This paper proposes a model in order to analyze whether standardized management systems facilitate the implementation and integration of CSR within the technology company, studying which is the influence of CSR in reputation and improvement of these companies and whether it has a positive impact on the economic performance of the company. The study was conducted in companies located in Spanish Science and Technology Parks. On the one hand, model results shows that there is a positive, direct and statistically significant relationship between the integration of CSR and reputation; on the other hand, performance and internal improvement has also this relationship. Likewise, the model shows also some indirect relations between management system before the implementation of CSR and reputation and internal improvement.

Introduction

The modern definition of quality extends beyond products/services specifications to encompass the requirements of a variety of stakeholders (Heras-Saizarbitoria, 2011b). Stakeholder requirements vary from ensuring employees' health and safety, sustainability, customer satisfaction, and transparency in organizational affairs to execution of business processes in a socially responsible manner (Turyakira, Venter, & Smith, 2014). To meet stakeholder requirements in a systematic manner, organizations use certain management systems standard (MSs) such as quality, environment, health and safety, and social accountability (Asif, Fisscher, Bruijn, & Pagell, 2010).

Such systems are standardized, because standardization is not only a coordinating mechanism but also an instrument of regulation comparable to other instruments such as markets, public regulation or hierarchies or formal organizations. Without standardization trade is extremely difficult in the global economy (Heras-Saizarbitoria, 2011a).

Quality management standards (QMS) and environmental management standards (EMS), are both the most successful have obtained in recent years compared with others (Llach, Marimon, & Alonso-Almeida, 2015). Thereby, between 2006 and 2014, the number of certifications has increased by 241,250 for ISO 9001 and 195,937 ISO 14001. At the end of 2014, ISO 9001 accounted for 1,138,155 registered companies in more than 188 countries and ISO 14001 for 324,148 in about 170 countries (ISO, 2014). In contrast, in June 2012, 3083 certified facilities were reported by Social Accountability International (Llach et al., 2015). These data warn us that in absolute terms in 2014 certification ISO 9001 is 3.5 times higher than certification ISO 14001.

In addition to ISO 9001 and ISO 14001, the proliferation of other MSs such as occupational safety and health (OHSAS 18001 and CSA Z1000), social responsibility (SA 8000 and AA 1000), information security (ISO 27001), supply chain security (ISO 28001), and energy (ISO 50001) (Gianni & Gotzamani, 2015), offers the possibility to companies to integrate their management in a single system to somehow benefit from synergies created between the systems to be integrated (Simon, Bernardo, Karapetrovic, & Casadesús, 2011; Simon, Karapetrovic, & Casadesus, 2012).

In a context where, MSs appear frequently into management and company policies more and more organizations are applying

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not only one, but a range of MSs to satisfy their own needs as well as those of external stakeholders (Simon et al., 2012).

Moreover, organizations are adapting to changes in the economy constantly, and those that adapt best have the greatest possibilities to survive in the market. A key factor for their success is innovation, which is critical to sustain customer satisfaction, reducing costs, and enhancing competitiveness in the long term (Bernardo, 2014). Innovation is usually defined by including products and services, and management processes, so the Corporate Social Responsibility (CSR) is in itself an innovation for companies management of. In fact, CSR practices tend to create innovation products or process seeking for a better quality (Benito Hernández & Esteban Sánchez, 2012).

Hence, companies should adopt formalized CSR practices and establish the procedures and tools that are aligned with corporate strategy (Bocquet, Le Bas, Mothe, & Poussing, 2013). Several studies claim that CSR has a significant positive contribution to competitiveness (Battaglia, Testa, Bianchi, Iraldo, & Frey, 2014; Boulouta & Pitelis, 2014). In this way, the European Union states that "A strategic approach to CSR is increasingly important to the competitiveness of enterprises. It can bring benefits in terms of risk management, cost savings, access to capital, customer relationships, human resource management, and innovation capacity" (Communication from the European Commission, 2011, pag.3).

There are three remarkable ways established in the scientific literature through which CSR helps and encourages innovation (Benito Hernández & Esteban Sánchez, 2012): (1) innovation resulting from dialog with various stakeholders both internal and external to the company, (2) identifying new business opportunities arising from social and environmental demands on products and more efficient processes or new forms of business and (3) creating better places and ways of working that encourage innovation and creativity, such as those based on more employee participation and confidence in them (Benito Hernández & Esteban Sánchez, 2012).

The main reasons for innovating are to (1) improve the current situation (achieved by, for example, reducing costs, raising margins and providing stability for the workforce), (2) open new horizons (by, for example, repositioning perceptions of an organization and gaining a competitive advantage), (3) reinforce compliance (by complying with legislation and fulfilling social and environmental responsibilities), and (4) enhance the organization's profile (by attracting extra funding and potential alliance partners for example) (Bernardo, 2014).

If CSR is integrated into business processes, it creates innovative practices in them (Benito Hernández & Esteban Sánchez, 2012) and therefore, a improvement into organization. This internal improvement can be understood as an improvement in operating efficiency and control through training and employee participation (Benito Hernández & Esteban Sánchez, 2012).

Furthermore, this improvement entails an exploitation of synergies and benefits arising from the integration of different management systems (Bernardo, 2014; Bernardo, Simon, Tarí, & Molina-Azorín, 2015; Gianni & Gotzamani, 2015). So far, integration is proven beneficial to the internal cohesion, the use and performance of the systems, the corporate culture, image and strategy and the stakeholders' implication (Gianni & Gotzamani, 2015).

For all these reasons above, the aims of this paper are: (1) analyzing whether standardized management systems facilitate the implementation and integration of CSR within the technology company, (2) studying which is the influence of CSR in reputation and improvement of these companies and (3) if it has a positive impact on the economic performance of the company, as some authors suggest (e.g. Gallardo-Vázquez & Sanchez-Hernandez, 2014).

For theses aims the work is divided into four sections. First, theoretical and empirical contributions related to the relationships between the variables that are included in the research model are reviewed. Second, methodology employed to test the model is described. Third, results are presented, ending with conclusions and discussion of the results obtained. This final section also highlights the main implications for future research.

Research background and hypotheses

It will conduct a review of the literature analyzing (1) integrated management systems, (2) the integration of CSR in technology companies, (3) Implementation of measures in technology companies CSR and (4) Performance in technology companies in order to propose research hypotheses.

Management systems

In the study of individual management systems there is abundant literature. For example, the literature on environmental management has studied the conditions of companies that decide to implement ISO14001 system, its certification and subsequent its economic impact (Cañón de Francia & Garcés Ayerbe, 2006; Marimon, Llach, & Bernardo, 2011; Narasimhan & Schoenherr, 2012). The focus on safety and occupational health management systems has studied the relationship of this system with reduced risks to workers, the reduction of accidents and the firm performance (Duijm, Fiévez, Gerbec, Hauptmanns, & Konstandinidou, 2008; Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2009; Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2012; Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2012b; Veltri et al., 2013; Vinodkumar & Bhasi, 2011).

Comparative studies between pairs of standards also appear in literature. Especially regarding quality (QMS) and environment (EMS) (Albuquerque, Bronnenberg, & Corbett, 2007; Casadesús, Marimon, & Heras, 2008; Delmas & Montiel, 2008; Marimon, Heras, & Casadesus, 2009) that analyze the relationship between them and their commonalities.

The first model of integration based on a systemic approach was developed by Karapetrovic and Willborn (1998) including the management systems ISO 9001: 1994 and ISO 14001: 1996. These authors introduced the concept of "system of systems" which had a nucleus containing the common requirements to integrate management systems (IMS).

This model was updated later by Karapetrovic and with Jonker adding two new systems, (1) the system of occupational health and safety, based on the OHSAS 18001: 1998 and (2) the system of social responsibility based on the model SA 8000 (Karapetrovic & Jonker, 2003). The figure below shows the model of "system of systems" that rise to the concept of integrated system.

In Fig. 1 we can observe a central core management system sharing different requirements while specific ones are located in parallel functional modules resulting a new system, thus constituting an integrated management system in which the components are interrelated but without sacrificing their individual identity and without invading other management systems.

Therefore, in many companies, quality, health and safety and environmental management exist as three parallel systems (Hamidi, Omidvari, & Meftahi, 2012). Hence, an integrated management system (IMS) must contemplate aspects: (1) focusing specifically on the quality, health and safety, environment, human resource and finance, and (2) generally stakeholders and accountability to these stakeholders, thus assuming different levels of integration (Jørgensen, Remmen, & Mellado, 2006).

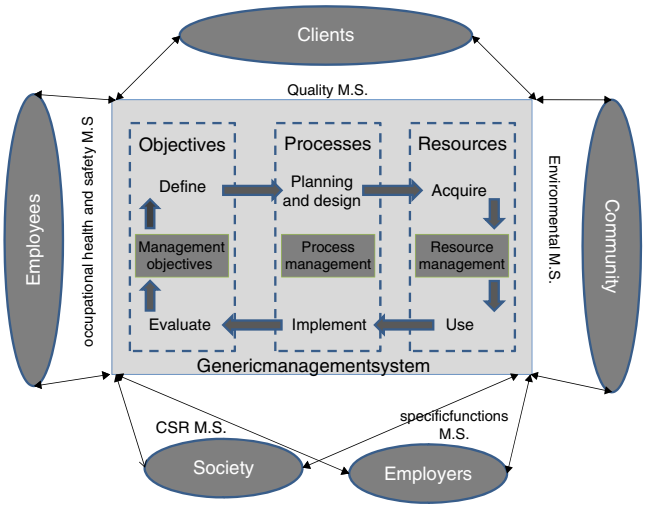

Fig. 1. Systems integration proposed by Karapetrovic and Jonker (2003).

Therefore, and after review in reference to management systems integration, the first research hypothesis is proposed in the following terms:

H1. The existence of previous standardized management systems has a positive effect on implementation of CSR measures.

The integration of MSs has been analyzed from a theoretical and practical point of view as such claim Bernardo, Casadesus, Karapetrovic, and Heras (2009). On the one hand we have several theoretical studies (e.g. Asif et al., 2010; Ciobanu, 2010; Rocha Romero, 2006; Simon et al., 2011, 2012) which explain us the followed strategies, methodologies, levels and benefits of integration. On the other hand, we have different empirical studies that complement the above (e.g. Bernardo et al., 2009; Bernardo, Casadesus, Karapetrovic, & Heras, 2010; Bernardo, Casadesus, Karapetrovic, & Heras, 2012a; Karapetrovic & Casadesús, 2009; Lindgreen, Swaen, & Johnston, 2009; Santos, Mendes, & Barbosa, 2011; Zeng, Xie, Tam, & Shen, 2011).

The need for the integration of individual MSs is rooted in the need to effectively utilize organizational resources (Asif, Searcy, Zutshi, & Fisscher, 2013).

Thus, the integration of operations, quality, strategy and technology is increasingly seen as a way to maintain the competitive advantage of organizations, as well as a way to overcome the disappointments with programs and quality standards (Castka & Balzarova, 2007).

Therefore, the integration of MSs can be defined as putting together different function-specific management systems into a single and more effective IMS (Bernardo et al., 2015) in order to achieve a continuous improvement and satisfaction of stakeholders (Bernardo et al., 2009) and its integration into business strategy.

In regard to the integration of systems management, methodology and case studies exist in literature in order to help any organization to carry out the integration process (Simon et al., 2012) and follow different integration strategies. Integration strategy refers to the scope and the sequence of MSs standards' adoption. Four options of implementation sequence are identified: first QMS, then others; first EMS, then others; QMS and EMS simultaneously, then others; and a common IMS core, then IMS modules (Gianni & Gotzamani, 2015).

Hence, this integration falls mainly on ISO9001, ISO 14001 and OHSAS 18001 standards, namely the integration of systems quality, environmental and occupational health and safety, dominated by the first two standards (Bernardo, Casadesus, Karapetrovic, & Heras, 2012b; Casadesús, Karapetrovic, & Heras, 2011).

Nevertheless, the integration of CSR can be facilitated by standardized management processes previously implanted as claimed several authors (Asif et al., 2013; Vilanova, Lozano, & Arenas, 2009). Thus, the second hypothesis is proposed as follows:

H2. The existence of previous standardized management systems positively influences the integration of CSR in the management system of the organization.

Furthermore, integration can be partial or total focused on aspects such as goals and objectives, system documentation and procedures (Sampaio, Saraiva, & Domingues, 2012). For example, Bernardo et al. (2009), claim that organizations follow a pattern with respect to documentation and procedures that make up the majority and it seems clear that start with strategic objectives, better documentation and procedures, leaving the integration of operations and tactics later. However, the role of the people involved in integrated management systems is not significant, contrary to what is stated in the theoretical literature and in the standards of application.

Integrating CSR in technology companies

The integration of these systems with CSR is recent interest in academia (Asif et al., 2013; Asif, Searcy, Zutshi, & Ahmad, 2011) and infrequent. In fact, in a study by Bernardo et al. (2012b) notes that of 422 Spanish companies studied, only 26 have the social responsibility system fully integrated with other systems (6.16% of total); 11 companies have it partially integrated (2.60% of total); 5 have a CSR system but is not integrated with any other (1.18% of total), that is only 8.76% of the companies surveyed have the CSR system fully or partially integrated with other systems. Moreover, most literature refers to this integration is based on standards such as SA 8000 (Asif et al., 2010; Jørgensen et al., 2006; Karapetrovic & Jonker, 2003; Llach et al., 2015). Despite during the past three decades, CSR standards have increased in number and popularity. Likewise, there are more than 300 global corporate standards, each with its own history and criteria which addresses various aspects of corporate behavior and responsibility (for example, working conditions, human rights, environmental protection, transparency, bribery) (Koerber, 2009; Marimon, Alonso-Almeida, Rodríguez, & Cortez Alejandro, 2012).

The guidelines ISO 26000 was published in September 2010 (Merlin, Duarte do Valle Pereira, & Pacheco Junior, 2012) and represents a major step forward. The guidance provided in this standard can allow any organization to achieve a truly integrated management system (Pojasek, 2011).

Experts from 99 ISO member nations and 42 public and private sector organizations were developing the standard in order to provide agreement about definitions, core subjects and integration processes of social responsibility in organizations (Gilbert, Rasche, & Waddock, 2011).

This standard provides guidance on: the principles of social responsibility, recognition of social responsibility and participation of stakeholders in seven key aspects and social responsibility issues and how to integrate socially responsible behavior into the organization (Merlin et al., 2012).

H3. The integration of CSR has a positive influence on the internal improvement of the technology company.

The guidance provided in this standard, as Pojasek (2011) states, allows an organization to achieve a system of sustainability management, and hence of its social responsibility, truly integrated. So, ISO 26000 defines Social Responsibility as "The responsibility of an organization for the impacts of its decisions and activities on society and the environment through transparent and ethical behavior that contributes to sustainable development, including

health and the welfare of society; takes into account the expectations of stakeholders; is in compliance with applicable law and consistent with international norms of behavior; and is integrated throughout the organization and practiced in its relationships" (AENOR, 2012; Caballero-Díaz, Simonet, & Valcárcel, 2013).

ISO 26000 can be perceived as an evolutionary step in standard innovation (Hahn, 2012). In fact, ISO 26000 is in a strategic plan of the organization through which to develop a tactical plan in the different management systems (Merlin et al., 2012), so at a time, as highlighted above, it must be integrated throughout the organization.

It is therefore, we do not limit ourselves only to "traditionally" management systems standard but we also include in our study the integration of aspects of CSR based on ISO 26000 for the implementation of CSR in which the human factor takes highly relevant to the internal and continuous improvement of the organization.

H4. The integration of CSR has a positive influence on improving the external perception (reputation) of the technology company.

Therefore one aspect to consider is the internal improvement and reputation of the organization through the integration of systems and the involvement of staff and their effects on the performance of the company because the performance of a IMS is a emerging research topic, as assert Gianni and Gotzamani (2015).

Implementation of CSR measures in technology companies

Many studies on CSR can be founded in scientific literature. Both large companies (Melé, Debeljuh, & Arruda, 2006), and small (Baumann-Pauly, Wickert, Spence, & Scherer, 2013; Vázquez-Carrasco & López-Pérez, 2013). In different sectors (Alcaraz & Rodenas, 2013; Bernal Conesa, De Nieves Nieto, & Briones Peñalver, 2014; Moseñe, Burritt, Sanagustín, Moneva, & Tingey-Holyoak, 2013; Pérez Ruiz & Rodríguez del Bosque, 2012); and even one that refers to technology companies (Guadamillas-Gómez, Donate-Manzanares, & Skerlavaj, 2010).

Therefore, it is considered limited information in the technology sector, denoting that have not been analyzed in depth the influences of a strategy based on CSR and its integration into the management of the company, so it is estimated interesting further study of it in Spanish technology companies since previous research has shown that organizations with a strategic focus on innovation are committed to improve their internal organizational capacities to become more competitive in a global environment (Suñe, Bravo, Mundet, & Herrera, 2012).

Several authors (Perrini, Russo, & Tencati, 2007; Spence, 2007) have noted the sector as one of the elements affecting the organizational culture in adopting and integrating CSR practices in the strategic plans of the organizations. For example, Perrini et al. (2007) found that companies in sector of Information and Communications Technology (ICT) were more likely to monitor and report on their behavior CSR while manufacturing firms were more interested in motivating employees through volunteer activities in the community.

H5. The implementation of CSR activities has a positive influence on the internal improvement of the organization.

In a study carried out by Lorenzo, Sánchez, and Álvarez (2009) states that the fact of belonging to technology and telecommunications sectors have a positive but not significant effect in the dissemination of CSR actions.

In certain technological sectors, product development periods are extremely long and businesses often have negative results in their first years of life, put forward higher financing difficulties. In these cases, financial indicators are not effective in assessing the business potential, being more suitable for intangible assets and knowledge-based (Quintana García, Benavides Velasco, & Guzmán Parra, 2013).

In these intangible assets we can find CSR which can enhance reputation of the company with banks and investors and facilitate their funding (Benito Hernández & Esteban Sánchez, 2012; Cheng, Ioannou, & Serafeim, 2014).

H6. The implementation of CSR measures has a positive influence on improving the reputation of the organization.

Performance in technology companies

Following the previous literature review is to investigate the knowledge and implementation of CSR in the Spanish Technology Industry since the activity of technology and information technology companies have a high relevant social impact (Luna Sotorrío & Fernández Sánchez, 2010), its relationship with other management systems of the company, the integration of such systems and whether such integration facilitates the adoption of strategies in the context of CSR, and the impact of CSR on economic performance since CSR practices can improve the reputation of the company with banks, investors and also facilitate their funding (as we saw in the previous section) and thus positively influence the performance of the company.

The implementation of CSR in organizations, as some studies have shown, has a positive relationship with the financial benefits, and specifically technology industries, can increase their economic performance by CSR (Chang, 2009).

Although, there is no clear consensus in the debate on measures of CSR and economic performance (Ramos, Manzanares, & Gómez, 2014) many researches suggests that there should be a positive relationship between the two variables (Gallardo-Vázquez & Sanchez-Hernandez, 2014; Garcia-Castro, Ariño, & Canela, 2009). There are also studies that suggest otherwise (Muñoz, Pablo, & Peña, 2015) but there are few studies examining the relationship between CSR technology companies, and its performance (Wang, Chen, Yu, & Hsiao, 2015).

H7. Improving reputation has a positive influence on economic performance of the technology company.

Moreover, studying the role of technology companies in environmental management, sustainability and CSR is still in its early stages (Wang, Chen, & Benitez-Amado, 2015). For this reason it is to investigate and analyze the situation of the Spanish technology companies face to CSR, taking as a starting point the Spanish Science and Technology Parks.

Nowadays, there are 67 Spanish Science and Technology Parks. They host to firms with different interests: academic spin-offs, Technology-based firms and start-ups (Jimenez-Zarco, Cerdan-Chiscano, & Torrent-Sellens, 2013). But all are characterized by a strategic orientation toward innovation, knowledge creation, technological development and cooperation (Vásquez-Urriago, Barge-Gil, Rico, & Paraskevopoulou, 2014) to increase their organizational capacity in order to improve internally.

Technology Parks have in common not only the creation of technology companies but also they attract companies already established to promote regional development through a technological approach and the creation of employment and welfare (Jimenez-Zarco et al., 2013; Ratinho & Henriques, 2010).

Therefore technology parks would be directly related to two of three dimensions of CSR (social and economic) and generate a network of cooperation between technology firms. These firms, can increase the capacity to generate knowledge and positively expand relationships with their own business agents. If we also add the adoption of CSR policies, it will allow greater flexibility and opportunities to address social problems with innovative

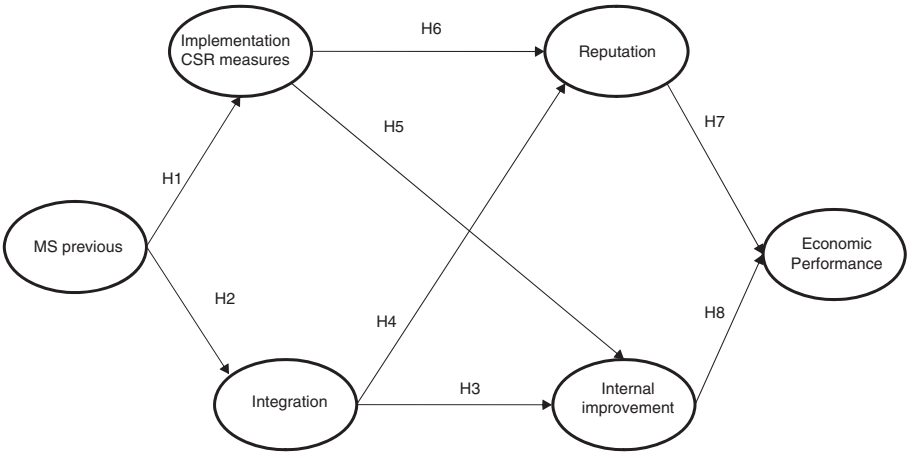

Fig. 2. Conceptual model.

products or services, increasing the ability to attract, retaining and motivating staff and accessing to new knowledge and information, so that companies could increase their economic performance and competitiveness (Benito Hernández & Esteban Sánchez, 2012; Vásquez-Urriago et al., 2014).

H8. Internal organizational improvement has a positive influence on economic performance of the technology company.

The objectives of the research are summarized in studying the influence of the system prior to the implementation of CSR management and if that can help positively influence the implementation and integration of CSR in the IMS. The influence of CSR on reputation technology companies, internal improvement and the performance. Therefore, and after review of the literature and the approach of the hypotheses, the following conceptual model shown in Fig. 2 was made.

Methodology

There are a great variety of methods for aggregating data in Social Sciences (Rodríguez Gutiérrez, Fuentes García, & Sánchez Cañizares, 2013) but they are not applied generally in the field of CSR research. One of the most widely used methods is the factor analysis, based mainly in works which study is based on surveys. In the last years there have been studies that in addition to this factor analysis and using regression techniques an analysis is incorporated through structural equations such as Aragon-Correa, Hurtado-Torres, Sharma, and Garcia-Morales (2008), Chen and Chang (2011), Torugsa, O'Donohue, and Hecker (2012) and Vázquez and Sánchez (2013).

To perform this analysis a structural equation modeling (SEM) is used. SEMs are statistical procedures for testing measurement, functional, predictive and causal hypotheses. This multivariate statistical tool is essential to master if one is to understand many bodies of research and to conduct basic or applied research in the behavioral, managerial, health, and social sciences (Bagozzi & Yi, 2011).

The specific literature indicates two stages of the SEM analysis: the assessment of the measurement model (outer model) and the structural model (inner model) (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014; Roldán & Sánchez-Franco, 2012). The measurement model verifies how hypothetical constructs are measured in terms of the observed variables while the structural model examines the relationships between constructs (Chen & Chang, 2011). The structural model is similar to performing a regression analysis but with explanatory power (Vázquez & Sánchez, 2013) studying the direct and indirect effects set of constructs.

The technique chosen within SEM is known as Partial Least Squares (PLS). PLS is an SEM technique based on an iterative approach that maximizes the explained variance of endogenous constructs. This characteristic makes PLS-SEM particularly valuable for exploratory research purposes. Using PLS-SEM in this research is rational for the following reasons. First, PLS-SEM has been broadly used in prior IT research (Chen & Chang, 2011; Pavlou & El Sawy, 2006; Wang et al., 2015a,b). Second, PLS-SEM use is recommended when the theoretical knowledge about a topic is scarce (Hair et al., 2014) as is this case (CSR and technology companies) and also PLS-SEM is more appropriate for causal applications and theory buildings (Henseler et al., 2014; Roldán & Sánchez-Franco, 2012) although it can also be used for confirming all these theories (confirmatory analysis) through the goodness of fit of the global structural model (Dijkstra & Henseler, 2015). Third, PLS can estimate models with reflective and formative indicators without problem of identification (Vinzi, Chin, Henseler, & Wang, 2010) because PLS path modeling works with weighted composites rather than factors (Gefen, Rigdon, & Straub, 2011). Fourth, PLS can be estimated models with small samples, in fact, the PLS modeling algorithms tend to get results with high levels of statistical power (Reinartz, Haenlein, & Henseler, 2009), even when the sample size is very modest (Rigdon, 2014). Therefore, we use PLS as statistical tool for management and organizational research as noted by Henseler et al. (2014).

In this study, we used the free software developed by Ringle, Wende and Will in 2005, subject to subscription and authorization of its authors, called SmartPLS. Since SmartPLS is an estimation model and SEM analysis, the estimation process used in two steps evaluating the outer model and the inner model (Hair et al., 2014).

This sequence ensures that we have adequate indicators of constructs before attempting to reach conclusions concerning the relationships included in the inner model (Roldán & Sánchez-Franco, 2012).

For the measurement of the constructs, different items were defined and collected in a questionnaire (Table 1). These items are based on the literature (e.g. Asif et al., 2011, 2013; Battaglia et al., 2014; Gallardo-Vázquez & Sanchez-Hernandez, 2014; Turyakira et al., 2014). For data collection, a total of 489 invitations were sent by email to access the link to our questionnaire. Finally a total of 98 companies completed the survey, representing a response rate of 20.04%. For surveys using web tools including a link to access the survey, the response rate is around 30% (Arevalo, Aravind, Ayuso, & Roca, 2013) although there are empirical studies with a valid

Table 1
Indicators.

Item	Indicator	Source
18_11	Reducing customer complaints	Gallardo-Vázquez and Sánchez-Hernández (2014), Turyakira et al. (2014)
18_15	Be approved as a provider of public bodies	
18_16	Be approved as a provider of private bodies	
18_17	Reducing sanctions from public bodies	
18_18	Get aid or subsidies from public bodies	
18_19	Meet requirements of third parties, such as administration, financial institutions, etc.	
18_4	Meet requirements of third parties, such as administration, financial institutions, etc.	Turyakira et al. (2014)
18_5	Improve the effectiveness and control of operations	Gallardo-Vázquez and Sánchez-Hernández (2014)
18_6	Building synergy between management systems	Bernardo et al. (2012b)
20_1	There is a prior knowledge about the difficulties of implementation	
20_2	There are advantages to having a standardized management system, such as standardization of processes, staff training	Asif et al. (2011, 2013), Bernardo et al. (2012a)
20_3	The processes of internal and external audit are known for certification	
20_4	The requirements of the different systems (e.g. legal compliance, management review, audits, indicators, etc.) are known	
20_5	Brings synergies between systems (sharing resources, common documentation, etc.)	
21_1	Sharing resources	
21_2	Sharing documented procedures	
21_3	Sharing requirements	Asif et al. (2010, 2011), Bernardo et al. (2010, 2012a)
21_4	Management manual is unified	
21_5	Sharing staff	
21_6	There is a management department in charge of all	Bernardo et al. (2009)
21_7	Workers are aware management systems and apply them daily without difficulties	Bernardo et al. (2012a)
21_8	Certified systems are themselves the management system of the organization and therefore the certificate is not a matter of image	Bernardo et al. (2010)
24_1	Increased sales are achieved	
24_2	Saving cost occurs	Gallardo-Vázquez and Sánchez-Hernández (2014), Herrera, Larrán, and Martínez-Martínez (2013)
24_3	Improved access to finance	
24_4	Growing revenue	
24_6	Access to new markets or customers occurs	
24_7	Competitive advantages are obtained	Battaglia et al. (2014), Gallardo-Vázquez and Sánchez-Hernández (2014)
24_8	Improves ROI	
24_11	Increases profitability	Martínez-Campillo, Cabeza-García, and Marbella-Sánchez, (2013)
24_12	Increasing financial returns	
24_13	Reduction of economic sanctions by the public administration	Bernal Conesa, De Nieves Nieto, and Briones Peñalver (2016)
24_14	Spin-off are created in order to be applied beneficially in other business areas	

response rate between 10% and 20% (Chow & Chen, 2012; Homburg & Stebel, 2009; Ramos et al., 2014).

Hence, the study was conducted in 98 Spanish technology companies located in Science and Technology Parks from February up to December in 2014. From 98 of these questionnaires were valid for this study a total of 50 (response rate of 10.22%), since this is the number of companies that had undertaken (or intended to do so) CSR and had previous management systems.

Results

Outer model

The measurement model defines the latent variables that the model will use, and assigns manifest variables to each. The assessment of the measurement model for reflective indicators in PLS is based on individual item reliability, construct reliability, convergent validity (Fornell & Larcker, 1981; Tenenhaus, Vinzi, Chatelin, & Lauro, 2005) and discriminant validity (Hair, Sarstedt, Ringle, & Mena, 2012).

Individual item reliability is assessed by analyzing the standardized loadings (λ), or simple correlations of indicators with their respective latent variable (Hair et al., 2014). Individual item reliability is considered adequate when an item has a λ greater than 0.707 on its respective construct (Carmines & Zeller, 1979). In this study, all reflective indicators have loadings above 0.714 (boldface numbers in Table 2).

The reliability of a construct, also known as internal consistency, allows to assess what extended indicators (observable variables) are measuring the constructs (latent variables). Construct reliability is usually assessed using composite reliability (ρ_c) (Hair et al., 2014) and Cronbach's alpha (Castro & Roldán, 2013). Following the guidelines proposed by Nunnally and Bernstein (1994), for both sets of values, one can be taken 0.7 as a benchmark for a modest reliability applicable in the early stages of research. Particularly, in our research, all constructs present values above 0.7 (Table 3), thus confirming their internal consistency.

Convergent validity is an assessment whether various items designed to measure a construct actually do it. To assess convergent validity, we examine the average variance extracted (AVE). This parameter expresses the amount of variance that a construct obtains from its indicators as against the amount due to measurement error. AVE values should be higher than 0.50 (Fornell & Larcker, 1981), which means that 50 per cent -or more- of variance of indicators should be accounted for the construct (Hair et al., 2014).

Discriminant validity indicates the extent to which a given construct differs from other constructs. There are two approaches to assess discriminant validity (Gefen & Straub, 2005). On one hand, Fornell and Larcker (1981) suggest the use of the average variance shared between a construct and its measures (AVE). This measure should be higher than the shared variance between the construct and other constructs in the model. To put this idea into operation, the AVE square root of each construct should be greater than its correlations with any other construct in the assessment. This condition is satisfied by all constructs in relation to their other variables (Table 3).

On the other hand, the second approach suggests that each item should load more highly on its assigned construct than others (Henseler, Ringle, & Sinkovics, 2009; Lee, Petter, Fayard, &

Table 2
Loadings and cross-loadings for the measurement model.

Item	Reputation	Internal improvement	Implementation	Integration	MS previous	Economic performance
18_11	**0.746**	0.638	0.368	0.361	0.301	0.241
8_15	**0.861**	0.429	0.219	0.307	0.231	0.345
18_16	**0.845**	0.492	0.368	0.352	0.344	0.363
18_17	**0.901**	0.518	0.310	0.329	0.284	0.290
18_18	**0.779**	0.417	0.195	0.290	0.164	0.253
18_19	**0.909**	0.556	0.273	0.349	0.239	0.393
18_4	0.530	**0.800**	0.237	0.100	0.189	0.308
18_5	0.468	**0.907**	0.210	0.239	0.312	0.403
18_6	0.569	**0.877**	0.386	0.402	0.386	0.377
20_1	0.227	0.350	**0.771**	0.551	0.549	0.090
20_2	0.164	0.130	**0.714**	0.443	0.450	0.049
20_3	0.272	0.238	**0.881**	0.568	0.575	0.181
20_4	0.394	0.349	**0.912**	0.724	0.628	0.184
20_5	0.344	0.267	**0.863**	0.700	0.473	0.149
21_1	0.345	0.378	0.619	**0.899**	0.626	0.288
21_2	0.439	0.238	0.711	**0.932**	0.654	0.236
21_3	0.363	0.368	0.724	**0.893**	0.627	0.231
21_4	0.404	0.246	0.653	**0.918**	0.686	0.142
21_5	0.135	0.093	0.460	**0.733**	0.611	0.242
21_6	0.296	0.316	0.516	0.730	**0.893**	0.386
21_7	0.376	0.376	0.558	0.625	**0.883**	0.299
21_8	0.179	0.273	0.673	0.604	**0.915**	0.239
24_1	0.095	0.225	0.092	0.151	0.275	**0.828**
24_2	0.112	0.304	0.029	0.098	0.227	**0.738**
24_3	0.185	0.135	0.148	0.359	0.288	**0.724**
24_4	0.249	0.361	0.225	0.337	0.398	**0.753**
24_6	0.417	0.342	0.249	0.383	0.371	**0.801**
24_7	0.303	0.441	0.090	0.107	0.240	**0.760**
24_8	0.390	0.433	0.155	0.186	0.267	**0.909**
24_11	0.304	0.294	0.083	0.179	0.277	**0.914**
24_12	0.352	0.409	0.125	0.242	0.331	**0.892**
24_13	0.350	0.337	0.146	0.136	0.268	**0.821**
24_14	0.367	0.290	0.069	0.145	0.113	**0.748**

Table 3
Composite reliability (ρ_c), convergent and discriminant validity coefficients.

	ρ_c	α	AVE	Implementation	Integration	Internal improvement	Economic performance	Reputation	MS previous
Implementation	0.917	0.886	0.691	**0.8316**					
Integration	0.943	0.924	0.771	0.7280	**0.8782**				
Internal improvement	0.896	0.830	0.743	0.3321	0.3096	**0.8624**			
Economic performance	0.954	0.947	0.657	0.1636	0.2566	0.4244	**0.8106**		
Reputation	0.935	0.917	0.709	0.3471	0.3949	0.6059	0.3780	**0.8425**	
MS previous	0.925	0.878	0.804	0.6498	0.7279	0.3569	0.3430	0.3136	**0.8971**

Note. Diagonal elements (bold) are the square root of the variance shared between the constructs and their measures (average variance extracted). Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements.

Robinson, 2011). In addition, each construct should load higher with its assigned indicators than other items (Roldán & Sánchez-Franco, 2012). This cross-loading analysis may be performed calculating the correlations between the construct scores and the standardized data of the indicators (Gefen et al., 2011). As can be observed in Table 2 that condition was satisfied.

Inner model

Once the reliability and validity of the outer models is established, several steps need to be taken to evaluate the hypothesized relationships within the inner model (Hair et al., 2014). The inner model is basically assessed according to the meaningfulness and significance of the relationships hypothesized between the constructs.

The assessment of the model's quality is based on its ability to predict endogenous constructs. The following criteria facilitate this assessment (Hair et al., 2014): path coefficients (β) and their significance levels (t-student), coefficient of determination (R^2) and cross-validated redundancy (Q^2).

First, we tested the significance of all the paths from the structural model. Standardized path coefficients allow to analyze the degree of accomplishment the hypotheses. In this regard, Chin (1998) proposed that the analysis should provide standardized path coefficients exceeding values greater than 0.2 and ideally 0.3 whether $\beta < 0.2$ there is no causality and the hypothesis is rejected (Chin, 1998). Consistent with Hair, Ringle, and Sarstedt (2011) and Henseler et al. (2009), bootstrapping (5000 resamples) was used to generate standard errors and t-statistics. This enabled us to assess the statistical significance of the path coefficients (Castro & Roldán, 2013). At the same time, the bootstrapping confidence interval of standardized regression coefficients was given and accepted (or not) the hypothesis. Table 4 shows the β standardized regression coefficients named "path coefficients" in SEM jargon.

Second, the goodness of a model is determined by the strength of each structural path (Gallardo-Vázquez & Sánchez-Hernández, 2014). This was analyzed by using the R^2 value (explained variance) for dependent latent variables. Hence, for each path between constructs, the desirable values should be at least equal to or higher than 0.1 (Falk & Miller, 1992).

The R^2 is a measure of the model's predictive accuracy (Hair et al., 2014) and therefore R^2 values measure the construct variance explained by the model (Serrano-Cinca, Fuertes-Callén, & Gutiérrez-Nieto, 2007) with 0.75, 0.50, 0.25, respectively,

Table 4
Hypothesis testing.

H	β	Standard error	t statistics	Accepted
H3a	0.2270^{ns}	0.2348	0.9669	No
H3b	0.1269^{ns}	0.1763	0.7199	No
H4a	0.1443^{ns}	0.2541	0.5679	No
H4b	0.3025*	0.1759	1.7193	Yes
H6	0.3087*	0.1623	1.9027	Yes
H5	0.1910^{ns}	0.2254	0.8476	No
H1	0.6498***	0.0852	7.6228	Yes
H2	0.7279***	0.0604	12.0557	Yes

Note: $t(0.05, 4999) = 1.645158499$, $t(0.01, 4999) = 2.327094067$, $t(0.001, 4999) = 3.091863446$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
ns: not significant (based on $t(4999)$, one-tailed test).

describing substantial, moderate, or weak levels of predictive accuracy (Hair et al., 2011). As it can be seen in Fig. 2, all R^2 values remain between 0.1 and 0.75, so it has a predictive capability in varying degrees.

Finally, Stone-Giesser's test or Cross-validated redundancy index (Q^2) is used to assess the predictive relevance of endogenous constructs with a reflective measurement model (Roldán & Sánchez-Franco, 2012; Wang et al., 2015a,b). Therefore, it means for assessing the inner model's predictive relevance (Hair et al., 2014). This test is an indicator of how well observed values are reproduced by the model and its estimates parameter. The cross-validated redundancy index (Q^2) is used for endogenous reflective constructs (Castro & Roldán, 2013). A Q^2 greater than 0 implies that the model has predictive relevance, whereas a Q^2 less than 0

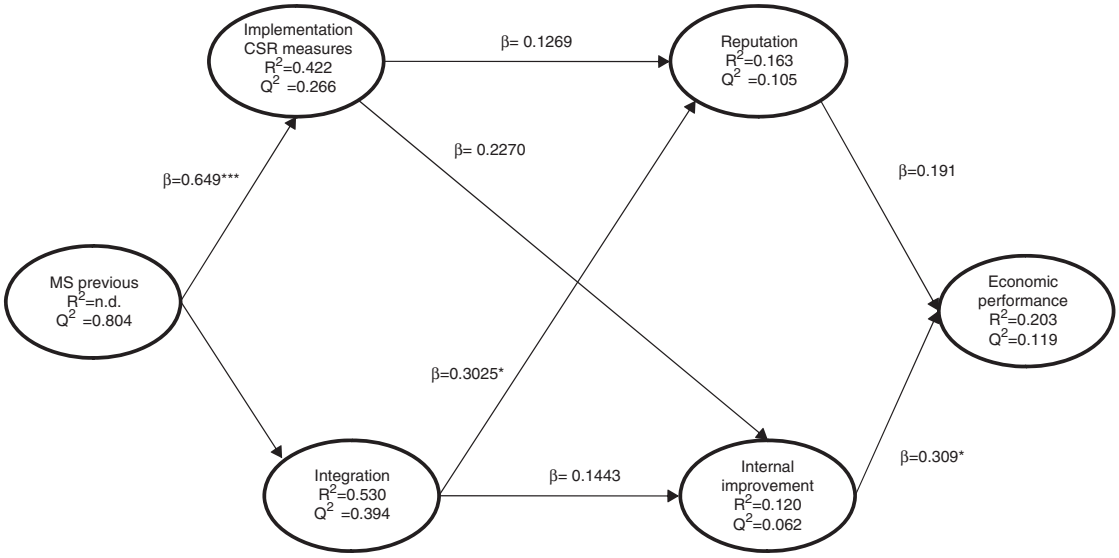

Fig. 3. Hypothesis testing.

Table 5
Full effects (direct and indirect).

Relations between constructs	β	Standard error	t statistics
Implementation → internal improvement	0.2270^{ns}	0.2348	0.9669
Implementation → economic performance	0.0943^{ns}	0.1121	0.8417
Implementation → reputation	0.1269^{ns}	0.1763	0.7199
Integration → internal improvement	0.1443^{ns}	0.2541	0.5679
Integration → economic performance	0.1023^{ns}	0.1221	0.8381
Integration → reputation	0.3025*	0.1759	1.7193
Internal improvement → economic performance	0.3087*	0.1623	1.9027
Reputation → economic performance	0.1910^{ns}	0.2254	0.8476
MS previous → implementation	0.6498***	0.0852	7.6228
MS previous → integration	0.7279***	0.0604	12.0557
MS previous → internal improvement	0.2526**	0.1132	2.2303
MS previous → economic performance	0.1358^{ns}	0.0689	1.9716
MS previous → reputation	0.3026**	0.1097	2.7591

Note: $t(0.05, 4999) = 1.645158499$, $t(0.01, 4999) = 2.327094067$, $t(0.001, 4999) = 3.091863446$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
ns: not significant (based on $t(4999)$, one-tailed test).

suggests that is lacking in the model (Castro & Roldán, 2013; Hair et al., 2014). According to this, it can be said that there is significance in the prediction of the constructs because a positive Q^2 value is obtained (Fig. 3).

Vázquez and Sánchez (2013) claim that full effects (direct and indirect) have to be considered. Theses effects are reflected in Table 5.

Hypothesis testing

These results confirmed four of the relations established in the research model. It can be see a clear influence on the standardized management systems prior to the implementation of CSR measures and their integration into the companies to improve their reputation. At the same time, we can see that some indirect effects on internal improvement and reputation by previous management systems occur (see Table 5) in line with other studies (Battaglia et al., 2014). However, we must reject the hypothesis H3, H6, and H7 because β value does not allow supporting such causality. It also has to be rejected H5 because is not getting an adequate significant level.

Conclusions and discussion

Through the study, it is intended to fill the gap identified in the literature on technology companies to implement CSR measures. Although there are preliminary studies for CSR, integration and results in Spanish companies, these are done from a regional perspective (Gallardo-Vázquez & Sanchez-Hernandez, 2014; Vintró, Fortuny, Sanmiquel, Freijo, & Edo, 2012) or analyzing a unique aspect of this relationship (Prado-Lorenzo, Gallego-Álvarez, García-Sánchez, & Rodríguez-Domínguez, 2008). Thus, the absence of previous empirical studies analyzing the relations of CSR in the Spanish Technology Sector and their integration into the company justified its implementation, and considers that adding a supplement research studies linking CSR and integration. Because this relationship is not only studied with a direct effect but also incorporates an indirect relationship through previous systems management on internal improvement and reputation.

The integration of socially responsible measures not only results in an ethical or moral positioning of the organizations, but also in generating high strategic intangibles value, such as the external reputation of the company.

The main contribution of this paper has been to demonstrate the link between CSR and its integration in technology companies empirically and reliably. From a practical standpoint companies can use the results of this study as a foothold to enhance the integration of CSR based on previous systems and exploit the synergies between them, since the integration of CSR has a direct relationship with the reputation of the company.

Nevertheless, the failure to find a significant relationship between the integration of CSR and economic performance is in line with other studies (Pamiés & Jiménez, 2011). This could be explained by the possibility that the case of an indirect or moderate relationship by other variables in what has been called the triple bottom line (TBL) (Miras Rodriguez, del, Carrasco Gallego, & Escobar Perez, 2014). TBL simultaneously considers the economic performance, social and environmental issues (Gimenez, Sierra, & Rodon, 2012; Miralles Marcelo, Miralles Quirós, del, & Miralles Quirós, 2012). In fact, some authors consider that organizations with CSR try to balance the TBL (Lo, 2010).

Ultimately, the proactive management of stakeholders can lead to a reduction of short-term profit, but long-term impact of these actions can be positive in terms of financial (Garcia-Castro et al., 2009) and environmental performance since awareness and dissemination of CSR activities by businesses can have a positive effect toward environmental protection (Gallardo-Vázquez & Sánchez-Hernández, 2014). Hence, it arise a future line of research which could propose a model of integration in technology companies where the environmental and social-performance and its impact on economic performance could be studied. Moreover, the application of environmental controls, although they may be a short-term cost, long-term can report environmental benefits if variable is positively perceived by customers.

In empirical studies, it is important to identify and consider limitations when achieve interpretations and conclusions.

First of all, an initial limitation is related to the notion of causality. Although the evidence is provided by causality model, this has not really been tested. This study has an associative modeling approach, since it is directed toward the prediction of causality. While causality guarantees the ability to handle events, the association (prediction) only allows a limited degree of control (Falk & Miller, 1992).

Second, another limitation is determined by the technique used for the proposed model: structural equation, which assumes linearity of the relationship between the latent variables (Castro & Roldán, 2013).

Third, technology companies are dynamic organizations that change over time. Consequently, future research should measure the same constructs analyzed over several time periods, taking into account the dynamics to configure the different dimensions of CSR.

However, given the above limitations, the work could be seen as pioneer since it represents a starting point the aspects of CSR in any technology company and covers the gap identified in the literature.

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Article

Determinants of the expenditure done by attendees at a sporting event: The case of World Padel Tour

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ABSTRACT

The influx of people attending sport events involves creating wealth in the environment where they are held. To understand the impacts of these events on the host community, it is necessary to analyze the main explanatory variables in relation to models of buying behavior in tourism, so as to know which variables are the ones that affect most the expenditure done by attendees at a sport event. Therefore, the objective of our research is to present a model to evaluate the influence that certain variables related to the model of consumer behavior have on the expenditure. For that, the variables have been grouped into those related to the personal characteristics of the attendee, and into those others of subjective nature related to the perceptions of those attending a sport event. The research has been based on the use of Structural Equation Models using the technique of Partial Least Square (PLS). The sport event that has been analyzed is the Padel tournament "Cáceres International Open". The proposed model shows significant results to support the relationships contained in the hypotheses, and provides positive data regarding the predictive relevance of the model.

Introduction

Padel is a sport that has achieved tremendous growth over the last decade in Spain. In 1993, the Supreme Council for Sports (CSD) recognizes it as a sport. According to the data provided by the CSD in relation to the number of licenses and clubs, in 2002 the number of licenses amounted to a total of 8344 and 140 clubs, occupying 37th position in sports by number of licenses; in 2012 the number of licenses was 39,652, and 593 clubs, occupying 19th position in sports by number of licenses. The increase in these ten years has been 375.21% in number of licenses and 323.57% in number of clubs.

Its modern origins date back to the late nineteenth century, although its background is common to tennis and badminton (Sánchez-Alcaraz, 2013); in 1997 the Spanish Federation of Padel was constituted. In order to professionalize the players and to manage the circuits in 2001, the Association of Professional Padel Players (AJPP) was created. In December 2011 World Padel Tour (WPT) was introduced as a professional padel circuit which emerges as initiative of the AJPP and a group of sponsors.[1] WPT brings a new dimension to the professional circuit in the sport, economic and media areas. Thus, international tournaments begin in different cities with a sporting event taking place in each city, which is worth analyzing due to the economic impact they generate. Sport events which are considered the major components of Sport Tourism and perhaps the most significant in terms of number of tourists and economic impact (Deery, Jago, & Fredline, 2004; Getz, 2003).

Tourism services related to sport have increased in recent years, having adapted leisure centers and particular tourist spots to give service to a client with sport motivations. The sport itself, or through competitions is a generator of the movement of people,

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that besides enjoying the sport, can do tourist activities. Thus, sport and tourism are two complementary activities: sport events generate tourism and tourists do different activities while enjoying their leisure, including sport activities.

Since 1990 there have been a significant number of studies to understand the nature of the relationship between sport and tourism (Weed, 2009). Previous research, among which is highlighted the work by Williams and Zelinsky (1970), show that link, but fundamentally analyze the economic effects of some sport events.

While major sport events have been thoroughly analyzed in relation to their impact on the cities that hosted them, we should not forget the importance of smaller sporting events, which nevertheless imply wealth creation in the environment where they are held, mainly due to the influx of attendees and participants (Barajas & Sánchez, 2011; Hurtado, Ordaz, & Rueda, 2007; Wilson, 2006).

Similar studies have been conducted, such as the one by Hurtado et al. (2007), which indicated that according to Lee (2001), it can be said that the organization of sport competitions is a source of benefits to the places where they are held. Basically, these benefits are reflected in terms of enhancement of the image of the city and/or the environment in economic terms (direct income) and also in the revitalization and development of the general socio-economic fabric of the territory. Therefore, sport tourism through events can be considered an alternative to complement the seasonality of tourism in a locality; the reason why we consider it necessary to analyze these events with the aim of contributing data relevant to decision-making and to maximize the resources used. The fact of promoting activities related to sport tourism can provide a number of resources to the tourism sector of the localities in order to combat seasonality and promote the sustainability of the sector.

In this context, in which wealth creation is assumed mainly due to the influx of attendees, we want to focus our analysis and specifically on the expenditure done by the attendees to one of the tournaments organized by WPT, "Cáceres International Open", held from 20th to 26th May 2013. Thus, the aim of our research is to present a conceptual model based on the use of structural equations, in which the influence of certain variables are analyzed, which are related to consumer buying behavior in the expenditure done during their attendance to the "Cáceres International Open" sport event. To do this, the work is divided into five sections, besides this first introduction section. In the second section a review of the literature on sport tourism is done to identify those people attending sport events, their expenditure as a relevant factor within the economic impact generated by sport events and the variables under analysis. The third section presents the model together with the research hypotheses. The fourth section presents the methodology used. The fifth section shows the results obtained from the research, and finally the conclusions of the study conducted are reflected.

Literature review

In an effort to analyze the relationship between tourism and sport the term "sport tourism" to better understand the use of sport as a tourism determination (Kurtzman, 2001) is coined. There have been many authors who during the last two decades have provided different definitions of sport tourism (Esteve-Secall, 1991; Gammon & Robinson, 1997; Hall, 1992; Latiesa, Paniza, & Madrid, 2000; Standeven & De Knop, 1999; among others), having turned this discipline in the subject of academic research and in a subject of great interest for governments.

According to Deery et al. (2004), it is important for the future of tourism segmentation that markets be defined accurately. Research in the profiles of the segments will benefit the sector and provide a higher level of accuracy with policy and planning purposes. Tourist participation in sport activities can be active or passive. Hall (1992) first introduced the possibility of tourists participating by watching a sporting activity; and Gammon and Robinson (1997), as well as Standeven and De Knop (1999), who included in their definition the opportunity to participate actively or passively in the sport. Thus, the concept of sport tourism includes those people attending a sporting event to observe it. Based on these authors, the population under study we will analyze is defined and which will be the attendees at a sport event.

Based on literature reviews on previous economic impact (Barajas, Salgado, & Sánchez, 2012; Gouguet & Nys, 1993; Halba, 1997; Késenne, 2001; Késenne, Taks, Chalip, Green, & Martyn, 2011; Otero, 1994; Pedrosa & Salvador, 2003; Salgado, Barajas, Lera, & Sanchez, 2013), it can be determined that the analysis of impacts on sport is difficult, since among other problems, there are those relating to considering as benefits the amounts spent on an activity. Moreover, there is some research detailing the different methodologies that have been used to develop the economic scale of sport (Barajas & Sánchez, 2011; Barajas et al., 2012; Hurtado et al., 2007; Pedrosa & Salvador, 2003). In this research, various methods used in studies of economic impact of events are observed, such as Satellite Accounts, input–output tables, the contingent valuation method, the computable general equilibrium model, cost-benefit analysis, and sectoral-regional analysis. Among all of these, the Cost-Benefit Analysis (CBA) stands out, whose objective is to compare the benefits of sport events for a region or country, which is the increase in value of consumption of the local population, with the costs of production factors that are needed to organize the event (Késenne, 2005). Through these methods the importance of the expenditure done by the attendees to the sport event is revealed, as it is considered as one of the factors involved in economic impact.

Conceptual model and research hypotheses

When proposing a model to analyze, we must first identify the variables that could have an influence on the expenditure of attendees at a sport event. Following Turco, Swart, Bob, and Moodley (2003), the socioeconomic characteristics must be studied to understand the consumption patterns related to sport tourism, and thus, as Johnson (2010) suggests, understand the impacts of these events on the host community. It is therefore necessary to analyze the main explanatory variables in relation to models of buying behavior in tourism, to know which variables will affect to a larger extent the expenditure done by attendees at a sport event. We can differentiate between internal and external variables to the individual, following groupings made by Swarbrooke and Horner (1999), Decrop (2005), Sirakaya and Woodside (2005). In our study we will focus on the influence that certain internal variables of the individual have on the expenditure; so that, following Aragonés (2013), the buyer's personal characteristics, motivation, perception and perceived quality will be the individual's internal variables, which will be analyzed. So, in this paper the influence of external variables such as pull factors of a particular sport, type of sport event, where it takes place, social class or lifestyle of the individual, among others (Sirakaya & Woodside, 2005) will not be analyzed.

The buyer's personal characteristics have been analyzed in relation to consumer buying habits, and this is evident in studies such as those by San Martín, Barman, and Rodríguez (2006). Among the personal characteristics, variables such as origin, gender, age or education and training (Bryant & Cha, 1996; Gordon, Mckeage, & Fox, 1998; Homburg & Giering, 2001; Kolodinsky, Nam, Jinkook, & Drzewiczewski, 2001; Mägi, 2003; Mittal & Kamakura, 2001; Nicolau, 2011; Parker, 1971; Shemwell, Croning, & Bullard, 1994; Smart & Martin, 1993; Wu, 2002) are usually analyzed. The following hypotheses arise from these authors: **Hypothesis 1.** The

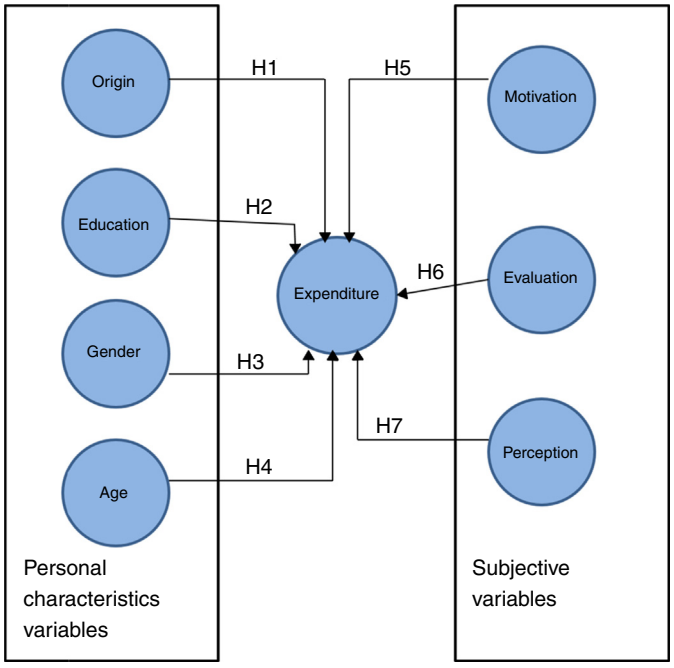

Fig. 1. Conceptual model. *Source*: *Authors' own data.*

origin of those attending sport events is related to the expenditure done during the sport event. **Hypothesis 2.** The education of those attending sport events is related to the expenditure done during the sport event. **Hypothesis 3.** The gender of attendees at sport events is related to the expenditure done during the sport event. **Hypothesis 4.** The age of attendees at sport events is related to the expenditure done during the sport event.

Studies such as those by Trail and James (2001) and Aragonés (2013), focused on the analysis of motivation, given its strong influence on the behavior of the tourist at sport events; while Yingzhi, Xiaoming, and Liu (2013) analyzed the influence of motivation on the impact factors related to sport events, adding economic benefit as one of the factors. As a result economic **Hypothesis 5** is originated. The reason for attendees coming to the sport event is related to the expenditure done during the sport event.

On the other hand, as suggested by Loureiro and Miranda (2010), concepts such as quality and satisfaction are subjective, since they are based on individuals' perceptions. Therefore among the selected variables, there is a difference established between those that are a consequence of the characteristics of attendees at events, and those variables that will be based on the perceptions of attendees at sport events. Among the studies that have focused on the analysis of the perception of quality and satisfaction of spectators of sport events, and from which arise the last two hypotheses proposed, those by Calabuig, Quintanilla, and Mundina (2008), Calabuig, Burillo, Crespo, Mundina, and Gallardo (2010), Moreno, Gómez, and Hervás (2010), Pérez (2010), Crespo, Pérez-Campos, and Mundina (2012), and Navarro-García, Reyes-García, and Acedo-González (2013) are worth noting. Therefore, we propose **Hypothesis 6.** The quality of the sport event evaluated by attendees is related to the expenditure done during the sport event, and finally **Hypothesis 7.** The perception that attendees have of sport events is related to the expenditure done during the sport event.

As previously stated, the aim of our research is to present a model to evaluate the influence of selected variables in this study (related to the model of consumer behavior) on the expenditure done by attendees at a sport event. Taking into account this objective and after conducting a study on the main variables that can affect the expenditure of those people who come to watch a sport event, a model is proposed. As shown in Fig. 1, seven variables are proposed in this model, four related to the personal characteristics of the buyer, and three variables of subjective nature, related to the perceptions of those people that attend a sport event.

As for the variables related to the personal characteristics of the buyer, and following Turco et al. (2003), we will analyze the influence of gender, age, income levels and origin. Income levels will be studied through indicators of work and education of the attendees. The origin variable will be analyzed through indicators of town of residence and distance to the city where the event is held. So the possibility that there may be non-resident individuals in the town of the event residing in nearby towns will be analyzed, so the distance will help us to relate among the non-residents those who spend the night and others who come to the town, attend the event and return home without major expenditures; in this way we will try to show the relationship of place of origin with expenditure, mainly related to housing and fuel.

Regarding the subjective variables, our model contains a variable related to the motivation to attend the event; a variable related to the evaluation of the perceived quality of the event; and a variable related to the perception of sport events. In relation to the evaluation of these variables, which are subjective in nature, we will focus on user perceptions about the service provided, as proposed by Cronin and Taylor (1992) by using specific measurement instruments that can be adapted better to the context in which the research is conducted as Reyes (2013) suggests.

Methodology

To test these hypotheses, we used a dual methodology: Descriptive Statistics and Multivariate Analysis. Descriptive statistics was used to sort out the information obtained through a series of questionnaires given to those attending the event. This is aimed at characterizing the sample through parameters that describe it and that allow for later interpretations. In this case, the tools used were SPSS (v.21) and Excel (2010). The multivariate analysis was based on the use of structural equation modeling (Structural Equations Models – SEM) using the technique of Partial Least Square based on the variance (PLS). In this case, the tool used was the SmartPls v. 2.0.M3 (Ringle, Wende, & Will, 2005).

Questionnaire design

With the aim of collecting sample data of the attendees at the sport event, a questionnaire structured into three sections was designed, the first one related to the personal characteristics of the attendees, the second one related to subjective perceptions related to motivation, quality and perception of the attendees, and the third one related to the expenditure of attendees during the event. More information on this is available in the Annex.

Sample

For data collection, personal interviews were conducted with the attendees at the sport event during the tournament days, obtaining 670 valid questionnaires. In Table 1 we present a profile of the sample.

Data analysis technique

The justification of the relevance of the analysis by Partial Least Squares – PLS – (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014; Sanz, Ruiz, & Aldás, 2008), finds reasons in the features which characterize the analysis of sport events, as well as in the fact that the aim of the research is focused on prediction, i.e. to explain the behavior of the dependent variable (Roldán & Sánchez-Franco,

Table 1
Attendees' profile.

Gender			*Age*		
Male	72.5%	486	Less than 25 years old	16.9%	113
Female	27.5%	184	Between 25 and 35	30.6%	205
			Between 35 and 45	30.4%	204
			Between 45 and 55	18.7%	125
			More than 55 years old	3.4%	23
Origin			*Resident*		
Cáceres	67.8%	454	Sí	52.5%	352
Badajoz	24.6%	165	No	47.5%	318
Others	7.6%	51			
Education			*Attends accompanied to the event*		
University	69.3%	464	Yes	90.4%	606
Non-university	30.7%	206	No	9.6%	64
Number of companions			*Number of relatives*		
None	1.3%	9	None	50.2%	336
One	28.5%	191	One	27.1%	182
Two	23.4%	157	Two	12.2%	82
Three	19.4%	130	Three	7.1%	47
Four	10.4%	70	Four	1.9%	13
Five	5.2%	35	More than five	1.5%	10
More than five	11.6%	78			
Total: 670 (100%)					

Source: Authors' own data.

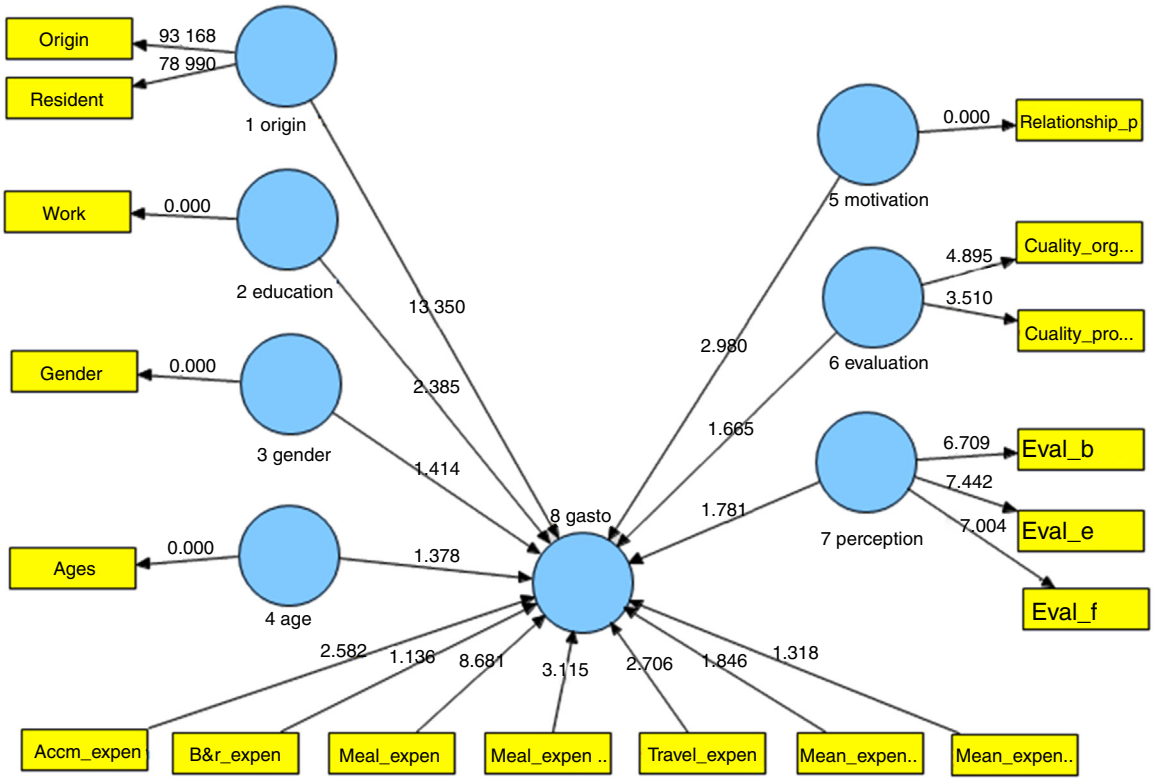

Fig. 2. Structural model with indicators. *Source: Authors' own data.*

2012)[2]. It is also an appropriate technique for very complex structural models (many constructs with many indicators), and the existence of formative and reflective indicators make this methodology adequate for our analysis.

Considering the above, Fig. 2 shows the structural model presented, where both the analyzed latent variables and their indicators can be observed.

Research results

Analysis of the measurement instrument

The model presented consists of variables whose indicators are of reflective nature, and also by another variable with formative indicators. Firstly, we perform the analysis on the validity and reliability of the measurement instruments of the reflective variables as indicated by Sanz et al. (2008) regarding the individual reliability of each construct. It is required that all Cronbach's α (Cronbach, 1951) be above 0.7 (Churchill, 1979; Nunnally &

[2] We appreciate the indication given by Dr. J.L. Roldán, of the "Universidad de Sevilla", in developing the methodological part.

Table 2
Evaluation reflective indicators.

CA	CR	AVE		Age	Education	Expenditure	Gender	Motivation	Perception	Origin	Evaluation
1.000	1.000	1.000	Age	1.000							
1.000	1.000	1.000	Eduction	0.465	1.000						
			Expenditure	0.047	0.126	N/A					
1.000	1.000	1.000	Gender	0.035	−0.083	−0.021	1.000				
1.000	1.000	1.000	Motivation	−0.115	−0.013	0.257	−0.104	1.000			
0.702	0.834	0.626	Perception	0.128	0.126	0.113	0.012	0.084	0.791		
0.818	0.917	0.846	Origin	−0.069	0.008	0.531	0.090	0.162	0.043	0.920	
0.741	0.870	0.771	Evaluation	−0.021	0.023	0.039	0.058	0.055	0.189	0.136	0.878

Source: Authors' own data.

Bernstein, 1994). Similarly the composite reliability was calculated, (Fornell & Larcker, 1981; Werts, Linn, & Jöreskog, 1974) whose values must be higher than 0.6 according to Bagozzi and Yi (1988). Other authors indicate that the values must be higher than 0.7 for early stages and 0.8 for basic research (Nunnally, 1978; Roldán & Sánchez-Franco, 2012). Following this, an analysis of convergent validity (significance and size of loads, AVE) through the average variance extracted, showing in this case values higher than 0.5 for each variable (Fornell & Larcker, 1981). The values of the indicator loadings are required to be higher than 0.7 (Hair et al., 2014).

To finish the evaluation of the measurement instruments of the reflective variables, discriminant validity through the cross-loadings of an indicator with all the latent variables was analyzed, and as stated by Fornell and Larcker (1981) and Sanz et al. (2008), in operational terms the AVE between each pair of factors with the square of the estimated correlation between those same factors should be compared. The data of these variables are shown in Table 2.

As well as the above, we perform the analysis on the validity and reliability of the measurement instruments of formative variables, which in our model is expenditure using the criteria of MacKenzie, Podsakoff, and Jarvis (2005); for this as indicated by Sanz et al. (2008) an analysis of co-linearity by using SPSS because SmartPls does not perform it by default was carried out. In this case, tolerance values greater than 0.2 are required (Hair, Ringle, & Sarstedt, 2011), and values less than 3.3 for the inflation factor of variance (Diamantopoulos & Siguaw, 2006) for the indicators. The results of the Co-linearity analysis are shown in Table 3. Finally, an analysis of the weight-load relationship of the indicator and its significance was performed (Hair et al., 2014).

Table 3
Co-linearity Analysis of the expenditure variable.

	Co-linearity statistics	
	Tolerance	FIV
Accommodation expenses	0.574	1.741
Bar and rest. expenses	0.365	2.740
Fuel expenses	0.492	2.032
Lunch-dinner expenses	0.308	3.251
Travel expenses	0.780	1.283
Average expenditure events	0.639	1.565
Average expenditure padel	0.358	2.792

Source: Authors' own data.

Analysis of the structural model

Firstly, an analysis of the significance of structural relationships through *Boostrapping* was performed, using 5000 subsamples (Hair et al., 2014) so that if they are significant, there will be empirical support to support the relationships contained in the hypotheses. Then the variance of the dependent latent variables was examined, in our case the expenditure, explained by the

Table 4
Evaluation of the structural model. Effect on the endogenous variable.

	R^2	Q^2	Original sample (O)	Correlation	Explained variance
Expenditure	0.337	0.125			
H1Origin → 8Expenditure			0.5135	0.531	27%
H2 Education → 8Expenditure			0.0887	0.126	1%
H3 Gender → 8Expenditure			−0.0419	−0.021	0%
H4 Age → 8Expenditure			0.0525	0.047	0%
H5 Motivation → 8Expenditure			0.1736	0.257	4%
H6 Evaluation → 8Expenditure			−0.0526	0.039	0%
H7 Perception → 8Expenditure			0.0689	0.113	1%

Source: Authors' own data.

Table 5
Structural model results.

	Original sample (O)	Lower	Upper	T statistics	Supported
1Origin → 8Expenditure	0.514	0.437	0.587	13.350	***
2Education → 8Expenditure	0.089	0.017	0.161	2.385	*
3Gender → 8Expenditure	−0.042	−0.109	−0.002	1.414	ns
4Age → 8Expenditure	0.053	0.003	0.142	1.379	ns
5Motivation → 8Expenditure	0.174	0.061	0.294	2.980	**
6Evaluation → 8Expenditure	−0.053	−0.122	−0.003	1.665	ns
7Perception → 8Expenditure	0.069	0.006	0.150	1.781	*

Source: Authors' own data.
* p (0.05).
** p (0.01);
*** p (0.001);
2-tailed Student T.

constructs that predict them (R^2). According to Falk and Miller (1992) the required value should not be less than 0.1, following Sanz et al. (2008) the interpretation of the minimum value clearly depends on the context of the research. Finally, the analysis of the predictive relevance of the model (Q^2) by *blindfolding*, requiring in this case positive values (Hair et al., 2014) was performed. The data of these variables are shown in Table 4.

The variance of the expenditure explained by the constructs that predict them (R^2) has a value of 0.337, higher than 0.1 (Falk & Miller, 1992), the result can be identified as moderate according to Chin (1998). Regarding the predictive relevance of the model for the endogenous latent variable, we observe a value (Q^2) of 0.125, so that, according to Hair et al. (2014), we can consider that the proposed model has predictive relevance. Table 4 shows the extent to which the predictor variables contribute to the explained variance of the expenditure variable.

With the empirical data obtained, the existence of relationship between the variables analyzed and expenditure is verified. Our work shows the significance between the relationships of the variables origin, education, motivation and perception on the latent variable expenditure of attendees; relationships contained in hypotheses 1, 2, 5 and 7. Hypotheses 3, 4 and 6 do not find empirical support in this research and are considered non-significant, concluding that gender, age of attendees does not have influence on expenditure, as well as the attendees' evaluation made of the sport event. The data obtained are shown in Table 5.

Discussion, conclusion and implications

As for the conclusions of this study, regarding the proposed model, we can highlight that a conceptual framework is provided to support research in the field of sport tourism; in particular one of the groups that affects the economic impact generated by sport events in cities, which are attendees at sport events.

The paper also provides a literature review regarding the variables and their impact on the field of sport events. This will enable to define them more accurately to advance research and segmentation of sport tourism. In addition to the above and meeting the objective of the research, some of the variables that can have an impact on expenditure by attendees at a sport event are shown.

Moreover, as a consequence of the literature review, we observed that the results obtained by measuring the economic impact in our study are similar to other research conducted on sport events with similar characteristics. We refer to those events with the attendance of national and international participants, however, its economic impact is very limited, being events which are characterized mainly for being unique and irregular (Barajas et al., 2012; Gratton, Dobson, & Shibli, 2000; Wilson, 2006). Although the purpose of this analysis is not to measure the economic impact, a Benefit/Cost ratio of 13.85 Euros (Jiménez-Naranjo, Coca-Pérez, Gutiérrez-Fernández, & Sánchez-Escobedo, 2015) was obtained and this value was 9.98 Euros for Hurtado et al. (2007), or 15.53 Euros for Barajas and Sánchez (2011).

Then the proposed model and the results concerning the reliability of the model and its predictive capacity are discussed, analyzing the contrast of hypothesis proposed. The results suggest that variables such as gender, age, and perceived quality by the attendee at the sport event do not affect his/her global expenditure in the host city; while other variables such as their origin, education, motivation or perception of the sport event do affect the global expenditure of spectators, highlighting the origin of the attendee among the variables that affect expenditure. In this regard, we should note that the results obtained can relate to those in other studies discussed in the literature review, highlighting Nicolau (2011), where the effect that movement to the leisure destination involves, as it implies higher costs is analyzed. This author notes the design of promotional campaigns aimed at a segment with appropriate characteristics; Sánchez, Barajas, and Alen (2013), who indicate the positive aspects of holding a sporting event to ensure a number of attendees for several days in the town, which involves a daily expenditure; or Navarro-García et al. (2013), authors who point out the importance for sport organizations as event managers, the perception of the event and the quality perceived by its users, being consistent with our analysis because the first variable influences the expenditure of users or attendees at the event and although the second variable does not affect this analysis, it should be related to the other variables, as we will point out for future research.

With all of the above, it can be concluded that the model developed will provide empirical evidence on the relationship of certain variables related to the model of consumer behavior on the expenditure of those attendees at a sport event, allowing us to advance the research of certain sport tourism activities, such as sport events. Therefore, this analysis will benefit the sector and provide a higher level of accuracy for policy and planning purposes. As for the implications for the management of such events, we consider that the identification of variables that influence the attendees' expenditure will enable managers to make decisions about programming those sport events that attract a greater number of attendees, which will generate resources in the locality. As for the theoretical implications, this study provides a conceptual model that will allow further analysis, besides the literature review shows the variables and their effects on expenditure in the field of sport events.

Despite the above mentioned, it should be noted that this analysis has a major limitation, which is that it is a novel study regarding the subject and methodological tool applied, so in some cases it has been difficult to obtain a bibliography suitable in which to base ourselves to build the model. The fact that we are in the early stages of development of scales, and in order to analyze the measurement instruments related with the variables, it was considered appropriate to use a methodology which subsequently enables the analysis of the relationships between variables, based on the contributions made through our research, which will allow to compare the structural models through the same methodology. Another limitation that is derived from the novelty of our study is the interpretation of the expenditure as a latent variable, which we justify that expenditure components may not be the same for each individual, so there may be unobservable factors affecting the amount spent (Urquieta-Salomón, Figueroa, & Hernández-Prado, 2008). The consideration of the expenditure as a formative latent variable enables us to rank the indicators that form it, which will give us relevant information for the management of sport events, as we will know which ones have more weight on that variable.

Consequently and finally, we would like to express the future lines of research in which we want to work in future publications. Firstly, we consider it appropriate to group the variables that correspond to consumer characteristics into a single multi-group variable that meets these characteristics, in order to form a profile of the attendee. Secondly, we want to relate the variables between each other, so that the influence of attendees' profile on motivation and perception of quality can be analyzed, without forgetting the expenditure as the dependent variable; following Uriel and Aldás (2005), and because dependency relationships between variables will be established. This analysis must be done through the same methodology that was used in this research, the use of structural equations, so that the structural models proposed can be compared. Thirdly, it would be suitable to analyze the influence that the incorporation of external variables could have on the model, using as a moderator variable the different types of sport events. And finally, we would like to apply the improved model to other sport events and other events, such as cultural events.

Annex. Conducted survey

A. Survey respondent´s information

1. Sex: ☐ Male ☐ Female 2. Age: ……. years old

3. Are you a resident in the city? ☐ Yes ☐ No

4. Origin (locality and province)……

5. Approx. distance in Km: ……

6. Education level: ☐ University ☐ Non-university

7. Work: ☐ Public Administration ☐ Housewife
☐ Unemployed ☐ Self-employed
☐ Student ☐ Employee

8. Relationship with participant/s: ☐ None ☐ Family ☐ Friendship

9. Has the main reason for staying in Cáceres been to attend the event?: ☐ Yes ☐ No

10. Are you attending it accompanied?: ☐ Yes ☐ No

11. If yes, specify the number of people…….. and how many of them are relatives: ……..

B. Opinion about world padel tour event

12. Rate from 1-5 (1 = lowest score, 5 = highest score) the quality of different aspects concerning the event held in Cáceres.

a) Sports facilities…… b) Program…….. c) Organization……

13. Tick the box giving your opinion about the following statements regarding the impact of the event in Cáceres

Concept	Totally disagree	Disagree	Indifferent	Agree	Totally agree
It increases recognition and promotion					
It represent an element of pride and satisfaction					
It generates a traffic and security problem					
It alters the normal rhythm and harms other activities					
It causes an increase in tourism during and after the event					
Increase in employment					
It involves economic loss as the investment is higher than the profits obtained					
Economic advantages are concentrated in a few enterprises and people					
Public expenditure is necessary for holding these types of events					

14. What score would you give the event as a whole? Rate from 1-5 (1 = lowest score, 5 = highest score): ……..

C. Estimate of expenditure during the world padel tour in cáceres

15. Tickets: ☐ Daily ☐ Season ☐ Complimentary Total expenditure: ……€

16. Accommodation: Are you going to stay overnight in the city? ☐ Yes ☐ No

17. In the case that the previous answer is affirmative, how many nights are you going to spend? …….. nights

18. What type of accommodation have you chosen?

a) Hotel (indicate category)……

b) Hostel

c) Rural house

d) Guesthouse

e) Parador

f) Others (indicate which)…….

19. Could you specify how much you have approximately spent in Cáceres on the following concepts (tick the box)?

Concept	0 €	1-30 €	30-60 €	60-90 €	90-120 €	120-150 €	Over 150 €
Accommodation							
Lunch/dinner							
Transport (taxi, bus…)							
Press							
Bars and restaurants							
Clothes							
Souvenirs							
Fuel							
Museums/sightseeing							
Sporting material							
Others (specify):							

20. What means of transport did you use to come to the World Padel Tour? You can tick several options

☐ Own vehicle ☐ In a friend/relative´s car ☐ Coach

☐ Train ☐ Provided by the organization ☐ Aeroplane

21. How much did you spend on this means of transport (return)? ……..……€

22. What is the average expenditure you have on these types of events? ……€

23. And on this one in particular, how much do you estimate you will spend?..……€

24. How much would you prepared to pay for the World Padel Tour to be held in Cáceres again? ……€

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Article

Statistical and cognitive optimization of experimental designs in conjoint analysis

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ABSTRACT

Conjoint analysis has become the most used technique for measuring preferences for new products to be launched in the market. Experimental design models are key elements for its use in market research. Such models involve a matrix in which attributes and levels are combined, making product concepts that respondents then evaluate.

Experimental design has emerged as a key element in conjoint analysis' success because its application generates statistical and reliability implications for part-worth factor estimations and for the type of heuristics followed by respondents.

This paper proposes a conceptualization of both statistical and cognitive efficiency criteria for experimental designs. A review of the most used statistical optimization criteria is presented, as well as a methodology for optimizing cognitive efficiency. Finally, we suggest a dynamic algorithm for optimizing the objective function in a sequential manner.

Introduction

Conjoint analysis (CA) has been one of the most successful market research techniques in the last 40 years and one of the reasons that explains this is the continuous interaction between academic theory and professional implementation (Bradlow, 2005; Green, Krieger, & Wind, 2001). Its success is not only due to the technical upgrade linked to its application in studies on consumer preferences among products with multiple attributes, but also to its versatility, which has permitted its application in diverse fields such as marketing, transport management, financial services (Green et al., 2001), and even oncological studies (Beusterien et al., 2014).

Although the statistical foundations of experimental design were developed throughout the 1920s by Ronald Fisher, it was not until the 1970s that researchers began to use it in psychology and, soon after, in consumer behaviour and market research studies (Gustafsson, Herrmann, & Huber, 2007). However, despite the numerous investigations in which CA has been used (e.g. when someone introduces the term 'conjoint analysis' in the 'Web of Science' there are more than 3000 references) and the amount of methodological innovations that have been proposed, such as adaptive conjoint analysis (Johnson, 1987) or polyhedral designs (Toubia, Simester, Hauser, & Dahan, 2003), there are some issues in conjoint experimental designs that remain unresolved. These include the criteria for choosing the number of attributes and the reasons for using an experimental design and no other (Bradlow, 2005).[1]

This paper attempts to deepen the analysis of these two problems from a dual perspective: firstly, through the consideration of an efficient statistical solution and, secondly, taking into account the cognitive burden of these designs and its effect on responses. The literature proposes different criteria and ways to qualify an experimental design as efficient and each criterion determines the type of design recommended and the type of analysis to be used on the data gathered. Although different methods have different structures and philosophies, they nevertheless share some common elements: firstly, they all use the statistical design of experiments to develop the experimental design and, secondly, they all consider a compensatory model of consumer behaviour that, moreover, considers this behaviour as independent of the experimental design (Johnson & Meyer, 1984). Although the first common element

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[1] Although Bradlow (2005) points out nine problems in the use of conjoint analysis, in this study we have focused our analysis on two of them.

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in experimental design appears to remain valid, the second has received numerous criticisms (Olshavsky, 1979; Payne, Bettman, & Johnson, 1988). In this paper, we review the most common criteria used to determine experimental design efficiency, as well as their advantages and disadvantages, and, in addition, we propose a methodology to estimate the cognitive efficiency of experimental designs.

The study is arranged in the following sections. Firstly, we present some of the most important concepts of experimental design in CA. Secondly, we describe the most common methods for determining statistical efficiency in experimental designs. We then propose a system for evaluating the cognitive efficiency of experimental designs, which is illustrated with an example. Finally, some conclusions and possibilities for further research are presented.

Experimental design in conjoint analysis

Experimental design is a numerical arrangement that combines attributes and levels to form stimuli (concepts of products or services), which later, in field work, must be evaluated by respondents. There are several ways of organizing stimuli, with full factorial designs being the easiest because they simply require presenting all possible level and factor combinations.

Experimental design is represented by an $n \times k$ matrix, where n are rows indicating the profiles generated and k are columns indicating the level variations of the attributes. If you use combinatory laws in the design, it is called a statistical design (Box, Hunter, & Hunter, 2005). However, statistical designs pose a major problem since as new attributes are added to the experimental design (even if they have only 2 or 3 levels), the number of combinations grows exponentially. For example, a statistical design in which there are 4 attributes with 3 levels each generates an experimental design of 81 profiles ($3^4 = 81$). Such a number of alternatives can overwhelm the cognitive ability of any interviewee (Green & Srinivasan, 1990). For this reason, researchers use fractional factorial designs, which are simply portions of a full factorial design. This reduces the number of alternatives that each interviewee has to assess, but researchers must pay the price of sacrificing the ability to estimate certain interactions. A price which, in some cases, could be very high, as for example in the research of new products associated with the sensory perceptions of respondents (haircare and cosmetic products) where two-factor interactions are very important (Green & Srinivasan, 1990).

Therefore, it has been shown that CA works quite well when a moderate number of attributes is considered for each profile within the experimental design, for example, less than 8 (Bradlow, 2005). But when the number of attributes is high, for example, more than 15, respondents' cognitive capacity is overwhelmed and they use non-compensatory heuristics to choose profiles (Hauser, 2014; Johnson & Meyer, 1984). However, many technological products, such as laptops, digital cameras, and even cars or tourist services, use a large amount of attributes in their advertising to differentiate themselves from competitors (Bradlow, 2005; Netzer & Srinivasan, 2011).

In order to address this problem, several solutions have been proposed, in some cases hybrid solutions using a combination of techniques in a single study. For example, this is the case in the use of adaptive conjoint analysis (Johnson, 1987) or, more recently, adaptive self-explicated approaches (Netzer & Srinivasan, 2011). These methods follow two stages: in the first stage, respondents must complete a self-explicated survey (compositional study) where different attributes and levels are measured with the aim of reducing their number to the most relevant and, in the second stage, there is a conjoint experiment (decompositional study) to estimate the part-worth of the factors.

Now, for any of these experimental designs to generate valid and reliable data they must follow two basic principles: orthogonality and balance (Chrzan & Orme, 2000). An experimental design is orthogonal if all main effects and interactions can be calculated as independent variables (i.e. without correlation between them), and it is balanced when each level of each factor is repeated the same number of times in the overall experiment. When an experimental design is orthogonal and balanced at the same time, it is said that it is optimal (Kuhfeld, Tobias, & Garrat, 1994). However, when an experimental design is formed by factors with different ranges of levels (i.e. factors have 2, 3, 4, or 5 levels combined in the same design), it is very difficult to make fractions that are both orthogonal and balanced. Therefore, there is no other option than to use quasi-orthogonal designs (Kuhfeld, 1997) and, in this case, it is necessary to have some measure of their efficiency.

Criteria of efficiency

In recent years, the literature has shown great concern around finding and developing efficient statistical designs (Vermeulen, Goos, & Vandebroek, 2008). A design is considered efficient when it gets the most and best information possible with the least number of interviewees and with the shortest time dedicated to field work (Louviere, Islam, Wasi, Street, & Burgess, 2008). However, knowing the researcher's objectives and assumptions is a prerequisite for trying to achieve efficiency in an experimental design. That is, whether the researcher considers interactions between factors or not, and the extent of these interactions, or, if they take into account the type of protocol used to gather information; i.e. if she or he uses verbal descriptions, images, or combinations of both. This means that the same experimental design can be efficient with regard to one criterion but not another. But the literature that discusses design efficiency only considers statistical efficiency (Kuhfeld et al., 1994; Vermeulen et al., 2008).

Kiefer (1959) was the first to propose the statistical efficiency concept as an instrument to compare and evaluate experimental designs and he described it using the so-called 'theory of optimal design'. The idea was to try to gather all of a statistical design's goodness-of-fit in a figure, i.e. to transform design variance and covariance into a number, facilitating the comparison of various experimental designs and choosing the design that minimizes or maximizes that number. In addition, there are some criteria that depend on the objectives pursued by each researcher. For example, the researcher might only be interested in the estimation of main factors or she might also be interested in two-factor interactions, and in each case she must use different criteria to optimize the design.

The different criteria are represented by letters following alphabetical order, among the most cited are criteria A and D (Kuhfeld et al., 1994; Vermeulen et al., 2008) and, moreover, they are also the most used by the software packages (Kuhfeld, 1997; Myers, Montgomery, & Anderson-Cook, 2009). However, although the enormous virtues offered by computer-generated designs are recognized, especially because they are easy to get, there are some authors who criticize how they are used indiscriminately and without taking into account the criteria behind the design or, therefore, the type of adjustment that can be achieved with the design obtained (Myers et al., 2009). Thus, knowing the basic characteristics of these designs can help researchers to select one criterion or another depending on the main purpose of the research and bearing in mind the limitations that each criterion entails.

The optimization criteria are based on the moment matrix. To illustrate its operation, we assume that a conjoint experiment was carried out, it was coded following a vectorial form, and in it respondents rated each profile from 1 to 10. In addition, it was assumed

that these scores reflected respondents' preferences in a linear model of part-worth attributes (Johnson & Meyer, 1984). In this case, the easiest way to estimate the part-worth of factors is to adjust them by linear regression, where the dependent variable μ_j gathers the scores assigned to each profile for $j = \{1, \ldots, n\}$:

$$\mu_j = \beta_0 + \sum_{i=1}^{q} \beta_i x_{ij} + \varepsilon_j, \quad (1)$$

where x_{ij} are experimental design combinations, β_i are part-worth estimates representing factor slopes, and ε_j is the error. In matrix notation, it can be expressed as $\boldsymbol{\mu} = \alpha + \beta\mathbf{X} + \mathbf{e}$, $\mathbf{X}$ being the experimental design matrix coded in vector form (−1, 0, 1). Efficiency criteria are based on the so-called moment matrix $\mathbf{M}$, which is defined as:

$$\mathbf{M} = \frac{\mathbf{X}'\mathbf{X}}{N}, \quad (2)$$

where $\mathbf{X}'\mathbf{X}$ is the product of the transposed matrix multiplied by the normal matrix from the experimental design and N is the number of profiles.

The A-optimal criterion only considers variance as a relevant element for defining efficiency. This criterion consists of calculating the sum of variances of the model parameters and it is the same as the sum of diagonal parameters, or the trace, of $(\mathbf{X}'\mathbf{X})^{-1}$. This means that the A-optimal criterion prioritizes main factor estimations without taking into account interactions that are reflected in covariance. Therefore, the optimization criterion consists of choosing the experimental design that minimizes the trace of the inverse moment matrix and it will be defined by:

$$\min_{\zeta} tra[\mathbf{M}(\zeta)]^{-1}, \quad (3)$$

where *tra* represents the trace of the moment matrix, i.e. the sum of coefficient variance, and ζ represents the design used.

The other most used criterion is the D-optimal criterion (Toubia & Hauser, 2007; Vermeulen et al., 2008). This also seeks to find the experimental design that improves parameter estimation, but in this case, besides the main factors, it also includes interactions. This criterion requires calculating the determinant of the moment matrix:

$$|\mathbf{M}| = \frac{|\mathbf{X}'\mathbf{X}|}{N^p}, \quad (4)$$

where p is the number of model parameters (which can be main factors, two-factor interactions, three-factor interactions, etc.) and N is the number of profiles analysed. If we assume that errors follow a normal distribution, independent and with constant variance, the determinant of the moment matrix $(\mathbf{X}'\mathbf{X})$ is inversely proportional to the confidence intervals of coefficients in the regression model, and this reflects how well these coefficients are estimated. In this case, a small value in $|\mathbf{X}'\mathbf{X}|$ implies a poor estimate of β (Myers et al., 2009). Thus, a design is D-optimal if it minimizes the determinant of the moment matrix (4), which is the same as the inverse of the determinant of the variance and covariance matrix:

$$(\mathbf{X}'\mathbf{X}) = \frac{1}{|(\mathbf{X}'\mathbf{X})^{-1}|}, \quad (5)$$

Therefore, the aim of the D-optimal criterion is to establish which experimental design minimizes both variance and covariance. Furthermore, due to the fact that this criterion uses the power p (number of parameters to be estimated) in the calculation of the determinant of the moment matrix, it allows for use of the D-optimal efficiency criterion to compare experimental designs of different sizes.

In short, whether we use A-optimal or D-optimal criteria, if we have a balanced and orthogonal experimental design its efficiency will be optimal for both, and when we analyse quasi-orthogonal designs they will be more efficient as they tend towards balance and orthogonality. These criteria measure the design's goodness-of-fit in relation to a hypothetical orthogonal design, which it is not possible to use for multiple reasons. However, these measures should not be considered as absolute measures of design efficiency, but as relative tools to compare one design with another. An efficient design must fulfil the following requirements (Kuhfeld, 1997):

- A design is orthogonal and balanced when the moment matrix $\mathbf{M}$ is diagonal.
- A design is orthogonal when the sub-matrix $\mathbf{M}$, excluding the row and column for the intercept variable, that is to say α, is diagonal.
- A design is balanced when all off-diagonal elements, all row and column interceptions, are zero.
- A design's efficiency increases as diagonal absolute values become smaller, that is to say, as N^p becomes larger.

If a full factorial design is orthogonal and balanced (i.e. the moment matrix $\mathbf{M}$ is diagonal), it is possible to use the A-optimal or D-optimal criteria indifferently. However, if the design is fractional factorial will be some off-diagonal values, it must be the researcher who decides if she is interested only in main factor estimations, thus using the A-optimal criterion, or if she is also interested in two-factor interactions, in which case the best approach would be to use the D-optimal criterion.

The goal pursued by Kiefer (1959) of reducing the statistical goodness-of-fit of an experimental design to a single number has been criticized as overly ambitious and, therefore, these criteria should be considered as one of many other relevant aspects, but not as a definitive measure (Myers et al., 2009). On the other hand, CA literature has also criticized that accepting these criteria as valid involves the assumption that respondents value profiles using an algebraic utility function, where the assessment of each profile is based exclusively on the observed attributes, and that their assessment is independent of the number of profiles to be evaluated (Johnson & Meyer, 1984). In the same vein, but in choice-based conjoint analysis, Louviere (2001) warns that the use of increasingly efficient designs can generate unintended consequences in respondents' answers due to their cognitive limitations, and they may therefore use heuristics other than the compensatory model during their selection process (Hauser, 2014).

In short, a statistically efficient experimental design does not guarantee the responses' reliability or good predictive capability, since these will depend on the effort and sincerity of interviewees' answers. CA is also used by academic researchers and market researchers who highly value the predictive capability of the models obtained. On the other hand, if the data gathered are not accurate, they can lead to misdiagnoses and, thus, to erroneous advice about management policies (Salisbury & Feinberg, 2010). Therefore, when an experimental design is developed we should not only take into account its statistical efficiency, but should also incorporate some criteria to measure its cognitive efficiency.

Determinants of cognitive effort in experimental designs

A common issue in CA literature is understanding how experimental designs determine the cognitive effort that respondents have to make and how their effort affects response reliability and its predictive capability. In particular, from a cognitive perspective, what would be the optimum size of a choice set?

Different theoretical approaches have proposed different behavioural models depending on their theoretical axioms. For

example, economic theory considers that if a consumer has a large number of profiles to choose from, this large choice set improves her likelihood of finding a profile with level-factor combinations that better fit her preferences (Lancaster, 1990). However, this rational model has been criticized from the perspective of other theoretical frameworks. Johnson and Meyer (1984) advocate the opposite: that it is better to maintain choice sets with a small number of profiles because a larger amount would have negative statistical and cognitive effects (see also DeShazo & Fermo, 2002; Louviere et al., 2008). From the statistical point of view, having many attributes (whether profiles or levels) in a choice set reduces the amount of data available for each attribute, undermining their weight and the accuracy of estimates (DeShazo & Fermo, 2002). In fact, as noted above, Bradlow (2005) considers that CA works relatively well with around 8 attributes per profile and that problems begin to be generated from 15 attributes and beyond.

Regarding cognitive effects, information processing theory considers that people have limited rational capacity and that when they face a decision-making process, the greater the number of alternatives, the greater the difficulty in processing, calculating, and storing all the information generated throughout the process (Simon, 1990). According to Johnson and Meyer (1984), the complexity of a choice is determined by the number of cognitive steps that each respondent has to take to carry out an evaluation and make the appropriate decision, comparing all of the alternatives. For example, if a consumer compares two photographic cameras defined by two attributes (one has 'the capacity to take 300 pictures' and one is 'pocket-size') the respondent has to make at least three assessments or 'cognitive steps' in Johnson and Meyer's terms: (1) assess if 'the capacity to take 300 pictures' is a good attribute; (2) evaluate if 'pocket-size' is also a good attribute; and (3) compare the two attributes and decide which one is best; as the number of attributes increases, the number of assessments and 'cognitive steps' also increases. Because the respondent comes to have difficulties in her evaluation of attributes one by one, she begins to use an alternative criterion of simplified heuristics such as the lexicographic heuristic or elimination by aspect (Hauser, 2014; Payne, 1982). As a result of using inconsistent responses and of not using the compensatory model, the linear model estimates will generate a poor fit (Payne et al., 1988).

A proposal to optimize cognitive effort in experimental designs

In this study, we make use of the cognitive complexity concept proposed by Johnson and Meyer (1984) and we also use the information acquisition cost function proposed by Grether and Wilde (1984). Both criteria where considered for optimizing an experimental design taking into account all steps taken by a respondent in making the appropriate decision. To achieve this optimum it is necessary to determine the number of profiles, factors, and levels that minimize the cost of the whole assessment process of a choice set.

One useful criterion for estimating the cost of cognitive effort has been the time spent on making a decision (Dellaert, Donkers, & Soest, 2012; Grether & Wilde, 1984; Johnson & Meyer, 1984). The time spent on a decision remains a recurring issue both in consumer behaviour studies (East, Wright, & Vanhuele, 2013) and in experimental design studies (Louviere et al., 2008). For example, in a classic experiment, East (1973) showed that respondents needed more time to choose between two alternatives than between three when the choice task was difficult and less time when the choice task was easier. This means that choosing between a larger number of profiles does not always require more time than choosing between a smaller number. However, time is a variable that is very closely related to effort (Grether & Wilde, 1984).

Besides, it is also important to consider the time taken to complete the questionnaire, because this can have negative consequences on respondents' behaviour: the longer the time required to do the interview, the lower the willingness to participate and the greater the chance of it being left unfinished (Netzer & Srinivasan, 2011; Scholz, Meissnery, & Decker, 2010). It is clear that as the experimental design's complexity increases (the choice set changes from 2 to 4 and then to 6 cameras), so does its duration (Grether & Wilde, 1984). In the formation of the cognitive complexity of an experimental design three variables are involved: the number of scenarios, the number of attributes, and the number of levels. In most cases, these three variables can have different weights during the time required to fill in the questionnaire (Johnson & Meyer, 1984).

Every factorial design, whether fractional or arranged in blocks, draws from a full factorial design. If we define the subset of profiles that form the choice set as S_r, $r = 1, \ldots, q$, the number of factors of each profile as C_i, $i = 1, \ldots, n$, and the number of levels of each factor *as* W_j, $j = 1, \ldots, m$, the number of Johnson and Meyer's cognitive steps would be determined by $S_r \Pi W_j$, Π being the product from j to q levels. Since time is related to effort (Grether & Wilde, 1984), the time required to evaluate the choice set will depend on the number of cognitive steps. Moreover, in the case that all the factors have the same number of levels, the time taken can be expressed as a function of the three elements: time $= f(W_j, C_i, S_r) = W_j \times C_i \times S_r$. Nevertheless, if we apply logarithmic transformation the model becomes additive:

$$T_j = \sum_{p=1}^{P} \beta_p y_{jp} \tag{6}$$

where T_j is the Napierian logarithm of time, β_p is the part-worth of variable p, indicating the slope, and y_{jp} is the Napierian logarithm of the three independent variables.

Given the diversity of subjects and ways to present profiles to respondents (described by text, by paragraphs, by pictures, etc.) and the variety of contexts in which the research can be based (Payne, 1982), it is reasonable to think that a way to estimate the weight each item has in the experiment's duration is by trial and error, because the models estimated in one context can hardly be appropriate in another context (Johnson & Meyer, 1984). In the present study, we follow this logic and we propose response surface methodology (RSM) as an algorithm to optimize the cognitive effort in an experimental design.

RSM is a statistical technique used in the development, improvement, and optimization of industrial processes and it has recently been incorporated into market research studies (Huertas-Garcia, Gázquez-Abad, Martinez-Lopez, & Esteban-Millat, 2013). The methodology was proposed in the early 1950s by Box and Wilson (1951), who justified its use on the basis of the need for efficient experimental procedures that were able to determine the operating conditions of a set of controllable variables. It was considered as a methodology with which an optimal response could be achieved (Box & Draper, 1987). However, it was not developed until the 1970s when some statistical restrictions were overcome and the use of software packages for calculation became widespread (Myers et al., 2009).

RSM is an experimental process that involves sequential stages in which the information obtained in the first stage serves for planning and executing the following stages (Raghavarao, Wiley, & Chitturi, 2011). Nowadays, with the development of market research on the Internet, these sequential models are particularly suitable because they allow for programming questions based on previous answers and, also, can be tailored in real time (Netzer & Srinivasan, 2011; Scholz et al., 2010). The experimental sequence of RSM consists of several stages, beginning with a first-order model

Table 1
Codification of factorial design 2^3.

	Variables	−1	0	+1
1	Profiles	6	8	10
2	Attributes	4	6	8
3	Levels	2	3	4

(i.e. a flat representation) to delimit the slope toward the optimal region and, next, further experiments are developed until reaching the optimum. The algorithm can be summarized in the following five steps (Myers et al., 2009):

1. A first exploratory experimental design of an orthogonal type is proposed and is fitted with a first-order model. For this, two-level vector encoding including a centre point is recommended.
2. Steps are calculated using the first stage's estimated values and 'the fastest route to the minimum' is delimited.
3. Several experiments are carried out throughout the process, noting that the response values decrease, until reaching a point where they begin to grow again; that is, until reaching a turning point.
4. In the case that greater precision were required, the turning point is taken as the basis for developing new experiments to better fit the trend. The adjustment model may continue to be a first-order model.
5. However, if it is noticed that the curvature degree is high, using a second-order model is recommended.

The procedure is designed to achieve independent variable combinations that allow for obtaining highly accurate optimum response values. However, market studies usually do not require such extreme degrees of accuracy given the subjective nature of responses and, therefore, with few experiments it is possible to achieve reasonably accurate approximations to the optimum.

Experiment

The experiment was inspired by the work of Netzer and Srinivasan (2011), who propose the assessment of digital camera profiles (Table 1 shows the attributes and levels considered), although they use a completely different methodology to ours. While they rely on an adaptive self-explicated model for measuring part-worth attributes (a compositional model), in our case we propose the RSM algorithm (a type of decompositional model). In order to arrange the experimental design we departed from a fractional factorial design, specifically from a half factorial design (as can be seen in the first four columns of Table 2). This experimental design has enough variations of profiles, attributes, and levels to contribute to a significant estimation of the factors' part-worth using, as a response variable, the time taken by respondents to assess the camera choice set (Table 3).

In the experiment, we considered three-factor combinations according to the experimental design to gather data from respondents' time spent on making their assessments. In addition, we also manipulated all three factors (profiles, attributes, and levels) around their mean value. These items of information were taken

Table 2
Attributes and levels of digital cameras.

Attributes	Levels
1. Brand	Canon, Nikon, Olympus, Sony
2. Battery life	150, 300, 450, 600 photographs
3. Internal memory	8 MB, 16 MB, 32 MB, 64 MB
4. LCD Size	3.81 cm, 5.08 cm, 6.35 cm, 7.62 cm
5. Optical zoom	2×, 3×, 4×, 5×
6. Price	€500, €400, €300, €200
7. Resolution	2, 3, 4, 5 megapixels
8. Warranty	6 months, 1, 2 or 3 years

Source: Adapted from Netzer and Srinivasan (2011).

from the work of Netzer and Srinivasan (2011), in which the average number of profiles was 8, for attributes it was 6, and for levels it was 3. This sets a 2^3 factorial experiment around the average point, that is, nine experiments (8 derived from the factorial design plus the central point), and all of them are encoded in vector form (the coding arrangement of the three factors is shown in Table 1). However, due to resource constraints, we have estimated a half factorial design, 2^{3-1} plus the centre point, i.e. 5 profiles. The literature recommends thinking about this first result as the point of origin, 'as a confirmation test, to ensure that conditions experienced during the original experiment have not changed' (Myers et al., 2009, p. 186) (Table 2).

In order to gather data, a sample of 250 undergraduate students from a large university in Barcelona was used, it was randomly divided into 5 groups and 234 valid questionnaires were obtained (45–48 per group). Each respondent was invited to a computer room and, following researchers' instructions, evaluated a set of digital camera profiles, to which attributes and levels were assigned following the experimental design in Table 2. At the begin of this exercise, respondents had to indicate the exact time registered on the computer clock, then make their assessment of the choice set of digital cameras using a rating score of 1–10 (1 being the least preferred and 10 the most preferred), after their evaluation they had to indicate, once again, the exact time on the questionnaire, and, finally, fill in some identification information and other control questions. Among the control questions, one asked respondents their assessment of the study and another was related to what they thought the objective of the study was. In order to arrange all the different choice set scenarios, which ranged from 6 to 10 profiles, the SPSS orthogonal design generator was used. The study was carried out between February and March 2014. No respondents thought that the study's objective was to measure the time taken; all of them thought it was for measuring their preferences in the digital camera set.

As a dependent or response variable, we used the stated time taken to perform the assessment of the digital camera choice set. To make the calculation easier, the time measured in 60 s was transformed into 100 s, we then calculated the average time of each group, measured in centesimal seconds. Next, this was converted into its natural logarithm and, finally, to calculate the part-worth values the table of contrast coefficients was used. This is a very simple method for estimating the slope of the main factors, given that when the vectorial coding system used with independent variables (a combination of −1 and 1) is transformed into the moment matrix

Table 3
Experiment results.

Experiment number	Profiles	Attributes	Levels	Mean time (in centesimal seconds)	Standard deviation
2	1	−1	−1	150.378629	50.6857802
3	−1	1	−1	138.75024	50.5166211
5	−1	−1	1	58.4159032	32.3333863
8	1	1	1	362.383978	97.5260192
9	0	0	0	157.857452	49.5892357

Table 4
Contrast coefficients calculation table.

Experiment number	Constant	Profiles	Attributes	Levels	Nap-log mean time
2	5.01315631	5.01315631	−5.01315631	−5.01315631	5.01315631
3	4.93288265	−4.93288265	4.93288265	−4.93288265	4.93288265
5	4.06758817	−4.06758817	−4.06758817	4.06758817	4.06758817
8	5.89270436	5.89270436	5.89270436	5.89270436	5.89270436
9	0	0	0	0	5.06169242
Sum	19.9063315	1.90538985	1.74484254	0.01425357	
Divisor	4	4	4	4	
Average	4.97658287	0.47634746	0.43621063	0.00356339	
Standard error	0.03442457	0.06884913	0.06884913	0.06884913	

it becomes an identity matrix and, therefore, the regression model to fit is simply $y = \mathbf{Xb}$. In other words, the coding matrix is multiplied by the vector of results to obtain a finding matrix, then, by adding the values of each column and dividing them by the number of positive and negative coded levels, it is possible to obtain the part-worth values as though adjusted by OLS (Table 4 illustrates the calculations). In order to calculate the standard error, we followed the process of estimating the average variance proposed by Box et al. (2005).

The first-order model derived from the experiment is as follows:

$$\hat{T}_j = 4.976 + 0.476y_1 + 0.436y_2 + 0.003y_3 \quad (7)$$

where T_j is the Napierian logarithm of average time spent on the assessment process, y_1 is the number of profiles, y_2 is the number of attributes, and y_3 is the number of levels. As we can see in Table 4, only the number of profiles and the number of attributes have a significant impact on the time used for assessment and both have a similar weight ($\beta_1 = 0.476$ and $\beta_2 = 0.436$), while the number of levels does not seem to have any effect on the amount of time used by respondents.

Once the model has been fitted and the weight of the main factors has been estimated (7), we need to set the path to achieve the minimum value of T_j. To calculate the path to reach the minimum we followed the algorithm proposed by Myers et al. (2009):

In the first stage, we need to estimate the length of the steps that will be taken to reach the minimum; usually the length of the step is 1, say Δx_i. This length is assigned to the independent variable whose part-worth is the highest in absolute value, in our case it is ($\beta_1 = 0.476$).

We then estimate the length of the other variables' steps, whose relative longitude will depend on the weight of each factor, following this function:

$$\Delta x_j = \frac{\beta_j}{\beta_i / \Delta x_i}, \quad j = 1, 2, \ldots, k, i \neq j \quad (8)$$

$$\Delta x_2 = \frac{0.436}{0.476} = 0.915$$

$$\Delta x_3 = \frac{0.003}{0.476} = 0.007$$

Finally, coded variables are transformed into their normal values. Each part-worth measures the slope degree that represents a change from 0 to 1 in the rating scale. For example, β_1 represents the change from 0 to 1 that meant a change from 8 to 10 profiles, i.e. an increase of 2 profiles. In the case of β_2, the slope represents the change from 6 to 8 attributes, i.e. an increase of 2 attributes, and, finally, β_3 represents the change from 3 to 4 levels, this time with an increase of 1 level. As defined above, the step length for the main important factor (number of profiles) is 1, and this step generated an increase of 0.476 in the amount of time, which corresponds to a change in two profiles. For the other independent variables, the length of their steps is proportional to the values resulting from Eq. (3), as shown in Table 5.

In many cases, it is possible to find a good approximation to the optimum simply with the first simulation. Particularly in the case when all values are discrete levels, as in this study. As shown in Table 5, with the 'base – 2 steps', the simulation table finds a good approximation to the optimal solution. This is obtained with the combination of 4 profiles with 2 attributes each and 3 levels per attribute, and to complete this assessment respondents take 25.15 centesimal seconds ($e^{3.22} = 25.15$). In the following simulation, the 'base – 3 steps', the model suggests an impossible solution because in the combination of profiles, attributes, and levels it considers less than one attribute in the choice set. However, if instead of working with discrete values we were working with continuous values, it could be possible to obtain greater accuracy, simply by developing new experiments around the last point estimated. It could also be possible to use a second-order equation to fit the model, trying to cover the degree of curvature that is usually near the optimum.

In short, developing an experimental design to carry out CA research is not an easy task as it must fulfil two contradictory objectives: firstly, achieve statistical efficiency, helping to improve the parameters' estimation, and, secondly, ensure effective and trusted answers from respondents taking into account their limited cognitive capability. With these arguments, using software for generating experimental designs is not a panacea, because the type of protocol used to collect data and the context in which the experiment is developed determine the behavioural pattern followed by consumers in evaluating profiles (Johnson & Meyer, 1984; Payne, 1982; Payne et al., 1988). Therefore, according to the advice of Kuhfeld et al. (1994), the best strategy for building an

Table 5
Simulation process of RSM algorithm.

	Coding variables			Natural variables			Nap-log time*
	Profiles	Attributes	Levels	Profiles	Attributes	Levels	
Base	0	0	0	8	6	3	5.06169242
Step length	1	0.91574044	0.00748066	2	1.83148088	0.00748066	
Base – 1 step	−1	−0.91574044	−0.00748066	6	4.16851912	2.99251934	4.10075303
Base – 2 steps	−2	−1.83148088	−0.01496132	4	2.33703824	2.98503868	3.2249232
Base – 3 steps	−3	−2.74722132	−0.02244198	2	0.50555737	2.97755802	2.34909336

* Values estimated from Eq. (2).

experimental design is to combine computer tools, which provide designs quickly and easily, with the researcher's insight to select the most appropriate design option for the context of the study.

Conclusions

CA has been one of the most common market research techniques used by researchers and practitioners to measure consumer preferences for more than four decades. This technique emerged to overcome some shortcomings in the use of self-explicated questionnaires, which had been criticized for being vague and unrealistic (Hauser & Rao, 2004; Sattler & Hensel-Börner, 2007). To implement CA, a fundamental step is building the experimental design, which determines the number of profiles that form the choice set and the pattern for arranging them by combining attributes and levels. To make these designs statistically efficient, they must be orthogonal and balanced, and this is only possible with very simple designs; i.e. those which require few variables and few levels. Therefore, most experimental designs are quasi-orthogonal and, in this case, it is necessary to measure their degree of statistical efficiency.

There are several ways to measure statistical efficiency. In this paper, we have reviewed the two most common optimization criteria in the literature: A-Optimal and D-optimal criteria. However, these criteria are based on the underlying assumption that an algebraic relationship between product attributes and utility explain consumer behaviour, and that this relationship is independent of the number of alternatives and of the experimental context. These assumptions have been criticized as unrealistic from the perspective of consumer cognitive behaviour theories. To overcome these cognitive limitations a cognitive efficiency criterion is proposed which can act as a complement to the statistical efficiency criterion. In addition, we have also proposed a function to estimate this efficiency and an algorithm to optimize it. The function is inspired by the cognitive steps proposed by Johnson and Meyer (1984), where the number of profiles, factors, and levels are independent variables, and the length of time to fill in the questionnaire is the dependent variable (Grether & Wilde, 1984). Using the time taken for the choice set assessment as an estimate of cognitive effort is completely appropriate since market research uses the Internet and websites where respondents' patience tends to be low (Deutskens, de Ruyter, Wetzels, & Oosterveld, 2004) and their willingness to participate decreases as the length of the survey extends (Scholz et al., 2010). In addition, the algorithm proposed to optimize this function is RSM and to illustrate this whole process we carried out an experiment using digital cameras as stimuli for respondents to choose among them.

This study responds to the request made by Bradlow (2005) to develop techniques to assess consumer preferences, allowing, at the same time, for the evaluation of a large number of attributes without cognitively burdening respondents. Its contribution to the literature is threefold: firstly, experimental designs are conceptualized using both statistical and cognitive efficiency; secondly, a functional relationship between all the components of an experimental design (profiles, factors, and levels) is established, as well as an estimator of cognitive effort as target function; and thirdly, a sequential and dynamic algorithm is proposed that allows the objective function reach an acceptable optimum.

Hybrid proposals have emerged, such as adaptive conjoint analysis, with the aim of balancing statistical efficiency and cognitive effort. However, the fact of using partial profiles during the compensatory phase has been criticized by both scholars and market researchers for the inability to obtain stable factor estimations in individual studies (Orme, 2007). There have been some proposals (for example, Huertas-Garcia, Gázquez-Abad, & Forgas-Coll, 2016) in which partial profile scenarios are replaced with full profiles, but this solution is only viable for a small number of factors.

One limitation of this study is that the analysis has only focused on classical CA without considering discrete choice experiments, which are characterized by each respondent only choosing the best option from the choice set. Although choice has been defined as much more natural behaviour in consumption than ranking and rating (Louviere, Hensher, & Swait, 2007), the items of information gathered by the researcher from each respondent are minimal (1, if x alternative was chosen from the entire choice set, and 0 otherwise), therefore its use is restricted to studies that use very large samples. Another limitation in our study is that only the existence of a compensatory model in consumer choice processes was considered, regardless of the existence of other non-compensatory heuristic models (lexical, qualifying, etc.) that could explain the process of choosing among many alternatives.

Furthermore, due to lack of resources, the experiment was carried out with the following restrictions: firstly, it was performed once, so more replicas are needed to verify the results; secondly, in the initial phase of RSM only a half factorial design was developed and with this restriction it was not possible to estimate all two-factor interactions, which would have contributed to more interesting results; thirdly, the sequential experiments needed to follow the steps to reach the minimum were simulated assuming a linear trend between the factors. Therefore, possible further research could involve conducting new tests using a full factorial design in the first phase and carrying out all the necessary steps until reaching the optimum.

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Article

Research in entrepreneurship using GEM data. Approach to the state of affairs in gender studies

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ABSTRACT

This paper analyzes the situation and development of research in "entrepreneurship" from a gender perspective that has used data from the Global Entrepreneurship Monitor (GEM) in the period from 1999 to 2015 in the journals of entrepreneurship included in the Web of Science (WOS). For this purpose, a blibliometric analysis was carried out, which identified the life-cycles of GEM and GEM/gender research, the topics, level of analysis, journals, articles, the most productive authors, the most active countries and institutions and the most used statistical techniques of analysis and data. The main findings of the study show that research on GEM has advanced in recent years; however from a gender perspective by using GEM data, it is in the initial phase, requiring more researchers to be involved, filling the gaps related to topics, macro analysis, or the use of GEM data at both global and regional level.

Introduction

Entrepreneurial activity that generates new businesses has become increasingly important in our society, not only as a key strategic means for public administrations to face economic and social development (Minniti, Bygrave, & Autio 2006; Wennekers & Thurik, 1999) and increased competitiveness of territories in an increasingly globalized economy (Porter, 1991), but also as an object of scientific research (Bygrave & Hofer, 1991; Stevenson & Harmelin, 1990), that can help understand this phenomenon.

In addition, the profound social changes that have recently been taking place in society, have allowed the incorporation of women into the entrepreneurial activity, having access to jobs which were unthinkable in past decades (Kirkwood, 2007). These are changes in which a higher number of families, their decrease in size, increased life expectancy of the population, an increase in the number of divorces and number of households with two members working, low fertility rates, etc. have played a very important role (Bliss & Garratt, 2001; McClelland & Swail, 2005; Thurik, Uhlaner, & Verheul, 2002). Therefore, time reveals that the situation of women in the business environment is an issue to be solved (Berg, 1997; Brush, 1992; Nelson & Levesque, 2007). Proof of this is that, in recent years research on business women has aroused interest in both the academic world as in governments and institutions responsible for establishing policies for promoting and supporting female entrepreneurship.

In this context, the GEM[1] (Global Entrepreneurship Monitor) Project emerged in 1999, currently considered the largest research project on entrepreneurship, both due to its global dimension and its results and implications (Reynolds, Hay, & Camp, 2002; Reynolds et al., 2005). During 15 years, the Consortium of research teams belonging to the countries that make up this project have carried out more than two million surveys with countries that participated in GEM between 1999 and 2015; observing a growing trend in publications of articles that use GEM data (Álvarez, Urban, & Amoros, 2014). However there are very few who made a review of the literature based on journals of impact on the current situation of this project research, and even fewer used bibliometric methods. If we only pay attention to gender, we only found one article, which was conducted by Sánchez-Escobedo, Diaz-Casero, Diaz-Aunión, and Hernandez-Mogollon (2012), in which key documents and their types are identified and highlighted, not only focusing on JCR articles.

Therefore, and in line with the work of Urbano, Rojas, and Diaz (2010), Amorós, Bosma, and Levie (2013), Bosma (2013) and

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[1] For further information on this project: http://www.gemconsortium.org.

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Álvarez et al. (2014), the aim of this article is to conduct a bibliometric analysis of the situation and development of research in "*entrepreneurship*" from a gender perspective using GEM data from 1999 to the end of 2015, focusing on the journals included in the Web of Science (WOS).

The main contribution of this paper is of an academic nature, both from its theoretical and methodological point of view, because the results obtained may be useful to researchers in further studies, as they identify and describe the certified intellectual structure in journals included in the WOS with the issue in question. The study also makes several important contributions:

1) Although the article by Sánchez-Escobedo et al. (2012) made an approach to the gender issue state using GEM data by introducing "non-certified" documents, which significantly affect the weight of the results obtained, in our research we only incorporate "*certified knowledge*",[2] due to this.
2) The use of bibliometric methods still represents an innovative contribution to the study of the intellectual basis of gender analysis using GEM data.
3) From the results, we present the following contributions: development of the research life-cycle, topics analyzed in the research conducted so far, the most relevant journals, most cited articles, most productive authors, casuistical levels analyzed, the most involved countries and institutions, as well as techniques and data used by researchers. Moreover, we cannot forget the literature review itself.

The structure of this work, after this brief introduction is as follows: a theoretical framework for analyzing gender research based on GEM is presented; the methodology used and the main results of the study are developed. Finally, the conclusions show the fundamental aspects of gender research using GEM data, as well as the limitations and future lines of research.

Theoretical framework

Entrepreneurship and gender

In the last century, a special interest in the study of female entrepreneurs arose, which emerged partly because of research conducted by Schwartz (1976) and Burr (1978). Their conclusions showed that women did not satisfy their professional expectations by doing housework, as they were not highly regarded or valued by society, so their need and desire to achieve job and/or personal satisfaction had increased (Carter, Anderson, & Shaw, 2001; Greene, Hart, Gatewood, Brush, & Carter, 2003). However, unlike their male counterparts, when they wanted to create their own businesses, they found discrimination problems related to business financing, in addition to their lack of training and expertise in business management and implementation. These problems were solved with time, in which the results of various research confirm the key role that women play today in the professional world (Chu, 2000; Jeynes, 2005; Kephart & Schumacher, 2005; Walker & Joyner, 1999).

Women are proving their own strength and development of their skills and abilities (Langowitz & Minniti, 2007; Terjesen, 2005), and also for them, creating their own company represents an important alternative for their incorporation into the productive system (Carter et al., 2001; Greene et al., 2003).

In this sense, gender has not been considered a peculiarity that could affect business results, since men have traditionally played the business role (Berg, 1997), which has led to the measuring instruments used to be aimed only and exclusively at male samples (Moore, 1990; Stevenson, 1990). However, currently, there are numerous researchers who are proving the interest it is starting to arouse by analyzing through large samples of individuals from different countries, the differences and similarities between men and women in the implementation of a business (Arenius & Minniti, 2005; Koellinger, Minniti, & Schade, 2013; Minniti & Nardone, 2007; Verheul, Van Stel, & Thurik 2006); or trying to investigate the influence or impact that gender has on commercial property, as far as management and performance of small businesses is concerned (Cowling & Taylor, 2001; Ndemo & Wanjiku, 2007). Carter et al. (2001) also corroborate this interest when referring to the existence of more than 400 citations in which gender in entrepreneurship have a privileged place; in the same line Lamolla (2005) indicates the creation of a section related to this subject in the academic journal *Frontiers of Entrepreneurship*[3] (reference journal in research in entrepreneurship).

In relation to gender, there are studies that have looked for differences in the characteristics of the enterprises, attitudes and behaviors adopted by men and women in their desire to become entrepreneurs, or in the development of their business tasks (Guzmán & Rodríguez, 2008; Rodríguez & Santos, 2009; Álvarez-Herranz, Valencia de Lara, & Martínez-Ruiz, 2011a,b). In addition, several studies suggest that the constant differences found between men and women in developing the entrepreneurial activity are due to gender characterization (Carter et al., 2001; Greene et al., 2003; Marlow, 2002), although others have studied in-depth the various factors and decision processes that drive men and women to create their own businesses (Verheul et al., 2006; Zhao, Seibert, & Hills, 2005).

What seems certain is that, under the differences that influence the intention to undertake in humans, there are underlying gender stereotypes that clearly harm women (Gupta, Turban, Wasti, & Sikdar, 2009). Stereotypes analyzed by Eagly (1987), through the theory of the social gender role, whereby the general way in which both men and women perform and assume different social status is found; and Connell (1990) with his theory of hegemonic masculinity attempts to define masculinity as an object, focusing on processes and relationships through which men and women lead lives dictated by gender.

Therefore, we can say that although signs of consolidation are seen in the research field related to the female entrepreneur, it still does not get the recognition it deserves, despite its continual progress and contribution to the economy and society (Díaz, Hernández, Sánchez, & Postigo, 2010; Minniti & Naudé, 2010; Porter, Sachs, & McArthur, 2002), contributing to it, lack of knowledge by not being able to record in a particular way and lay the theories that explain the emergence of women in the business field (Díaz et al., 2010; Greene et al., 2003). Therefore, this article aims to collaborate in this effort, especially since, as shown by data of "*GEM Women's Report*" of 2012, it is estimated that 126 million women were starting a business in 67 economies around the world and 98 million were already established entrepreneurs (Kelley, Brush, Greene, & Litovsky, 2013).

[2] The term "certified knowledge" is commonly used to describe the knowledge of the disciplines which the scientific papers focus on, in the sense that a scientific paper published in an indexed journal has been subjected to criticism of colleagues, resisted their objections, and therefore, it has achieved its positive assessment to be published (Callon, Courtial, & Penan, 1993).

[3] From 1980 to 1987, only 13 articles relating to women of a total number of 227 were published in the academic journal Frontiers of Entrepreneurship (regarding the study on creation of enterprises).

Research based on GEM with gender perspective

Traditional analyses of economic growth have focused mainly on the impact that large companies have had on the economy, often forgetting the contribution that small and medium-sized enterprises have made to economic development through innovation and competitiveness (Porter et al., 2002; Sternberg & Wennekers, 2005).

In contrast to other studies, the GEM model integrates both the contributions of large and small and medium enterprises in its economic growth analysis (Reynolds et al., 2005), assuming that the role of entrepreneurship is essential for economic growth (Reynolds, Hay, & Camp, 1999). It is also a model which includes a set of key elements that relate and interact with each other: attitudes, activity and entrepreneurial aspirations of the population, these elements being influenced by the level of development of each country and by its particular environmental conditions to undertake (Bosma, Wennekers, & Amorós, 2012; Kelley, Bosma, & Amorós, 2011).

In addition, GEM uses more than 600 secondary variables that allow us to understand more clearly why the entrepreneurial activity is vital to the global economy; being possible among other things, to analyze the situation of women in the entrepreneurial field, so that the studies that have been conducted regarding the relationship between women and the economy have been completed (Arenius & Ehrstedt, 2008; Minniti & Nardone, 2007; Minniti & Naudé, 2010). In this regard, GEM conducted the first study in 2004 (Minniti, Arenius, & Langowitz, 2005), becoming thereafter a periodical publication. Its results showed no significant distinctions in demographic characteristics between male and female entrepreneurs, but small differences in some factors between female entrepreneurs in countries with different economic levels (Valencia, 2011). In successive gender reports based on GEM,[4] it was found that women engage in business activities mainly for opportunity reasons, being there few necessity reasons, which were concentrated in low-income countries. In this sense, we must point out that of those businesses which were started out of necessity in Latin America and the Caribbean, those created by women are less likely to become consolidated (Álvarez-Herranz, Valencia de Lara, Barraza, & Legato, 2010). Moreover, the perception that female entrepreneurs have on average of their activity is positive, having in common the fact that knowing and being in contact with other entrepreneurs helps to decrease their fear of failure (Terjesen & Lloyd, 2015).

Together with this research, articles that use GEM data have been developed, and which analyze the variables related to the decision to be an entrepreneur depending on gender. In this sense, Arenius and Kovalainen (2006) and Figueiredo and Oliveira (2015) explore the preferences of women for self-employment in Nordic countries and Portugal respectively; Baughn, Chua, and Neupert (2006), and Estrin and Mickiewicz (2011) evaluate the impact of specific rules to support female entrepreneurs, and Verheul et al. (2006) found that rates of entrepreneurial activity of men and women are influenced by the same factors, although some of these have a greater impact on women. In addition, Minniti and Nardone (2007), and Langowitz and Minniti (2007) suggest that perception variables explain the majority of gender differences regarding the decision to start a business, being less favorable in the woman's environment. Wagner (2007) and Burke, van Stel, Hartog, and Ichou (2014) investigate which variables are related to gender differences in the creation of enterprises, emphasizing fear of failure-greater in women as a fundamental reason for not starting a business. Thompson, Jones-Evans, and Kwong (2009) explore the characteristics of self-employed women who manage their businesses from home.

[4] GEM dedicated 6 Monographic Global Reports to women and entrepreneurship in 2005, 2006, 2007, 2010, 2012 and 2015, signed by authors of world reference in this field.

Fig. 1. Methodological outline.

Study methodology

We can see the historical evolution of scientific production in this context, the most productive and renowned authors who study the subject, the most represented countries and institutions, the level of analysis carried out and the most relevant journals in this subject matter by carrying out a bibliometric analysis[5] of the scientific literature recognized on research of the gender subject using GEM data.

Articles published in journals included in the Web of Science (WOS) were taken into account for this research. The indicators used are: the article, authors' productivity rate, the most active countries and institutions, as well as types of data and techniques used.

Ramos (2004: 78), uses the journal article as a unit of analysis, considering it "*certified knowledge*" after undergoing critical review (Callon et al., 1993).

As shown in Fig. 1, in the first phase, we collected the articles included in WOS compared to GEM relating to gender descriptors. To do so, a literature search in WOS databases was conducted, by combining the descriptors, "Global Entrepreneurship Monitor" and "GEM Entrepreneurship" with each of the following: gender, man, woman, male and female using the logical OR operator.

In the second phase, firstly, we did a descriptive exploration, in which certain characteristics of the articles, research and methodologies used were extracted, which provide information on the journals, techniques and data used. Furthermore, in-depth analysis of each of the selected articles was carried out.

Finally, in the third phase, we obtained a database with all the selected articles to which the different bibliometric techniques were applied, whereby the life-cycle, authors' productivity rate, countries and institutions involved were obtained.

The review contains 40 articles published in journals indexed in WOS, which are signed by 52 different authors from 27 different countries and 37 participating institutions.

Research results in the GEM project

Life-cycle

We performed a life-cycle analysis of GEM/gender, finding 40 articles that make up the study area. The first publication on GEM/gender in the WOS took place in 2004, while the year with the highest publications was 2011, with nine. In relation to the total of

[5] Bibliometrics has important limitations derived from the business that this science provides, as mentioned in the work by Cortés (2007), Cornnin (2005), Brown (2007), Adler et al. (2008) and Simons (2008) among others, but the reality is that even if there are opposed positions, currently the quality index with greater recognition of research quality worldwide, without doubt is the Journal Citation Report, which as part of the ISI Web of Knowledge, provides an objective and systematic means to evaluate the most important journals in the world. It offers a unique perspective for evaluation and comparison of journals, as it accumulates and tabulates the number of citations and articles of virtually all specialties in science, technology and social sciences. It is also worth noting the existence of numerous publications that have made use of GEM databases and which have not been published in the journals of JCR, which are not considered object of analysis in this review.

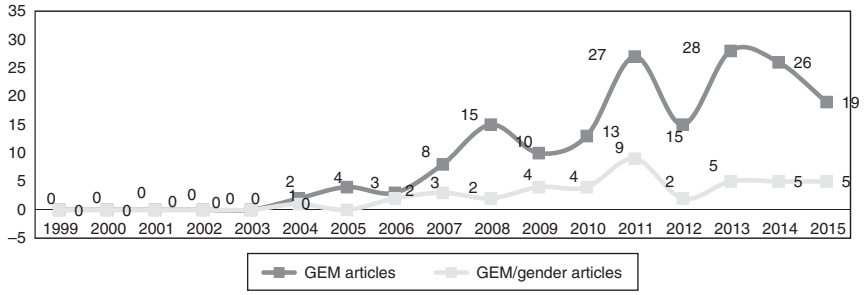

Fig. 2. Life-cycle of GEM and GEM/gender research.

170 papers, which make up the 17-year cycle since GEM emerged, gender articles represent 23.5%. Thus, when analyzing the number of documents published each year, the evolution of scientific production using GEM data or specializing in GEM in the gender subject using its data is obtained (see Fig. 2).

When analyzing the life-cycle of GEM research in general, three phases can be observed: the first phase from 1999 to 2003, without publications; the second phase from 2004 to 2008, with a total of 32 documents, and a final phase from 2009 to 2015, with a total of 138 documents; the last phase represents the period with the highest growth in publications. This article discusses this cycle and compares it with what interests us, and sees in perspective the situation of gender publications in GEM. Nevertheless, it may be the subject of future studies.

When comparing the evolution of the life-cycle of research of GEM with GEM/gender, we observe that the latter hardly grows, reaching its maximum value in 2011 with 9 articles, compared to those in other years, among which 2013, 2014 and 2015 stand out with 5 articles each year. Here, we can distinguish two periods: an initial one until 2011, with 25 articles, and another one from 2012 to 2015, in which growth is observed, and with 17 articles collected.

Research topics

Another study aspect is to analyze the gender research topics using GEM data. We will do it following the GEM model structure, which distinguishes between attitudes, activities and entrepreneurial aspirations.

As can observed in Table 1, most of the empirical papers are related to entrepreneurial attitudes, with 62.50% of cases, highlighting the topic of "Attitudes and entrepreneurial activity (TEA)" with 10 articles, followed by the analysis of "entrepreneurial attitudes and aspirations" with 5 articles.

As for entrepreneurship, the second component associated with the entrepreneurial process, we found 7 out of 40 articles analyzed, representing 17.50% of the total. This figure is identical in the work group that analyzes all phases of the entrepreneurial process described by GEM.

And finally, in the component called aspirations, we found one paper, which is done by Escandón, González, and Murillo (2013).

Journals included in the WOS and total number of articles per year

Among the journals analyzed in the search process (see Table 2) the *Journal of the Korean Entrepreneurship Society* and *Small Business Economics* are highlighted, with 6 and 5 publications respectively, proving to be the most dynamic in publications, that use GEM/gender data, as they represent 27.5% of the total, with 11 articles published between 2007 and 2015.

The first article appeared in 2004, in the journal *Drustvena Istrazivanja*. It was followed in 2006 by *Entrepreneurship and Regional Development* and *Entrepreneurship: Theory and Practice*,

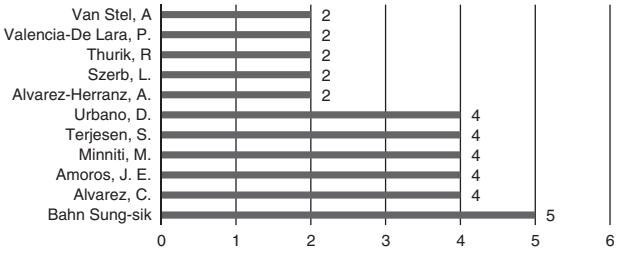

Fig. 3. Most productive authors in gender research using GEM data.

with one publication in each one respectively. During 2007 and 2010, there were a total number of 11 articles, while 2011 is the year with largest scientific production to date, with a total of 8 publications in 8 different journals. Finally, there are 17 articles published from 2012 to 2015.

To end this section, we must mention that we found 17 articles published in *Business*[6] field journals, although only two in the main ones, as is the case of the journal *Entrepreneurship: Theory and Practice*, with an impact factor in 2014 of 3.144; and 14 in the *Management*[7] field, being in this case the journal *Small Business Economics* the best positioned with an Impact Factor of 1.795 in 2014. These results show that there is still a long way to go, as there are hardly any publications in journals of great impact.

Author's productivity rate

Not many authors with a large contribution to this area were detected, since only 11 have more than one publication. We obtained a total of 52 authors in the 40 articles described in the study, representing in Fig. 3 those who contributed with more than one article.

Bahn stands out with five papers published, followed by Amorós, Álvarez, Minniti, Terjesen and Urbano, with four articles, which represent 50% of the total production. Nevertheless, the most cited articles, with 100 citations, are by Langowitz and Minniti (2007), titled *"The Entrepreneurial Propensity of Women"*. They are followed by those by Verheul et al. (2006), Minniti and Nardone (2007), and Baughn et al. (2006), with 69, 56 and 50 citations respectively.

We can find the following authors with two articles: Álvarez of the University of Castilla La Mancha (Spain), Szerb of the University of Pécs (Hungary), Thurik of the University of Erasmus of Rotterdam

[6] The main journals in the Business field and their JCR impact factor in 2014 are: *Academy of Management Review (7,475), Academy of Management Journal (6,448), Journal of Management (6,071), Family Business Review (5,528) and Journal of Marketing (3,938).*

[7] The main journals in the Management field and their JCR impact factor in 2014 are: *Academy of Management Annals (7,769), Academy of Management Review (7,475), Academy of Management Journal (6,448), Journal of Management (6,071), and Mis Quaterly (5,311).*

Table 1
Research topics.

Subject	Articles	JCR	%
Attitudes			
Attitudes	Goltz, Buche, and Pathak (2015), Noguera, Álvarez, and Urbano (2013), Sepúlveda and Bonilla (2011), Szerb, Rappai, Makra, and Terjesen (2007), Mancilla and Amorós (2015)	25	62.50%
Attitudes in consolidated enterprises	Álvarez-Herranz et al. (2011a,b)		
Attitudes and entrepreneurial aspirations	Burke et al. (2014), Estrin and Mickiewicz (2011), Koellinger et al. (2013), Langowitz and Minniti (2007), Sánchez-Escobedo, Díaz-Casero, Díaz-Aunión, and Hernández-Mogollón (2014)		
Attitudes and entrepreneurial activity (TEA)	Driga, Lafuente, and Vaillant (2009), Elam and Terjesen (2010), Figueiredo and Oliveira (2015), González-Álvarez and Solís-Rodríguez (2011), Mahadea, Ramroop, and Zewotir (2011), Minniti and Nardone (2007), Ramos-Rodríguez, Medina-Garrido, and Ruiz-Navarro (2012), Romaní, Atienza, and Amorós (2012), Santiago-Castro and Pisani (2013), Tominc and Rebernik (2004)		
Attitudes and entrepreneurial activity (TEA). Consolidated enterprises	Álvarez-Herranz and Valencia-De Lara (2011), Hessels, Grilo, Thurik, and Van Der Zwan (2011), Rodríguez, Fuentes, and Rodríguez (2014), Terjesen and Szerb (2008)		
Activity			
Entrepreneurial activity (TEA)	Álvarez and Urbano (2013), Arenius and Ehrstedt (2008), Baughn et al. (2006), Roper and Scott (2009), Terjesen and Amorós (2010), Thompson et al. (2009), Verheul et al. (2006)	7	17.50%
Aspirations			
Aspirations and entrepreneurial activity (TEA)	Escandón et al. (2013)	1	2.50%
Attitudes, activity and aspirations			
Attitudes, entrepreneurial activity (TEA), and aspirations	Bahn, Kelley, Lee, 이현숙, 서상구 (2009), Bahn et al. (2011, 2012, 2013, 2014), Banseongsik et al. (2010), Ramadani (2015)	7	17.50%
Total		**40**	**100%**

(The Netherlands), Valencia-De Lara of the University of Castilla La Mancha (Spain) and Van Stel of Panteia (Holland).

The average number of authors per article is 3.2, indicating that researchers prefer to work in teams. Proof of this is that only one article written by one person was found, while 13 and 14 articles were found by two and three authors respectively. In the case of four or more researchers, only four papers were found.

Most active countries and institutions in gender publications using GEM data

The country with the highest number of papers (see Fig. 4) is the USA with a total number of 11 articles, followed by Spain with 10, Chile with 6, Colombia 5, United Kingdom, Germany and the Netherlands with 3, and Hungary and Belgium with two.

From 1999 to 2015, the number of countries with scientific publications on gender is very small. Also note that the high participation of European countries in the GEM Project is influencing the field as six of the countries with more publications are European, while the other three are American.

The authors belong to 37 institutions. Fig. 5 represents the institutions that have more than two publications, so we find the following with three articles: Universidad Autónoma de Barcelona (Spain), Max Planck Institute Economic (Germany),

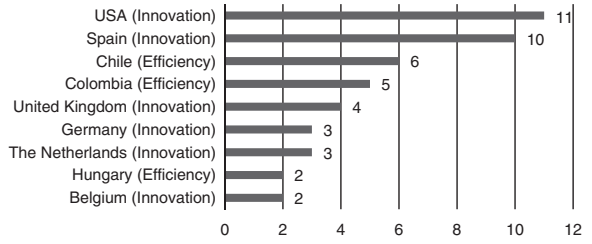

Fig. 4. Most active countries (according to type of economy) in publications of GEM/gender documents.

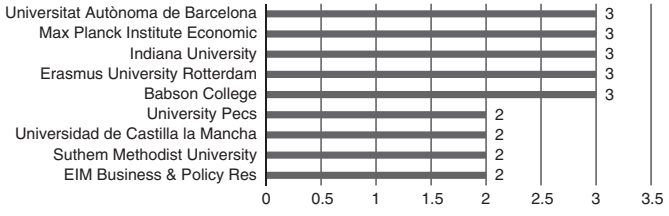

Fig. 5. Institutions involved in gender research using GEM data.

Table 2
Total number of gender articles per journal a year.

Total number of gender articles per journal a year

Indexed Journals (JCR)	Position	Field	FI	Years											Total
				04	06	07	08	09	10	11	12	13	14	15	
Academia-Revista Latinoamericana de Administración	109	*Business*	0,205							1				1	2
	109	*Management*													
Actual Problems of Economics (2011)	317	*Economics*	0,039							1					1
AD-miniter		*Indexed in WOS but not in JCR*										1			1
African Journal of Business Management	54	*Business*	1,105							1					1
	58	*Management*													
Drustvena Istrazivanja	38	*Social Issues*	0,101	1											1
	136	*Sociology*													
Entrepreneurship and Regional Development	52	*Business*	1,519		1										1
	16	*Planning & Development*													
Entrepreneurship: Theory and Practice	15	*Business*	3,144		1	1									2
Estudios de Economía	323	*Economics*	0,105				2								2
European Journal of Development Research	40	*Planning & Development*	0,851						2						2
Industrial Management & Data Systems	66	*Computer Science, Interdisciplinary Applications*	1,226							1					1
	21	*Engineering, Industrial*													
International Entrepreneurship and Management Journal	87	*Business*	0,746									1	1		2
	4	*Management*													
International Journal of Hospitality Management	8	*Hospitality, Leisure, Sport & Tourism*	1,692								1				1
International Small Business Journal	49	*Business*	1,469					2							2
	133	*Management*													
Journal Of Balkan And Near Eastern Studies	44	*Area Studies*	0,312											1	1
Journal of Business Economics and Management	88	*Business*	0,723								1				1
	191	*Economics*													
Journal of Evolutionary Economics	138	*Economics*	1,036							1					1
Journal Of Small Business Management	81	*Management*	1,353										1		2
Journal of the Korean Entrepreneurship Society		*Indexed in WOS but not in JCR*						1	1	1	1	1	1		6
Oxford Bulletin of Economics and Statistics	82	*Economics*	1,368									1			1
	16	*Social Sciences, Mathematical Methods*													
Pensamiento & Gestión	Out	*It has been deleted*	Out									1			1
Revista de Ciencias Sociales (2012)	104	*Business*	0,010												
	333	*Economics*										1			1
Small Business Economics	39	*Business*	1,795												
	52	*Economics*				2				1			2		5
	57	*Management*													
Sociología Ruralis	33	*Sociology*	1,306					1							1
	29	*Geography*													
South African Journal of Economic and Management Sciences	320	*Economics*	0,041							1					1
	171	*Management*													
Tourism & Management Studies		*Indexed in WOS but not in JCR*												1	1
	TOTAL			1	2	3	2	4	3	8	3	6	5	3	40

Table 3
Types of data used in empirical papers on gender.

No.	Data typology	Articles	JCR	%
1	Global APS	Álvarez-Herranz et al. (2011a,b), Arenius and Ehrstedt (2008), Burke et al. (2014), Goltz et al. (2015), Hessels et al. (2011), Koellinger et al. (2013), Langowitz and Minniti (2007), Minniti and Nardone (2007), Ramos-Rodríguez et al. (2012), Sánchez-Escobedo et al. (2014), Santiago-Castro and Pisani (2013), Terjesen and Amorós (2010), Verheul et al. (2006)	13	32.50%
2	National APS	Álvarez-Herranz and Valencia-De Lara (2011), Baughn et al. (2006), Driga et al. (2009), Escandón et al. (2013), Figueiredo and Oliveira (2015), Mahadea et al. (2011), Mancilla and Amorós (2015), Noguera et al. (2013), Rodríguez et al. (2014), Romaní et al. (2012), Roper and Scott (2009), Sepúlveda and Bonilla (2011), Terjesen and Szerb (2008), Thompson et al. (2009), Tominc and Rebernik (2004)	15	37.50%
3	APS and secondary sources: OECD, World Bank, US Census, Heritage Foundation, Encyclopedia Britannica, BBVA Foundation.	Álvarez and Urbano (2013), Elam and Terjesen (2010), Estrin and Mickiewicz (2011), González-Álvarez and Solís-Rodríguez (2011)	4	10.00%
4	APS and NES	Szerb et al. (2007), Bahn et al. (2009, 2011, 2012, 2013, 2014), Banseongsik et al. (2010), Ramadani (2015)	8	20.00%
	Total		**40**	**100%**

Table 4
Types of analysis techniques used in empirical papers on gender.

No.	Statistical technique of analysis	Articles	JCR	%
1	Descriptive analysis	Bahn et al. (2009, 2011, 2012, 2013, 2014), Ramadani (2015), Banseongsik et al. (2010), Romaní et al. (2012)	8	20.00%
2	Descriptive analyses and logistic regression (logit, probit, multinomial)	Álvarez and Urbano (2013), Burke et al. (2014), Driga et al. (2009), Elam and Terjesen (2010), Figueiredo and Oliveira (2015), Goltz et al. (2015), González-Álvarez and Solís-Rodríguez (2011), Hessels et al. (2011), Koellinger et al. (2013), Langowitz and Minniti (2007), Mahadea et al. (2011), Mancilla and Amorós (2015), Noguera et al. (2013), Ramos-Rodríguez et al. (2012), Rodríguez et al. (2014), Sánchez-Escobedo et al. (2014), Santiago-Castro and Pisani (2013), Sepúlveda and Bonilla (2011), Terjesen and Amorós (2010), Thompson et al. (2009), Tominc and Rebernik (2004)	21	52.50%
3	ANOVA and logistic regression	Álvarez-Herranz and Valencia-De Lara (2011)	1	2.50%
4	Panel data	Álvarez-Herranz et al. (2011a,b)	1	2.50%
5	Structural equations	Escandón et al. (2013)	1	2.50%
6	Descriptive analyses, MANOVA, correlations and regressions	Arenius and Ehrstedt (2008), Baughn et al. (2006), Roper and Scott (2009)	3	7.50%
7	Logistic regression, Logit, Probit	Estrin and Mickiewicz (2011), Terjesen and Szerb (2008), Verheul et al. (2006)	3	7.50%
8	Multinomial, logistic regression and cluster	Szerb et al. (2007)	1	2.50%
9	Bootstrapping	Minniti and Nardone (2007)	1	2.50%
	Total		**40**	**100%**

Indiana University (USA), University of Erasmus of Rotterdam (Holland) and Babson College (USA). They are followed by two publications, University Pecs (Hungary), University of Castilla La Mancha (Spain), Suthem Methodist University (USA) and EIM Business & Policy Res (The Netherlands).

In short, these results highlight the importance of individual work in the institutions, i.e. few relationships between them. However, collective work is observed between research teams of the same universities or other institutions.

Methodology used in the papers analyzed

Data used

As for the methodology used (see Table 3), 37.50%, use data from their country based on the adult population survey (APS); while 32.50% analyze the global database resulting from the participating countries for a given year, the equivalent of 13 articles.

Followed by a lower percentage, with 8 publications (20.00%), are those using both types of surveys, those conducted in the adult

Table 5
Level of analysis in empirical papers on gender.

Level of analysis	Articles	JCR	%
Micro (individuals)	Álvarez-Herranz and Valencia-De Lara (2011), Álvarez-Herranz et al. (2011a,b), Burke et al. (2014), Driga et al. (2009), Escandón et al. (2013), Figueiredo and Oliveira (2015), Goltz et al. (2015), González-Álvarez and Solís-Rodríguez (2011), Koellinger et al. (2013), Langowitz and Minniti (2007), Mahadea et al. (2011), Mancilla and Amorós (2015), Minniti and Nardone (2007), Noguera et al. (2013), Ramos-Rodríguez et al. (2012), Romaní et al. (2012), Roper and Scott (2009), Sánchez-Escobedo et al. (2014), Santiago-Castro and Pisani (2013), Sepúlveda and Bonilla (2011), Szerb et al. (2007), Terjesen and Szerb (2008), Thompson et al. (2009), Tominc and Rebernik (2004)	24	60.00%
Macro (countries)	Álvarez and Urbano (2013), Arenius and Ehrstedt (2008), Bahn et al. (2009, 2011, 2012, 2013, 2014), Banseongsik et al. (2010), Baughn et al. (2006), Elam and Terjesen (2010), Estrin and Mickiewicz (2011), Hessels et al. (2011), Rodríguez et al. (2014), Terjesen and Amorós (2010), Verheul et al. (2006), Ramadani (2015)	16	40.00%
	Total	**40**	**100%**

population (APS) and to experts (NES), thus reflecting different environmental conditions analyzed by GEM. Finally, those articles that combine the adult population survey (APS) and other secondary sources such as: OECD, World Bank, US Census, Heritage Foundation, Encyclopedia Britannica, BBVA Foundation, etc., with a total of 4 articles, which represent 10.00% of the total (see Table 3).

Analysis techniques

Taking into account the analysis level, mostly micro- and the nature of the GEM data (binary responses 1/0), in Table 4 we can see that the analysis techniques used in most articles, specifically 21, are descriptive and logistic, binomial or multinomial regression, among others, representing 52.50% of the total. They are followed to a lesser extent, by descriptive analysis with 20.00%; and those that in addition to using descriptive analysis combine their data with the processing of other types of analyses: regressions, correlations, MANOVA, etc., which represent 7.5%. It is the same percentage as that of the group that used logistic regression analysis, logit or probit (see Table 4).

Finally, the topics of which there is only one publication (10.00%) are those that use: analysis of variance (ANOVA) and logistic regression, data panel or structural equations, or multinomial logistic regression and later cluster analysis (see Table 4).

Analysis level

Regarding the level of analysis (see Table 5), and following the criteria which were once used by Sternberg and Wennekers (2005), the articles were classified into a micro level, if the empirical paper made use of individual data from GEM databases, into a meso level if it referred to regions and a macro level when it came to data related to countries. The results indicate that most of the papers, specifically 24, focus on the analysis of entrepreneurial activity from a micro perspective (60.00%), while the remaining 16 articles, do it at a macro level (40.00%); having found no evidence of the existence of articles performing analysis at regional level.

Conclusions

In fifteen years, GEM has contributed to build an understanding of the prevalence, nature and role of entrepreneurship in the economy and society in general; in addition to the consolidation of a large team of researchers worldwide, who annually publish reports and a significant number of monographs on different topics. Among the monographs are highlighted those performed on women, whose results have shown the importance and weight of women in all world economies, including not only those who are already entrepreneurs, but those that are starting a business based on need and/or opportunity, depending on the country where they want to carry it out (Kelley et al., 2013).

Considering these aspects, this paper has carried out a bibliometric analysis of the situation and development of research in "*entrepreneurship*" from the gender perspective, based on GEM for the period 1999–2015, focusing on journals indexed in WOS. The results reveal a low scientific production in this field, based on the gender topic and with GEM data (40 articles). However, given the large volume of data and researchers of GEM, it is expected that the trend will develop at a growing pace, as it is evident that there is a significant "gap" of research to fill, due to the positioning that the discipline of entrepreneurship in academia is acquiring.

Except for the journal *Small Business Economics*, which boosts research on GEM, the few articles found are not published in the main journals of the fields of Business (*Academy of Management Review, Academy of Management Journal, Journal of Management, Family Business Review, Journal of Marketing, International Journal of Management Reviews)* or Management (*Academy of Management Annals, Academy of Management Review, Academy of Management Journal, Journal of Management and Mis Quarterly*), which shows a possible challenge to consolidate gender research based on GEM.

Regarding the life-cycle, if we compare research of GEM generally with GEM/gender, we note that it hardly increases, reaching its maximum value in 2011 with 9 articles, compared to those done the rest of years, among which are 2013, 2014 and 2015 with 5 articles per year. Here, we can distinguish two periods: an initial one until 2011, with 25 articles, and another one from 2012 to 2015, in which growth is observed, and 17 articles are collected.

As for the research topics, most of the empirical papers have focused on the study of the attitudes of respondents (62.50%), although, logically, entrepreneurial activity through its indicator (TEA) has been present in most of them. The rest did it at some stage in particular, being lower those which analyzed the component denominated "entrepreneurial aspirations", with only one work done by Escandón et al. (2013).

Moreover, regarding the level of analysis considered, it was identified that more than half of the articles point to a micro perspective (individuals) based on logistic, binomial or multinomial regressions (60%) in contrast to a macro perspective (40%) based on descriptive techniques and linear regressions. These results indicate the limited use of information obtained from experts, together with the non-existence of qualitative work, as well as the use of regional data, which make future lines of research likely.

With regard to authors' productivity and articles, the most productive in this type of research has been Bahn with 5 articles; followed by Amorós, Álvarez, Minniti, Terjesen and Urbano, with four articles, which represent 50% of the total production. However, the most cited article, with 100 citations, is by Langowitz and Minniti (2007), titled "*The Entrepreneurial Propensity of Women*". It is followed by those by Verheul et al. (2006), Minniti and Nardone (2007), and Baughn et al. (2006), with 69, 56 and 50 citations respectively.

The United States and Spain are included among the most active countries in scientific journals indexed in WOS with 11 and 10 articles respectively; i.e. more than half of the production of GEM regarding gender.

The average number of authors per article is 3.2, indicating that researchers prefer to work in teams due to its complementarity, leaving aside individualism that once existed. Proof of this is that only one article written by a single author was found.

In short, we can say that although in general terms, research on GEM and the publication of articles indexed in the Web of Science (WOS) has progressed in recent years (Álvarez et al., 2014), in the case of the publication of gender studies based on GEM data, it seems not to have taken off yet, requiring more researchers from different countries and institutions to get involved to publish in journals of greater impact, in which there are many "research niches" yet to cover in terms of topics, macro analysis, with the use of global or regional APS data, and especially NES.

Finally and regarding limitations and future lines of research, we find them in the databases used for the study, since many publications were left out, that even though they can be of quality are not included in the WOS. In addition, we must assume as limitation the possibility of some documents that although they deal with the topic of gender and entrepreneurship with GEM data, could have been left out of the study because the keywords used to search could have excluded them from the results. Publications together with other quality scientific documents have been ruled out in the study, since in this research only scientific articles have been taken into account.

As for future lines, we propose a cocitation analysis on the same research topic in order to identify the authors and seminal works of this research field.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.redeen.2016.09.002.

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Article

Cause-related marketing: An experimental study about how the product type and the perceived fit may influence the consumer response

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ABSTRACT

Although previous cause-related marketing literature has examined the role of the nature of the product and the perceived fit between the product and the cause, there is no clear consensus yet regarding the effect of these variables. This study contributes to existing literature by shedding light on the role that these two key factors have on consumer response. A 2 (utilitarian products vs. hedonic products) × 2 (perceived fit: high vs. low) between-subjects factorial design was used to test the hypotheses. The results indicate that the nature of the promoted product used in the cause-related marketing campaign influences both brand attitude and purchase intention. Specifically, the attitude towards the brand was greater for the hedonic products than the utilitarian ones. By contrast, cause-related marketing campaigns linked to utilitarian products lead to higher purchase intentions. In addition, perceived fit between the product and the cause seems to play a key role, as this variable positively influences both the credibility of the campaign and the attitude towards the brand. The results provide useful guidelines for marketers in designing their cause-related marketing initiatives.

Introduction

Cause-related marketing (CRM) initiatives have become increasingly popular among organizations. This strategy implies supporting a social cause to promote the achievement of marketing objectives (Barone, Norman, & Miyazaki, 2000). CRM implementation can be undertaken in different forms (Gupta & Pirsch, 2006a; Liu & Ko, 2011). One of the most common forms involves the donation of a portion of the corporation's profits from each product sold to a cause. In this sense, CRM is defined by Varadarajan and Menon (1988, p. 60) as "the process of formulating and implementing marketing activities that are characterized by an offer from the firm to contribute a specified amount to a designated cause when customers engage in revenue-providing exchanges that satisfy organizational and individual objectives".

Supporting a specific cause can have several advantages. For instance, cause marketing programmes allow companies to create a link with customers and show a commitment to social responsibility. Unlike other marketing communications tools, CRM is also a powerful way to reach consumers on an emotional level (Roy, 2010). This promotional strategy can improve and sustain a favourable image and reputation among consumers, establish differentiation from competitors and add value to the brand (Brown & Dacin, 1997; Wymer & Samu, 2009). All these benefits can, in sum, positively influence consumer attitude and purchase behaviour. However, recent research has shown that, compared to other corporate social responsibility (CSR) actions, such as sponsorship or philanthropy, CRM activities are more likely to be viewed with suspicion (Lii & Lee, 2012; Sheikh & Beise-Zee, 2011), as CRM initiatives generally require consumers to make a purchase; therefore, the link between the cause and the company's profits can result in a less favourable evaluation.

Given the relevance and business emphasis on using CRM initiatives, it is important to explore the main factors associated with successful CRM campaigns. Among the multiple factors that may

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have a bearing on the effectiveness of CRM, two are of particular interest: the type of product and the perceived fit between the product and the cause. The evaluation of CRM initiatives is likely to depend on the type of product used (i.e. hedonic vs. utilitarian) (Strahilevitz & Myers, 1998). Likewise, perceived fit, which refers to the degree of proximity or congruence between the product and the cause, has been assumed to be one of the most influential with respect to the ultimate success of the partnership (Lafferty, 2007). Controversy exists, however, regarding the influence of these variables. For instance, while some authors have found that consumer response to CRM is more favourable when the products are hedonic rather that utilitarian (Strahilevitz & Myers, 1998), others have not replicated these results (Subrahmanyan, 2004; Wymer & Samu, 2009). Likewise, advice on the level of fit between the product and the cause is mixed, with some calling for a high level of fit and others advocating a moderate or low product-cause fit level (Barone et al., 2000). In addition, both factors (the type of product and perceived fit) can simultaneously influence three levels of consumer response: cognitive, affective and behavioural (Roy, 2010). Research, however, has generally addressed the analysis of consumer responses individually.

In this context, this study assesses whether the nature of the product and the fit between the product and the cause influence: (1) the credibility of the CRM campaign (cognitive consumer response); (2) the attitude towards the brand (affective consumer response); and, (3) the purchase intention (behavioural consumer response). In addition, we aim at comparing the nature of the product, that is to say, hedonic and utilitarian products in order to better understand the results of this study.

The remainder of the article is organized as follows. First, we present the theoretical background of the study and formulate the hypotheses. We then describe the research method, followed by an analysis of the empirical results. Finally, conclusions and implications for researchers and managers are provided, along with the limitations of the study and directions for future research.

Literature review

As with other managerially controllable factors, such as price, distribution and advertising, CRM campaigns influence cognitive, affective, and behavioural consumer responses (He, Zhu, Gouran, & Kolo, 2016; Huertas-García, Gázquez-Abad, & Lengler, 2014; Roy, 2010). To increase the efficacy of CRM, the growing literature on this topic has analyzed the impact that several factors have on consumer responses to these initiatives.

For instance, some authors have studied cause characteristics, such as the familiarity, the importance and the geographic scope of the cause (Cui, Trent, Sullivan, & Matiru, 2003; Grau & Folse, 2007; Hou, Du, & Li, 2008; Lafferty & Edmondson, 2009). Researchers have also explored the role of the variables related to the campaigns, such as the donation size (Chang, 2008; Moosmayer & Fuljahn, 2010; Pracejus, Olsen, & Brown, 2003, 2004), the clarity of the message (Simmons & Becker-Olsen, 2006), the dominance or emphasis given to the cause in the message (Samu & Wymer, 2009), or the duration of the campaign and the amount of resources invested (van den Brink, Odekerken-Schröder, & Pauwels, 2006). Similarly, other researchers have analyzed the influence of characteristics relating to the company, such as its corporate credibility (Kim, Kim, & Han, 2005; Lafferty, 2007), or related to the non-profit organization, such as its image (Arora & Henderson, 2007). Finally, other authors have examined the impact of consumer characteristics on their responses to CRM, such as consumer scepticism (Vanhamme & Grobben, 2009), concern for appearances (Basil & Weber, 2006), consumers' temporal orientation (Tangari, Folse, Burton, & Kees, 2010) and other socio-demographic variables (Cui et al., 2003).

While these previous studies have offered new insights into consumer responses to CRM, there is a general consensus among scholars that more research is needed (Aldás, Andreu, & Currás, 2013; Lafferty & Edmondson, 2009). Specifically, among the multiple variables that may affect the influence of a CRM programme, two are of particular interest: the nature of the product, and the fit between the product and the cause. These variables have been identified in prior research as potentially relevant factors influencing CRM success (Lafferty, 2007; Strahilevitz & Myers, 1998). However, as noted earlier, the results are still controversial. In addition, as these variables are under companies' control, they are relevant to managers when designing CRM campaigns. In the next section, we explore how these two variables may influence cognitive, affective and behavioural consumer responses to CRM programmes.

Nature of the product: hedonic vs. utilitarian

The evaluation of CRM initiatives is likely to depend on the type of product used (i.e. hedonic vs. utilitarian). While hedonic products, such as ice cream, chocolates or concert tickets, are generally linked to experiential consumption, utilitarian products, such as laundry detergent or toothpaste, are viewed as more functional and instrumental. Therefore, hedonic products are judged in terms of how much pleasure they provide, whereas utilitarian products are judged in terms of how well they function.

Previous research has shown that the success of CRM campaigns is higher when the strategy is used with hedonic products rather than utilitarian ones (Chang, 2008; Strahilevitz & Myers, 1998). For instance, Strahilevitz and Myers (1998) found that donations to charity were more effective for promoting frivolous products (i.e. hedonic products) than in promoting practical products (i.e. utilitarian products). On the contrary, monetary incentives (i.e. price discounts) were preferred when they were bundled with utilitarian or practical products. This result can be explained by the fact that hedonic products are more likely than utilitarian products to arouse both pleasure and guilt (Kivetz & Simonson, 2002; Zheng & Kivetz, 2009). According to the field of social psychology, guilt is a negative emotion that a person may wish to overcome by means of some prosocial behaviour (e.g. Batson & Coke, 1981). Therefore, the feeling of guilt can be mitigated if the hedonic purchase is linked to a cause. In contrast, CRM campaigns linked to practical products tend to generate fewer emotional responses. Thus, the evaluation and purchase decisions for these types of products are usually more rational and focused on cues related to the product itself (Chang, 2008).

Based on the reasoning above, it is expected that consumers will demonstrate more positive cognitive, affective and behavioural responses when CRM initiatives are used in hedonic products. Therefore, the following hypothesis is proposed:

H1. CRM linked to hedonic products (vs. utilitarian) will lead to: (a) higher campaign credibility; (b) a more positive attitude towards the brand; and (c) higher purchase intention.

Perceived fit between the product and the cause

Perceived fit refers to the perceived degree of proximity or congruence between the promoted product and the cause. The influence of perceived fit has been studied within multiple research streams in marketing, such as brand extensions (e.g. Aaker & Keller, 1990; De Jong & van der Meer, 2015; Völckner & Sattler, 2006), co-branding (Simonin & Ruth, 1998), corporate social responsibility (CSR) (Bigné, Currás-Pérez, & Aldás-Manzano, 2012; Pérez

& Rodríguez del Bosque, 2013) and sponsorships (Simmons & Becker-Olsen, 2006; Speed & Thompson, 2000). Drawing from this literature, previous studies have also analyzed the importance of fit with respect to the CRM campaign's success (Bigné-Alcañiz, Currás-Pérez, Ruiz-Mafé, & Sanz-Blas, 2012; Kuo & Rice, 2015).

In order to achieve suitable results Lafferty, Goldsmith, & Hult (2004, p. 512) recommend distinguishing between functional and brand fit. Product-category is considered a functional fit and it is determined in function of the characteristics, attributes and functions of the type of product of the brand and the type of social cause supported. Brand-name fit refers to how comfortable consumers are with the cause-brand pairing and it is related with the congruence between the image of the brand and the social cause. More, the same brand may have different product categories. Considering differences between types of fit is necessary as these two types of fit may have different influence on consumer perceptions and attitudes (Bigné et al., 2012).

However, unfortunately literature too often has not differentiated between functional (product category) and brand (image) fits. This misunderstanding can be the reason of identifying ambivalent results in former researches, and for such reason within the CRM literature, there is a lack of consensus regarding the level of fit a brand, product or company should have with a cause.

While some researchers posit that high perceived fit improves the results of campaigns, others suggest that low fit is more effective. Specifically, some studies have found that high perceived fit can negatively influence consumers' brand perceptions. This negative effect is due to the fact that CRM campaigns with high fit can be viewed by consumers as opportunistic (Drumwright, 1996; Ellen, Mohr, & Webb, 2000). However, most works have revealed the opposite. In general, high fit has been proven to positively affect different factors, such as product choice (Pracejus & Olsen, 2004; Strahilevitz & Myers, 1998), attitude towards the brand (Bigné-Alcañiz, Currás-Pérez, & Sánchez-García, 2009; Samu & Wymer, 2009), and attitude towards the campaign (Barone et al., 2000). As such, higher levels of perceived fit between the product and the cause will lead consumers to perceive the company as being more expert, and favour the transfer of positive feelings and beliefs about the cause to the brand (Ellen, Webb, & Mohr, 2006; Hoeffler & Keller, 2002). Likewise, a high fit can explain why an organization is supporting a cause (Sheikh & Beise-Zee, 2011). Therefore, it is suggested that higher levels of fit will improve the credibility of the association between the company and the cause, as well as the consumers' attitudes and purchase intentions (Gupta & Pirsch, 2006b; Pracejus & Olsen, 2004; Samu & Wymer, 2009). In contrast, lower levels of fit are likely to generate weaker attributions of the brand's motive and perceptions of brand credibility, and lead to negative attitudes towards the brand (Becker-Olsen, Cudmore, & Hill, 2006; Rifon, Choi, Trimble, & Li, 2004). The above discussion leads to the following hypothesis:

H2. High perceived fit between the product and the cause will have a positive effect on: (a) campaign credibility; (b) the attitude towards the brand; and (c) the purchase intention.

Method

In the design of the study we have followed the recommendations made by Lin, Lu, and Wu (2012) to analyze interactions between product types and other related variables. A 2 (utilitarian products vs. hedonic products) × 2 (perceived fit: high vs. low) between-subjects factorial design was used in this study to test the proposed hypotheses.

Experimental stimuli

Three pretests were conducted to identify the products, brands and causes to be used in the study. The objective of the first pretest was to choose the products and causes. First, a group of undergraduate students ($n = 46$) indicated, from a list of 20 products, the degree of utilitarianism or hedonism on three seven-point bipolar scales proposed by Wakefield and Inman (2003) (1 = practical purpose/7 = just for fun; 1 = purely functional/7 = pure enjoyment; 1 = for a routine need/7 = for pleasure). Among them, four products were chosen: milk and printers as the utilitarian products ($\text{mean}_{\text{milk}} = 3.01$ and $\text{mean}_{\text{printer}} = 2.07$) and chocolates and Mp3 players as the hedonic ones ($\text{mean}_{\text{chocolates}} = 5.88$ and $\text{mean}_{\text{Mp3}} = 5.57$). To enhance the generalizability of the results, the study used both fast-moving consumer goods and durable goods for each type of product (utilitarian products: milk and printers; and hedonic products: chocolates and Mp3 players). Next, the same group of students ($n = 46$) rated the familiarity (F), trust (T) and image (I) of a list of eight causes, again using seven-point scales. We wanted the selected causes to be well-known to respondents (Robinson, Irmak, & Jayachandran, 2012), and from different categories in order to facilitate the design of the scenarios (high fit vs. low fit). Therefore, two causes were selected: Red Cross ($F = 5.91$; $T = 5.69$; $I = 5.80$) and Greenpeace ($F = 5.58$; $T = 4.94$; $I = 4.88$).

The purpose of the second pretest was to choose a brand for each product category (i.e. milk, printers, chocolates and Mp3 players). In line with previous research, well-known brands were selected (Becker-Olsen et al., 2006; Lafferty et al., 2004; Samu & Wymer, 2009). Eight brand names from each product category were identified. A total of 47 undergraduate students were asked to rate their familiarity (1 = not at all familiar/7 = very familiar) and perceived quality (1 = poor quality/7 = good quality) on the candidate brands using seven-point scales. Four brands well-known brands in Spain were selected: Pascual for milk ($F = 6.09$; $Q = 6.19$); Nestlé for chocolates ($F = 6.47$; $Q = 6.23$); HP for printers ($F = 6.36$; $Q = 6.45$); and Sony for Mp3 players ($F = 6.55$; $Q = 6.55$).

Finally, another pretest was conducted to select CRM campaigns promoted by the causes previously selected (i.e. Red Cross and Greenpeace) that would represent a different level of perceived fit between the products and the causes. Perceived fit in this pretest was manipulated by providing different scenarios (e.g. 3% of the product purchase price will be donated to the Red Cross campaign for food distribution in Africa; 3% of the product purchase price will be donated to the Greenpeace campaign for preventing climate change). Then, a group of undergraduate students ($n = 46$) were asked to rate the degree of perceived fit of the product categories selected and the causes on seven-point scales (1 = complementary/7 = not complementary and 1 = makes sense/7 = does not make sense). The results showed a high perceived fit in the following scenarios: milk and Red Cross; chocolates and Red Cross; printer and Greenpeace; and Mp3 players and Greenpeace (see Table 1).

Data collection, sample and procedure

A total of 186 undergraduate business students enrolled at a major university in Spain participated in the study. The research used a survey-based experiment with eight different scenarios. The subjects were randomly assigned to one of these experimental conditions. The use of student samples is very common in CRM research (e.g. Ellen et al., 2006; Lafferty, 2007; Lafferty & Goldsmith, 2005; Lafferty et al., 2004; Lii & Lee, 2012; Moosmayer & Fuljahn, 2010; Nan & Heo, 2007). In addition, homogeneous samples, such as students, facilitate the control of extraneous variables that could potentially confound the results (Callow & Lerman, 2003; Kwok & Uncles, 2005).

Table 1
Pretest 3 results (fit levels).

Product (Brand)	High fit cause (mean)	Low fit cause (mean)	*Z*
Milk (Pascual)	Red Cross (6.00)	Greenpeace (2.02)	5.448***
Chocolates (Nestlé)	Red Cross (4.98)	Greenpeace (1.67)	5.498***
Printer (HP)	Greenpeace (4.48)	Red Cross (2.23)	5.448***
Mp3 (Sony)	Greenpeace (4.38)	Red Cross (2.11)	4.857***

Source: Own elaboration.
*** $p < 0.01$.

Similar to previous research, fictitious campaigns were created (Lii & Lee, 2012). These campaigns featured offers from Nestlé, Pascual, HP and Sony to donate, in return for a purchase of one of their products (chocolates, milk, printers and Mp3 players, respectively), a percentage of the purchase price (3%) to help one of the following campaigns: the Red Cross campaign for food distribution in Africa, or the Greenpeace campaign for preventing climate change.

Eight different questionnaires, with analogous questions, were used to collect the data. The questionnaires had two parts. The first part included questions related to the hedonic (vs. utilitarian) nature of the product and brand's perceived quality, among other issues. Next, subjects were provided with one of the eight scenarios (e.g. in scenario 1 participants were told that Nestlé (chocolates) was supporting the Red Cross campaign). They were then asked to assess the perceived fit between the product and the cause, the credibility of the campaign, the brand attitude and their purchase intentions.

Measures

Well-established scales were employed to measure the constructs in this study. In all cases except for the hedonic vs. utilitarian nature of the product, eleven-point scales were used. Table 2 provides an overview of all the measures.

Three dependent variables associated with consumer responses to CRM were measured. Credibility of the CRM campaign was assessed based on two eleven-point bipolar scale items, following Trimble and Rifon (2006). Attitude towards the brand was measured using three eleven-point bipolar scale items, based on Lafferty and Goldsmith (2005). Finally, purchase intention was measured with three 11-point bipolar scale items, as suggested by Bailey (2005). All three scales demonstrated unidimensionality, with one factor accounting for 96.21%, 86.37% and 75.08% respectively. Credibility exhibited a high degree of reliability ($\alpha = .96$), as did attitude towards the brand ($\alpha = .92$) and purchase intention ($\alpha = .83$). Therefore, to test the hypotheses, the mean scores of the corresponding items on each scale were averaged.

Table 2
Measurements.

Variable	Items
Credibility of the CRM campaign	Unbelievable/believable
Trimble and Rifon (2006)	Unconvincing/convincing
Brand attitude	Negative/positive
Lafferty and Goldsmith (2005)	Unfavourable/favourable
	Bad/good
Purchase intention	Very unlikely/very likely
Bailey (2005)	Improbable/probable
	Impossible/possible
Perceived fit	No consistent/consistent
Lafferty et al. (2004)	Not complementary/complementary
	Does not make sense/makes sense
Type of product	Practical purpose/just for fun
Wakefield and Inman (2003)	For a routine need/for pleasure
Brand quality	Bad product/good product
Park and Kim (2001)	Poor quality/Good quality

Source: Own elaboration.

Measures of perceived fit were adapted from Lafferty et al. (2004). The hedonic vs. utilitarian nature of the product was measured with two dichotomous scales (practical purpose/just for fun; for a routine need/for pleasure) based on Wakefield and Inman (2003). Perceived brand quality, which was included in the analysis as a covariate, was assessed using a subset of two items from Park and Kim (2001). Principal components analyses with varimax rotation were performed to evaluate the dimensionality of the scales. The results suggested that the corresponding items of each scale could be grouped into a single factor with significant factor loadings, and the explained variance exceeded 60% in each case. Scale reliabilities were assessed using Cronbach's alpha. All the scales exhibited a high degree of reliability.

Findings

Manipulation checks

Manipulation checks were carried out to determine whether treatments related to the nature of the product and the perceived fit were effective. As explained above, the hedonic vs. utilitarian nature of the product was measured with dichotomous scales (practical purpose/just for fun; for a routine need/for pleasure). The results show that the chocolates and Mp3 players were mainly considered hedonic by respondents (chocolates = 88.05%, Mp3 player = 77.5%), while milk and printers were mainly considered utilitarian (milk = 92.7%, printer = 95.55%). Perceived fit manipulation was also successful. Within the chocolates and milk product categories, perceived fit (PF) with the Red Cross was significantly higher than with Greenpeace ($PF_{Chocolates\text{-}Red\ Cross} = 5.80$, $PF_{Chocolates\text{-}Greenpeace} = 3.69$, $t = 4.513$, $p < 0.01$; $PF_{Milk\text{-}Red\ Cross} = 7.33$, $PF_{Milk\text{-}Greenpeace} = 4.75$, $t = 4.551$, $p < 0.01$). In contrast, within the Mp3 players and the printers, perceived fit with Greenpeace was significantly higher than with the Red Cross ($PF_{Mp3\text{-}Red\ Cross} = 2.78$, $PF_{Mp3\text{-}Greenpeace} = 5.07$, $t = -3.625$, $p < 0.01$; $PF_{Printer\text{-}Red\ Cross} = 3.33$, $PF_{Printer\text{-}Greenpeace} = 5.38$, $t = -4.417$, $p < 0.01$).

Test of hypotheses

To test the hypotheses, a MANCOVA was conducted with the nature of the product and perceived fit as independent variables. The cognitive, affective and behavioural responses were included in the analysis as dependent variables. Previous studies indicate that a brand's perceived quality might affect the CRM results (e.g. Park & Kim, 2001; Tsai, 2009). Thus, this variable was entered as a covariate. Table 3 presents the MANCOVA results for the dependent variables.

These results reveal a significant main effect of both the nature of the product and the perceived fit. These effects are further investigated using univariate analyses. Table 4 summarizes the univariate ANCOVA results.

H1a, H1b and H1c proposed that CRM initiatives linked to hedonic products (vs. utilitarian) would lead to higher credibility,

Table 3
MANCOVA results.

Source	Wilks' lambda	df	*F*-statistic
Main effects			
Product type	0.964	3, 179	2.253*
Perceived fit	0.931	3, 179	4.418***
Interactions			
Product type × Perceived fit	0.996	3, 179	0.218
Covariate			
Perceived quality	0.410	3, 179	85.996***

Source: Own elaboration.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

Table 4
Univariate ANCOVA results.

Source	Credibility *F*-statistic	Brand attitude *F*-statistic	Purchase intention *F*-statistic
Main effects			
Product type	1.539	4.900**	3.491*
Perceived fit	5.860**	9.087***	1.28
Interactions			
Product type × Perceived fit	0.226	0.151	0.273
Covariate			
Perceived quality	11.536***	259.685***	22.823***

Source: Own elaboration.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

a more positive attitude towards the brand, and a higher purchase intention. As can be seen in Table IV, the univariate test results show significant effects of product type on the attitude towards the brand ($F = 4.900$, $p < 0.01$) and purchase intention ($F = 3.491$, $p < 0.10$). Hedonic products have higher estimates of brand attitude ($M = 7.27$) than utilitarian products ($M = 7.25$). In contrast, purchase intention was higher in utilitarian products ($M = 6.11$) than hedonic products ($M = 5.79$). Thus, the results only support H1b.

H2a, H2b and H2c proposed that CRM initiatives with a high perceived fit between the brand and the cause would lead to higher credibility, a more positive attitude towards the brand, and a higher purchase intention. The univariate test results (see Table 4) show significant effects of perceived fit on credibility ($F = 5.860$, $p < 0.05$) and the attitude towards the brand ($F = 9.087$, $p < 0.01$). The mean for credibility for the high fit condition ($M = 6.05$) was higher than in the low fit condition ($M = 5.38$). Similarly, brand attitude was higher when there was a high fit between the product and the cause ($M = 7.5$) than when the fit was low ($M = 7.03$). Thus, the results suggest that the higher the fit between the product and the cause, the more favourable the credibility of the campaign and the brand attitude. These results support hypotheses H2a and H2b. In contrast, there was no main effect of fit on purchase intention ($F = 1.28$, $p > 0.1$). Therefore, H2c was not supported.

Finally, the analysis revealed a significant effect of the perceived brand quality, included as a covariate, on the credibility of the campaign, the brand attitude and purchase intentions.

Discussion and managerial implications

Given the fact that companies are operating under increasing competition, they need to differentiate, reach new customers, enhance their corporate image and generate incremental sales. In addition, they need to engage in socially responsible behaviours. In this context, CRM is seen as a way for companies to achieve both corporate and nonprofit objectives (Samu & Wymer, 2009). Consumers' responses to CRM practices are complex. Therefore, this paper analyzes the influence of two determinants that may condition the success of a CRM campaign: the product type and the perceived fit between the product and the cause.

Trying to solve the ambiguity identifying in former studies we have adopted the proposal made by authors such as Lafferty et al. (2004) and Bigné et al. (2012). Our results must be considered under the functional fit. Our data revealed that product type had a significant main effect on the consumer response variables included in the analyses. Specifically, the findings showed that the utilitarian or hedonic character of the product used in the CRM campaign influences both brand attitude and purchase intention. As proposed in previous research, attitude towards the brand was greater for the hedonic products than for the utilitarian ones. In contrast, despite the fact that some studies have suggested that CRM used in hedonic products should enhance purchase intention, this was not the case in this study. Previous literature suggests that the feeling of guilt evoked by the purchase of hedonic products can be tempered when the hedonic purchase is linked to a cause (Strahilevitz & Myers, 1998). However, in our study, contrary to what was expected, CRM linked to utilitarian (vs. hedonic) products lead to higher purchase intention. This finding is consistent with other recent studies (Roy, 2010; Subrahmanyan, 2004). The experiential benefits generated by the cause may explain this finding. CRM campaigns generate emotional arousal and affective benefits. The addition of these benefits to the expected functional benefits of the utilitarian products may enhance their overall perceived value (Lim & Ang, 2008) and, consequently, their purchase intentions. Further, the consumption of utilitarian products is typically rational, cognitively driven and goal oriented (Roy & Ng, 2012). These characteristics may make consumers more aware of the need to help causes, thereby increasing their purchase intentions.

Likewise, perceived fit between the product and the cause seems to play a key role. Perceived fit had a significant effect on both the credibility of the campaign and the attitude towards the brand. In contrast, a high level of fit did not have any significant effect on purchase intention. Extant literature has widely discussed the influence of the perceived fit between the product and the cause on consumer response. Although most researchers advocate a high product-cause fit level, others call for a moderate or low level of fit (Drumwright, 1996). Several researchers have not supported that higher levels of fit can improve consumer responses to CRM campaigns (e.g. Lafferty, 2007; Nan & Heo, 2007). Our results show that fit has a significant effect on both the cognitive and affective level of the consumer response. When consumers perceive a high fit, the campaign is more credible. In addition, the beliefs and affect associated with the cause might be transferred to the brand, thus improving consumers' perceptions towards it. The findings in this study suggest that perceived fit between the product and the cause, in contrast, does not play a key role in terms of influencing the behavioural level of the consumer response. As Lafferty (2007) explains, other variables, such as the congruence among the individuals and the firm, can influence the purchase intent. Therefore, two CRM campaigns with different levels of fit could get similar effects.

The research findings have several managerial implications. Our findings related to the effects of type of product on consumer responses were intriguing. The cognitive response was not affected by this factor. Therefore, the nature of the product does not appear to be a relevant determinant of the credibility of the campaign. In contrast, while the affective response, measured through the brand attitude, was higher for hedonic products, the behavioural response, measured through purchase intentions, was slightly higher for utilitarian products. These mixed results could suggest that CRM campaigns are not only suitable for hedonic products, as has usually been proposed in the literature, but also for utilitarian products. Indeed, our findings show that linking a CRM campaign to a utilitarian product may be more effective in influencing purchase intentions. Therefore, marketers selling hedonic products can benefit from a more favourable attitude towards their brands, whereas marketers selling utilitarian products can benefit from higher purchase intentions.

Our findings also provide some insights into the mixed results about the influence of the perceived fit between the product and the cause. A high level of fit did not have any significant effect on purchase intention. It is interesting to note, however, that according to the results of our study, a CRM campaign with high product-cause fit, compared with one of low fit, is more effective in influencing the credibility of the campaign and the attitude towards the brand. Therefore, the perceived fit between the cause and the product does appear to be relevant. As such, marketing managers should acknowledge the importance of linking their products with congruent causes. Some consumers are sceptical about the firms' objectives when using CRM alliances. Therefore, higher fit can reduce this scepticism and increase the credibility of the campaign. Similarly, as most managers seek to maintain and reinforce positive attitude towards their brands, linking their brands to CRM initiatives appears to be a wise alternative to reach this objective and build consumer-based brand equity. The selection of the cause is, therefore, extremely important when designing these initiatives.

Limitations and further research

As with all research, this study is subject to several limitations. First, a convenience sample was used. Future research should be conducted using different groups of consumers to generalize the results of this study to other populations. Second, the products, brands and causes used as stimuli in the experiment could have impacted the research findings. We recommend that further research consider other product categories, brands and causes.

Our results also suggest that the interaction effect between fit and product type is not significant on credibility, attitude and purchase intention. However, although this was not the objective of this research, we believe that further analysis in the interaction effects would be of interest and it represents one of our proposals for future research.

Finally, this study has focused on the role of product type and perceived fit. More specifically, the core objective has been functional fit (product category) rather than brand fit (image). As potential differences may arise when functional and brand fits are analyses, studies where simultaneous analyses are performed would be of great interest. We also advocate future research to analyze additional factors, such as variables related to the cause, the non-profit organization or the consumer characteristics, in order to gain a better understanding of consumers' responses to CRM initiatives.

Nevertheless, this study offers some new insights and adds to the literature on consumer responses to CRM. Further, it is hoped that the findings presented in this research will help managers to improve the effectiveness of this practice.

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Article

Marketing mix effects on private labels brand equity

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ABSTRACT

The present study explores some marketing mix effects on private labels brand equity creation. The research aims to study the effect of some elements under retailer's direct control such as in-store communications, in-store promotions and distribution intensity as well as other general marketing mix levers such as advertising, perceived price, and monetary promotions. The results indicate that the most efficient marketing mix tools for private label brand equity creation are private labels in-store communications, private labels distribution intensity and the perceived price. These results highlight the importance of the store as a key driver for the private labels brand equity creation. As opposed to manufacturer brands we find no effect of advertising on the private labels brand equity and an opposite effect of the perceived price. This study is a pioneering contribution in the domain of private labels brand equity research exploring a more comprehensive and in-store specific set of marketing mix initiatives as sources of brand equity. The results suggest important implications for retailers when managing their own brands.

Introduction

Private label brands, also known as "store brands" or "distributor brands", were considered low-price, low-quality products several decades ago; currently, however, they represent a clear alternative to manufacturer brands (Kapferer, 2008). They account for more than 40% of the market in six European countries (Private Label Manufacturers Association [PLMA], 2015). In general, private labels refer to brands owned by the retailer or distributor and sold only in its own stores (Kumar & Steenkamp, 2007). Conversely, manufacturer brands are brands owned by manufacturers with the purpose of commercializing them.

One determinant of a private label's success is the concentration of the retailing industry (Hoch & Banerji, 1993). This concentration has implications for manufacturer brands and private label dynamics: First, retailers can grow larger because they can achieve economies of scale by offering similar products at lower prices (Dhar & Hoch, 1997). Second, a retailer's critical mass allows it to find powerful suppliers to manufacture its private labels, thereby ensuring good quality.

The development of private labels has resulted in many advantages for retailers. For example, they can serve as strategic tools to enhance differentiation and positioning between retailers (Grewal, Krishnan, Baker, & Borin, 1998; Richardson, Jain, & Dick, 1996; Semeijn, Van Riel, & Amborsini, 2004; Sudhir & Talukdar, 2004). They can also build store loyalty, strong consumer relationships and store image (Bigné, Borredá, & Miquel, 2013; Bonfrer & Chintagunta, 2004; Collins-Dodd & Lindley, 2003; Corstjens & Lal, 2000; Miquel-Romero, Caplliure-Giner, & Adame-Sánchez, 2014; Richardson et al., 1996). However, managing private labels is unquestionably a challenge for retailers (Wu, Yeh, & Hsiao, 2011), whose main business traditionally has been distribution of products. Retailers must be aware of the strategic role of their private labels and develop strong investments and efforts to build their private label brand equity (Burt, 2000; Dekimpe & Steenkamp, 2002). Because brand management is critical to the success of both retailers and manufacturers (De Wulf, Odekerken-Schröder, & Goedertier, 2005), creating and maintaining brands is increasingly important in the current highly competitive environment (Seetharaman, Nadzir, & Gunalan, 2001). In this context, the concept of brand equity is a key driver of brand management, from both practitioner and academic viewpoints (Keller & Lehmann, 2006). In general, "brand equity" is defined as the incremental utility or value that a brand name imbues to a product (Farquhar, 1989; Rangaswamy, Burke, & Oliva, 1993; Srivastava & Shocker, 1991). Elements of brand equity positively influence consumers' perceptions and subsequent brand buying behaviors (Reynolds & Phillips, 2005). With a consumer-based behavioral approach to brand equity, it can be viewed as the differential effect of brand knowledge on consumer response to the marketing of the brand

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(Keller, 1993). From a managerial point of view, adequately managing brand equity enhances the result and productivity of marketing activities (Keller, 1993; Yoo & Donthu, 2001). Therefore, to increase such positive effects and manage brands properly, firms must develop strategies to foster the growth of brand equity (Keller, 2007). In this context, identifying factors that build brand equity represents a central priority for academics and marketing managers (Valette-Florence, Guizani, & Merunka, 2011).

In the domain of private label brands, the phenomenon of their brand equity is only just emerging; research on the topic is scarce. There are few studies focus on comparing manufacturer and private label brand equity (e.g., Ailawadi, Lehmann, & Neslin, 2003; De Wulf et al., 2005; Sethuraman & Cole, 1999; Suárez, Nogales, & Barrie, 2012) since traditionally, researchers viewed private labels as products with the lowest brand equity in the market (Ailawadi et al., 2003). However, recent studies suggest that private labels are able to enjoy brand equity (Beristain & Zorrilla, 2011; Cuneo, Lopez, & Yague, 2012; De Wulf et al., 2005). Consumer-based private label brand equity research (e.g., Beneke & Zimmerman, 2014; Beristain & Zorrilla, 2011; Calvo-Porral, Martinez Fernandez, Juanatey Boga, & Levy-Mangin, 2013) indicates that private label brand equity is a multidimensional construct structured similarly to manufacturer brands but with some particularities. These works show evidence that Aaker's (1991) conceptual model can be extended to these particular brands but also highlight the need to further research the topic. Specially, these findings demonstrate that more attention is needed to understand how private label brand equity is created and how it can be managed across the various marketing mix activities that retailers use to support their brands.

Previous research suggests that marketing mix elements are key variables in building brand equity (Yoo, Donthu, & Lee, 2000). In this context, Keller (1993) states that brand equity should be managed over time by fine-tuning the supporting marketing program, because brand equity represents the effect of accumulated marketing investments into the brand (Keller, Heckler, & Houston, 1998). Indeed, a major challenge marketing teams face is deciding on the optimum marketing mix to achieve the greatest impact on the market (Soberman, 2009). Previous studies focus on exploring marketing activities effects on manufacturer brand equity (e.g., Bravo, Fraj, & Martinez, 2007; Buil, de Chernatony, & Martínez, 2011; Villarejo & Sánchez, 2005; Yoo et al., 2000); however, few studies explore which marketing activities contribute most effectively to build private label brand equity.

Although currently, private label brands are considered clear alternatives to manufacturer brands (Kapferer, 2008), we propose that marketing mix efforts might have different effects on private label brand equity. In general, manufacturers rely more on traditional mass media, while retailers engage much more in experience marketing through their stores (De Wulf et al., 2005).

Therefore, to close this research gap, the research goal of this investigation is to measure the effect of some marketing mix elements on the creation of private label brand equity, focusing on in-store specific activities such as in-store communication, in-store promotions and distribution intensity, as well as other marketing mix elements such as advertising, price and monetary promotions.

To analyze the aforementioned relationship, the present research proposes a model that relates marketing mix efforts to the private label brand equity construct. It extends Yoo et al.'s (2000) framework to the domain of private label brands, adding other marketing mix efforts specific to retailers' marketing strategy. Therefore, the contribution of this paper are twofold: first, to identify the effects of marketing mix efforts on private label brand equity, and second, to add to previous models the in-store specific marketing tools controlled by retailers.

The next section reviews the literature that addresses the effect of marketing mix elements on brand equity. Then, the review narrows to those studies investigating the effect of marketing mix elements on private labels brand equity. The following section discusses these results and introduces additional marketing mix elements, proposes a model and describes the hypotheses derived from it. The subsequent section explains the methodology followed and presents the results obtained. Finally, the article concludes with a discussion of the results and implications of the research, some limitations of the study and suggestions for future lines of research.

Marketing mix efforts and brand equity

In general, brand equity is the utility or value that a brand name gives to a product (Farquhar, 1989). In this study we will consider brand equity from the consumer perspective, therefore, we will build on the literature of Consumer Based Brand Equity (Aaker, 1991; Keller, 1993; Yoo et al., 2000). Aaker (1991) considers consumer based brand equity as a set of assets (liabilities) linked to a brand's name and symbol that adds to (or subtracts from) the value a product/service provides to customers. This value added can be created through several dimensions: perceived quality, brand loyalty, brand associations, and brand awareness.

Early research has suggested exploring the effect of marketing mix elements on brand equity creation (e.g., Barwise, 1993; Shocker, Srivastava, & Reukert, 1994). Yoo et al. (2000) empirically investigate whether distribution, price, advertising and store image enhance manufacturer brand equity creation. Subsequent studies identify new effects such as consumer's perception of advertising and nonmonetary promotions (Buil et al., 2011).

No early studies address the effect of marketing mix elements on private label brand equity, probably because the first generations of private label brands received no marketing support (Ailawadi & Keller, 2004). Although some retailers exhibited a strategic marketing orientation toward their private labels (Burt, 2000), marketing support of private labels is considered a recent phenomenon.

In the case of private labels, three unique characteristics of private label brands can influence which marketing mix strategies are most effective: First, private label brands are sold exclusively in their retailers; second, private label positioning is influenced by the retailer's positioning (Kapferer, 2008), and third, private label brands form a category in consumers' minds (Nenycz-Thiel & Romaniuk, 2009; Nenycz-Thiel, Sharp, Dawes, & Romaniuk, 2010), defined by some specific attributes such as perceived value.

The few studies that address marketing mix effects on private label brand equity (Beneke & Zimmerman, 2014; Beristain & Zorrilla, 2011; Calvo-Porral & Lévy-Mangín, 2014) focus on store image (considered a marketing tool in this context; e.g., Srivastava & Shocker, 1991) and on the effect of store price image in terms of affordability (Beristain & Zorrilla, 2011; Calvo-Porral et al., 2013), both revealing a positive influence on private label brand equity.

Proposed model: justification and hypothesis

As the previous section explains, extensive literature shows that marketing mix efforts have an effect on brand equity creation. Yoo et al.'s (2000) framework indicates the specific marketing mix tools that have proven most relevant in building manufacturers' brand equity: distribution intensity, advertising, price and store image. However, since private label brands are owned by the distributor and sold exclusively in their stores, other marketing mix elements under the direct control of the retailer, such as in-store promotions and in-store communications are important to consider. Therefore, we extend Yoo et al.'s (2000) model by incorporating these two additional marketing mix initiatives.

In this sense, the current research makes two contributions. First, it represents pioneer research on retailers' marketing

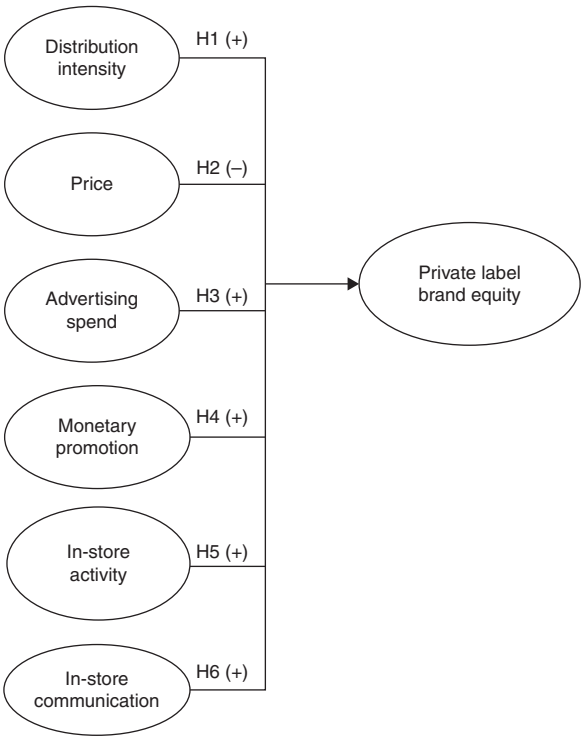

Fig. 1. Proposed conceptual model.

activities for their private label brands, including special activities related to retail environments such as in-store promotions and in-store communication. Second, this work extends the exploration of several selected marketing mix elements on private label brand equity.

In line with extant literature, the current study hypothesizes directional relationships between marketing efforts and an overall construct of private label brand equity. Fig. 1 summarizes the relational paths among marketing efforts constructs and the private label brand equity construct. The following subsections discuss in depth the hypotheses related to each selected marketing effort.

In-store promotions

Retailers frequently use point-of-sale promotions to offer "experiences" to consumers (e.g., De Wulf et al., 2005). Because private labels are exclusive and unique of each retailer, they constitute a differentiated ingredient of the point-of-sale experience. Sprott and Shimp (2004) suggest that in-store promotions such as sampling or demonstrations are important tools to increase the perceived quality of private label brands. Since the perceived quality is an important component of the brand equity, we can expect the sampling or demonstrations to have a positive effect on the private labels brand equity. Interestingly, Sprott and Shimp (2004) research shows that the effect of sampling on the perceived quality differs significantly between private labels and manufacturer brands. While sampling activity significantly improves private label perceived quality the same is not true for manufacturers brands.

Moreover, the trial of private labels contributes to decrease the private labels perceived risk that is of critical importance for private labels intention to purchase (Sweeney, Soutar, & Johnson, 1999).

Therefore, we posit that in store promotions are an effective means for enhancing private labels brand equity.

H1. Private label brand in-store promotions have a positive effect on private label equity.

In-store communication

Following previous arguments, one might expect that retailers use their stores and point of sale to communicate their private label brands. In the context of this investigation it is interesting to highlight that the effects of in store exposure differ between manufacturer brands and private labels (Clement, Aastrup, & Charlotte Forsberg, 2015).

Brown and Lee (1996) suggest that shelf space can be conceived as a way of advertising. Nogales & Suarez, 2005 find that retailers offer more shelf space to their private labels, thus promoting them intensively at the point of sale. One reason for this decision is that increased shelf space enhances consumers' perception of private label brand quality (Dursun, Kabadayı, Alan, & Sezen, 2011) and the private label brand image (Corstjens & Lal, 2000) thus, increasing private label brand equity. In addition to these arguments, other in-store elements such as posters, banners or features (Gázquez-Abad & Martínez-López, 2016) might help build private label brand awareness and familiarity that, in turn, will increase the overall private label brand equity.

Therefore,

H2. Private label brand in-store communication has a positive effect on private label brand equity.

Price

Price is a marketing tool used to position and differentiate the product (Yoo et al., 2000). Brand equity literature states that a high price has a positive effect on brand equity (Bravo et al., 2007; Yoo et al., 2000) because consumers use price as an extrinsic cue to infer product quality (e.g., Rao & Monroe, 1989). Private label brands are characterized by their perceived value (Kumar & Steenkamp, 2007). Many studies show evidence that the price gap between private label brands and manufacturer brands is a driver of private label brands' success (e.g., Dhar & Hoch, 1997; Kapferer, 2008; Sethuraman, 2003). Thus, consumers expect lower prices for private label brands than for manufacturer brands (Sethuraman, 2000). Indeed, much research has established price as a determinant variable of private label brand success (e.g., Ashley, 1998; Dhar & Hoch, 1997; Raju, Sethuraman, & Dhar, 1995; Sethuraman & Cole, 1999; Sinha & Batra, 1999). In particular, a crucial factor for private label brand success is its positioning in value perception (e.g., Sethuraman, 2000), because an important characteristic consumers associate with private label brands is value (Nenycz-Thiel & Romaniuk, 2012). We therefore posit for private labels a reverse hypothesis about the price effect on brand equity than that of expected for manufacturer brands:

H3. Private label brand price has a negative effect on private label brand equity.

Monetary promotions

Literature suggests that monetary promotions relate negatively to brand equity (Mela, Jedidi, & Bowman, 1998; Valette-Florence et al., 2011; Yoo et al., 2000). However, these promotions enlarge the advantageous price gap of private label brand and the attractiveness of purchasing them. Thus, private label brand consumers can consider that they are receiving more value for a lower price due to coupons or price reductions. In this case, monetary promotions would reinforce the private label brand's positioning on value. All these arguments lead to the following hypothesis:

H4. Frequency of private label brand monetary promotions has a positive effect on private label brand equity.

Distribution intensity

Distribution (referred to the availability in number of stores) is a marketing tool aimed to put the product into consumers' hands in the appropriate place and time (Kreutzer, 1988). Literature evidences that intensive distribution, when products are placed in a large number of stores, is positively related to brand equity (Yoo et al., 2000). In the domain of private label brands, it is intuitively appealing to posit that distribution intensity will also have a positive effect on private labels brand equity. If the private labels are distributed in a large number of retailers' stores, consumers will have greater exposure to the product, leading to greater brand awareness and satisfaction as consumers save time searching and traveling to stores—in other words, they experience more convenient purchasing. Greater satisfaction will lead to stronger brand loyalty (Yoo et al., 2000), and thus, the effect of distribution intensity on the overall private label brand equity will be positive. Therefore,

H5. Private label brand distribution intensity has a positive influence on private label brand equity.

Advertising activity

Advertising is one of the most visible marketing tools (Buil et al., 2011; De Chernatony, 2010), and it has a positive effect on brand equity (Bravo et al., 2007; Buil et al., 2011; Cobb-Walgren, Ruble, & Donthu, 1995; Simon & Sullivan, 1993; Villarejo & Sánchez, 2005; Yoo et al., 2000). By extension, it seems intuitive that in the domain of private label brands, the effect of advertising on private label brand equity will be no different. The following hypothesis synthesizes this argument:

H6. Private label brand advertising activity has a positive effect on private label brand equity.

Methodology

With the aim of analyzing the proposed model to explore the effect of marketing mix elements on private label brand equity and to empirically test the proposed hypotheses, we conducted a survey in Spain in 2014 using a sample of private label brand consumers. Spain is a relevant country for private labels management since it enjoys the highest the private label share in Europe, 50% (PLMA, 2015).

Data were collected through store-intercept surveys in which consumers responded to a questionnaire consisting of items identified from the literature review. Exploratory factor analysis followed by confirmatory factor analysis using structural modeling (Amos) investigates the relationships between marketing efforts and private label brand equity and examines the hypothesized paths in the proposed model.

Sample selection and data collection

To be eligible for the study, respondents needed to be aware of and familiar with the focal brand on their questionnaire and to have recently bought it. Previous studies on brand equity highlight this filter as necessary in brand equity studies (e.g., Lassar, Mittal, & Sharma, 1995; Pappu, Quester, & Cooksey, 2005). In line with previous similar brand equity studies (e.g., Buil et al., 2011; Netemeyer et al., 2004; Yoo et al., 2000), two criteria determined the selection of product category and brands: wide availability and consumer familiarity. The product category yogurt fit these criteria well. Three private label brands represented different private label brands from different retailer brand formats.

We selected yogurt, first, because it is a category in a mature market in which private labels are solid accounting for 57.1% of market share in Spain (Alimarket, 2014). Second, this category is large, with numerous brands operating in the Spanish market. Finally, it has been successfully used in previous private label brand research studies (Cuneo et al., 2012).

The yogurt private labels in this study, Hacendado, Carrefour and Milbona, correspond to three different retail brands and formats: Hacendado is the yogurt private label from Mercadona, a lead supermarket; Carrefour is the yogurt private label from Carrefour, a lead hypermarket; and Milbona is the yogurt private label from Lidl, a lead discounter.

These selected private label brands can be classified as third-generation private label brands. We haven't considered premium private labels since in Spain, similarly to most of the countries in the world, fourth-generation private label brands or premium private label brands account for around 3% of market value (Kantarworld Panel, 2014).

Participants were exposed to one of the three versions of the questionnaire, which were identical except for the private label brand of interest. The data were collected via store-intercept survey using systematic sampling (every three). Field workers collected the data during different times of the day and on different days. The survey yielded a total of 450 complete usable questionnaires. 72.2% of participants were women. Half the respondents were aged between 31 and 50 years. Respondents aged more than 50 years made up 13% and those younger than 30 years accounted for 18.4%. The largest proportion of respondents lived in a family unit of four to five people (38.7%); those living in a household size of two to three people accounted for 37.8%; 15.8% lived in a family unit of more than five people; and 7.8% lived alone.

Survey instrument

A seven-point Likert-type scale measured private label equity, using the anchors "strongly disagree" (1) and "strongly agree". Likert scales are useful to measure constructs because they can gauge personality, perceptions and attitudes (Bordens & Abbott, 1996; Hodge & Gillespie, 2003), and six- to seven-point Likert-type scales have been shown to be optimal (Green & Rao, 1970). A pretest with 20 participants validated the questionnaire. It contained two sections: In Section 1, the 23 items identified from literature review measured marketing mix elements and the construct of the overall private label brand equity. Section 2 included questions on demographics.

Four items from Yoo et al.'s (2000) consumer-based overall brand equity scale measure the incremental value of the focal product due to the brand name. Following Yoo et al. (2000) and Buil et al. (2011), the questionnaire examined perceived rather than actual marketing efforts for two reasons. First, data of actual marketing in the study were not available. Second, perceived marketing efforts play a more direct role in the consumer psychology than actual marketing efforts (Yoo et al., 2000).

Previous research measures private label brand distribution intensity by the number of retail stores where the private label brand is available according to the consumer's perception. The questionnaire adapts Yoo et al.'s (2000) three scale items. Private label brand advertising activity was measured as the consumer's subjective perception of the intensity of private label advertising activity and the firm's investment in it (Buil et al., 2011).

To measure private label brand monetary promotions, the survey asked for the relative perceived frequency of monetary promotions developed on the focal private label brand using Yoo et al. (2000) and Buil et al.'s (2011) three-item scale. To measure in-store promotions, the questionnaire adapts items from Yoo et al. (2000), adding ad hoc items related to private label activities in store, for

Table 1
Constructs, items and model results.

Constructs, items and measurement		Standardized loadings	*t* value
Distribution intensity (CR = 0.72; AVE = 0.71; Cronbach's alpha = 0.95)			
DIS1	More retailers sell yogurt X, as compared to other competing yogurts brands	0.92	*
DIS2	The number of retailers that deal with yogurt X is more than that of its competing brands	0.96	40.292
DIS3	Yogurt X is distributed through as many retailers as possible	0.93	33.949
Price (CR = 0.72; AVE = 0.75; Cronbach = 0.94)			
PRI1	The price of yogurt X is high	0.97	*
PRI2	The price of yogurt X is low (r)	0.85	31.235
PRI3	Yogurt X is expensive	0.95	46.165
Advertising activity (CR = 0.80; AVE = 0.69; Cronbach's alpha = 0.95)			
ADS1	Yogurt X is intensively advertised	0.92	*
ADS2	Yogurt X spends a lot in advertising compared to other competing yogurt brands	0.95	40.307
ADS3	The advertisements for yogurt X are frequently shown	0.93	36.682
Monetary promotion (CR = 0.71; AVE = 0.68; Cronbach's alpha = 0.94)			
PROM1	Price deals for yogurt X are frequently offered	0.95	*
PROM2	Too many times prices deals for yogurt X are presented	0.91	34.934
PROM3	Price deals for yogurt X are more frequent than competing brands of yogurt	0.91	34.882
In-store promotions (CR = 0.71 AVE = 0.78; Cronbach's alpha = 0.93)			
ACT1	Yogurt X frequently offers tasting in store	0.81	*
ACT2	Store employees frequently recommend yogurt X	0.96	26.890
ACT3	Store employees often inform me about yogurt X	0.96	27.104
In-store communication (CR = 0.48; AVE = 0.82; Cronbach's alpha = 0.90)			
INSTO1	Yogurt X has more space on retailer shelves, as compared to other competing yogurt brands	0.75	*
INSTO2	Yogurt X has more visual elements (posters), as compared to other competing yogurt brands	0.89	17.512
INSTO3	There are many more retail activities in yogurt X, as compared to other competing retailers	0.86	18.325
INSTO4	Yogurt X appears more advertised in retailer leaflets, as compared to other competing yogurt brands	0.82	20.102
Overall Private Label Equity (CR = 0.67; AVE = 0.66 Cronbach's alpha = 0.96)			
OB1	It makes sense to buy yogurt X instead of any other brand, even if they are the same	0.87	*
OB2	Even if another yogurt brand has same features as X, I would prefer to buy X	0.94	31.400
OB3	If there is another brand of yogurt as good as yogurt brand X, I prefer to buy yoghurt	0.93	30.660
OB4	If another yogurt brand is not different from yogurt brand X, it seems smarter to purchase X	0.88	27.199

Notes: X focal private label. (r) = reverse code. One factor loading parameter in each set of loadings that measure the same factor is constrained to 1. The goodness-of-fit statistics of the measurement model of 23 indicators for 7 constructs are as follows: $\chi^2_{209} = 477.531$; goodness of fit index = 0.92; adjusted goodness-of-fit index = 0.89; incremental fit index = 0.98; normed fit index = 0.96; Tucker–Lewis index = 0.97; comparative fit index = 0.98; root mean square error of approximation = 0.05; standardized root mean residual = 0.04.

* Significant at $p < 0.05$.

a total of three items. Finally, in-store communication consists of every visual element consumers can perceive to communicate the focal private brand such as shelf space, posters, banners or leaflets. For this purpose, we developed four ad hoc items based on previous literature (Ailawadi, Beauchamp, Donthu, Gauri, & Shankar, 2009).

Several statistical methods can be used to achieve our results objectives. We chose structural equations modeling methodology since: (i) presence of latent variables (ii) complex relations among the different variables of the model and (iii) the need to test the theory of the model (Bielby & Hauser, 1977; Kline, 2015). Therefore, the confirmatory factor analysis using structural equations modeling tested the unidimensionality of the marketing mix elements. The 23 items obtained from the exploratory factor analysis served as indicator variables in the confirmatory factor analysis.

Results

Measurement model

Cronbach's reliability, exploratory factor analysis and confirmatory analysis were used to select and assess the final items used for hypothesis tests. Cronbach's measure reliability coefficient was first calculated for the items in each marketing effort construct and for the overall private label construct. Cronbach's alpha for all the constructs were above 0.70, the cutoff level of reliability recommended (Nunnally & Bernstein, 1994). Exploratory factor analysis then examined whether the items produce the proposed factors and whether the individual items are loaded on their appropriate factors. Factor analysis using principal component analysis and Varimax method suggested seven factors. All the indicators were significant, with factor loading higher than 0.7 and no cross loading. The explained variance exceeded 60% in each case. A Bartlett test and Kaiser–Meyer–Olkin (KMO) index were satisfactory (significant and above 0.7, respectively).

Following Anderson and Gerbing (1988), a two-step approach for structural equation modeling was executed. First, a confirmatory analysis detected the unidimensionality of each construct, and then a structural model tested the proposed hypotheses. The analysis uses Amos 21 maximum-likelihood estimation method. However, it is important to highlight that this method requires multivariable normality in every observed variable. The result of multivariate kurtosis coefficient was 47,783, indicating that sample did not presented a normal distribution (Mardia, 1974). An approach to manage the presence of nonnormal multivariable data is to use the bootstrap procedure (West, Finch, & Curran, 1995; Yung & Bentler, 1996; Zhu, 1997), as suggested by Bollen and Stine (1993). We ran a resampling of 1000 bootstraps, in accordance with our sample size Nevitt and Hancock (2001). The confidence intervals of regression coefficients and standardized regression coefficients revealed that estimated values were significantly different from zero, suggesting that the model was acceptable. Confirmatory factor analysis (CFA) confirmed the adequacy of all the proposed items to measure the constructs. Furthermore, CFA of the multi-item scale produced an acceptable fit for the data accordingly to Hu & Bentler, 1999Hu and Bentler's (1999) goodness-of-fit criteria (see Table 1). Composite reliability (CR) values are greater than 0.6 (Bagozzi & Yi, 1988) and Cronbach value is superior than 0.7 (Nunnally & Bernstein, 1994) which guarantee the good internal

Table 2
Discriminant validity of measurement scale.

Construct	Correlation						
	F1	F2	F3	F4	F5	F6	F7
F1. Distribution intensity	**0.843**						
F2. Perceived price	0.319	**0.866**					
F3. Advertising activity	0.559	0.264	**0.831**				
F4. Monetary promotion	0.455	0.294	0.599	**0.825**			
F5. In-store promotion	0.533	0.400	0.547	0.583	**0.883**		
F6. In-store communication	0.474	0.181	0.431	0.374	0.454	**0.907**	
F7. Overall private label brand equity	0.298	-0.039	0.132	0.124	0.146	0.285	**0.806**

Table 3
Structural model results: relationship between marketing efforts and private label brand equity.

Hypothesized relationship	Standarised loading	*t* value	Hypothesis	Conclusion
In-store promotions → PL brand equity	−0.140	−0.204	H1	Not supported
In-store communications → PL brand equity	0.210	3.591	H2	Supported
Perceived price → PL brand equity	−0.146	−2.860	H3	Supported
Monetary promotion → PL brand equity	0.070	0.119	H4	Not supported
Distribution intensity → PL brand equity	0.295	4.691	H5	Supported
Advertising intensity → PL brand equity	−0.810	−1.255	H6	Not supported

Note: Significant, $p < 0.05$.
PL: private label.

validity of the measurement model. In addition, average variance extracted (AVE) is above 0.5 that indicates the percentage of variance explained by the items (Fornell & Larcker, 1981) and confirms the convergent validity of the model. In addition, all factor loadings are above 0.5 and the *t*-values associated to them are statistically significant (at 0.05 significance level), suggesting a considerable convergent validity (see Table 2).

To test discriminant validity we used Fornell and Larcker (1981) criteria. According to it, the extracted variance (VE) for any two constructs should be always greater that the squared correlation estimate. Results confirm the discriminant validity of the model (see Table 3).

Structural equations modeling

Once reliability, dimensionality and validity of the multi-item scales were assessed, the parameters of the structural model were estimated. Goodness-of-fit (GFI) statistics indicating the overall acceptability of the structural model analyzed (see Table 2) were acceptable: GFI: 0.92; adjusted goodness-of-fit index (AGFI) = 0.89; normed fit index (NFI) = 0.96; incremental fit index (IFI) = 0.98; Tucker–Lewis index (TLI): 0.98; confirmatory fit index (CFI) = 0.98; root means square approximation (RMSA) = 0.05; standardized root mean square residual (SRMR) = 0.04. Although the chi-square is not significant ($\chi^2_{209} = 477.531$; $p = 0.000$), it cannot be considered a reliable indicator of GFI because the samples exceeded 200 cases (Bollen, 1989). In most cases, path coefficients were significant ($p < 0.05$), and evidence supports several of our hypotheses. The following subsections discuss these results, and Table 3 summarizes them.

Relationships of selected marketing mix elements with private label equity

In-store communication of private label brands has a positive influence on private label brand equity, in support of H1. However, the data do not confirm the effects of other marketing elements such as: advertising activity, monetary promotions and in-store promotion (H6, H4 and H1). As hypothesized, the positive effect of distribution intensity on private label brand equity was supported (H5). Findings also reveal that private label brand price has a negative influence on private label brand equity creation and maintenance, in support of H3. This result contradicts previous knowledge about the positive effects of high price on brand equity of manufacturer brands. In the particular case of private label brand, the direction of this effect on brand equity is opposite. In summary, the results suggest that the marketing mix elements that show the greatest effects on private label brand equity are private label brand distribution intensity (0.294), private label brand in-store communication (0.210) and private label brand price (−0.146) (see Table 3).

Discussion and conclusions

The current study explores the relationships between private label brand equity and several marketing mix elements that retailers use to support their private labels: in-store promotion, in-store communication, distribution intensity, price, advertising activity and monetary promotions.

Our research reveals important academic and managerial implications. For the retailers the current research shows effective means to build the brand equity of their private labels. For academics our research contributes to the scarce brand equity literature on private labels suggesting new elements and factors to consider.

Our results show that private labels in-store communication, its distribution (availability in number of stores) and the perceived price play an important role in building private label brand equity. This research underlines the importance of in-store communication as opposed to advertising that in the context of our research shows no effect on private labels brand equity.

These results can be explained from different perspectives. In the first place, retailers invest less in advertising than lead manufacturer brands do since retailers tend to leverage the advertising of manufacturer brands to grow their private labels (Soberman & Parker, 2006). On the other hand, when retailers enhance private labels exposure in the store, which they control, it is possible that the effect of this exposure in consumers is stronger than the exposure of a mere advertising commercial.

Previous research shows that the effect of some in store communication activities differ between manufacturer brands and private labels (Clement et al., 2015). Therefore, our results underscore important implications for the brand management of private labels since they suggest in store marketing as a possible source of competitive advantage for private labels versus manufacturer brands.

Given that consumers make a majority of decisions in the store and they are affected by the stimuli they find there our results are even more significant.

These results along with the positive effect of distribution intensity on the private label brand equity highlight the importance of the store as primary source of private labels brand equity. Distribution intensity, i.e., the level of availability of the private label brand, is an important driver of the private label brand equity. Although private label brands are unique, exclusive for every retailer, consumers' perception of private labels distribution positively affects brand equity. Given that retailers' strategy regarding the number of outlets seems difficult to change, this result suggests the importance of seeking alternatives when physical distribution will not be possible. For example, availability in online channels might compensate the limited number of stores where the retailer operates, even slightly increasing their share (Dawes & Nenycz-Thiel, 2014). In addition, some cobranding or cross-service strategy, such as retailers' agreement with some petrol stations, might also contribute to increase the availability perception.

Concerning price, the private label brand perceived price is a key factor for its success, in that private label consumers expect advantageous prices. In this context, price is an important tool to offer a value proposal to the market and an alternative to manufacturer brand positioning. In general, price is considered an external cue of perceived quality. Indeed, previous research on manufacturer brand equity suggests that a high price has a positive effect on brand equity because consumers relate price to product quality. Interestingly enough, however, our results reveal that a higher price perception of private labels negatively affects their brand equity. This counterintuitive result can be explained, as we hypothesized, since private label brand price is not an indicator of the brand quality but rather a reflection of the retailer price positioning (González-Benito & Martos-Partal, 2014). Some anecdotal evidence illustrates this result: Retailers' aggressive positioning in price does not mean that their private label brands' price advantage, which can be as large as 30% over manufacturer brands, reflects a comparable difference in quality (Rubio, Oubiña, & Villaseñor, 2014; Apelbaum, Gerstner, & Naik, 2003). Similarly, consumers will not infer significantly improved quality with an increase in price in a private label, because their categorization of these brands would lead them to expect value as an intrinsic characteristic. Model-free evidence in brands with high perceived value positioning such as Zara or H&M sheds light on this result: Higher prices for these two brands does not necessarily positively contribute to an increase in their brand equity.

Limitations and further research

As with all empirical studies, the current research has several limitations, and overcoming them can be a guide for future research. First, the data are based on consumer surveys; therefore, the research is not exempt from individual subjectivity. Future research could combine actual measures of marketing activities with perceptual measures. Second, the current research explores the effect of some marketing mix elements on overall private label brand equity. Future research could extend the model to include additional dimensions of the consumer-based brand equity construct in order to better understand the brand equity creation process. Third, the current study does not include all possible marketing activities retailers use to support their private label brands. Future research might include other marketing tools such as the use of slogans (Aaker, 1991), company image (Keller, 1993) or brand-naming strategy (Keller et al., 1998) to improve the knowledge of private label brand equity creation. Finally, this research is limited to Spain and to one product category. Future research should consider different countries and market differences in product categories and private label strategy.

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