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Assessing the entrepreneurial and intrapreneurial intentions of current and future labor forces: the role of entrepreneurial orientation

Azra Bičo and Emil Knezović
International University of Sarajevo, Ilidža, Bosnia and Herzegovina

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Abstract

Purpose – The study aims to examine whether there is a difference in entrepreneurial intentions (EI) and intrapreneurial intentions (II) between current labor force (CLF) and future labor force (FLF). Moreover, the role of entrepreneurial orientation (EO) as a common determinant has been presented.

Design/methodology/approach – A cross-sectional survey was used to collect the data from 472 members of the CLF and 310 members of the FLF in Bosnia and Herzegovina. To test the hypotheses, Welch's *t*-test and multiple regression were used.

Findings – The findings show that there is a difference in both EI and II between CLF and FLF and that individual EO, to a certain degree, is a determinant of them.

Originality/value – The study extends the literature by offering a comparative approach to two populations within the same country. Furthermore, the study deviates from a more traditional approach that EI and II are divergent constructs with different determinants.

Keywords Entrepreneurial intentions, Intrapreneurial intentions, Entrepreneurial orientation, Labor force, Bosnia and Herzegovina

Paper type Research paper

Introduction

Entrepreneurship plays an important role in economic and social growth (Brancu *et al.*, 2015). Besides job creation, it also brings innovation to companies and is of the essence for economic advancement (Rico and Cabrer-Borrás, 2019). These are significant reasons governments of developing economies see entrepreneurship and self-employment as the best and fastest solution to both the high unemployment and development of overall economies. Entrepreneurship is closely related to the entrepreneurial activity (EA), which is defined as the "enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets" (Ahmad and Seymour, 2008, p. 14). Rajh *et al.* (2016) explain that it is generally accepted that entrepreneurship and EA are positively associated with higher economic development.

However, EA is not manifested in a single form. For example, the literature suggests an interesting discourse between entrepreneurial activities undertaken free of the influence of

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existing organizations, or simply entrepreneurship and entrepreneurial activities taken within an existing organization known as intrapreneurship (Nyström, 2012). Although Douglas and Fitzsimmons (2013) argue that these are two divergent concepts in terms of costs and benefits they bring or the different roles of entrepreneurs and intrapreneurs, both concepts are founded on the entrepreneurial mindset that is crucial for the future development of a business context. As such, both entrepreneurs and intrapreneurs are considered critical in the contemporary business context.

According to Ajzen (1991), intentions are the best predictor of behavior. In particular, to understand individual behavior (entrepreneurial or intrapreneurial), one has to understand intentions in their essence. For example, Krueger *et al.* (2000) explain that starting a business is not spontaneous but an intentional act, and that intention is entrepreneurial. According to Bird (1988), entrepreneurial intentions (EI) are a collection of attributes of a person's mindset that enable action through guidance and coordination of the business yet to be established. Intentional behavior can help explain entrepreneurs' reasoning to start a business even before they scan for opportunities (Krueger *et al.*, 2000). Accordingly, EI can be a predictor of actual entrepreneurship. Derived from EI, in broad terms, intrapreneurial intentions (II) can be described as a conscious state of mind that directs individuals toward intrapreneurial behaviors such as new product development, initiating new business or division within the existing organization by exploring new opportunities, markets and technologies (Nicholson *et al.*, 2016).

Although literature exists on both EI and II, the prevailing one deals with EI due to wider and more direct economic and social benefits (Krueger *et al.*, 1993; Douglas and Fitzsimmons, 2008). However, II are becoming more important each day. Until now, studies have been single-focused when it comes to populations. The research so far has been focused on investigating both EI and/or II of employees (Douglas and Fitzsimmons, 2008; Hatak *et al.*, 2015; Neessen *et al.*, 2019), students (Gonzalez-Serrano *et al.*, 2018; Soomro *et al.*, 2020), gender (Arshad *et al.*, 2016) and youth (Rajh *et al.*, 2018). Besides, the comparisons were primarily drawn between different countries and cultures (Linan *et al.*, 2013; Šebjan *et al.*, 2016; Trung *et al.*, 2020), but still, they were dominantly focused on either employees or students. This creates one serious gap in the literature, considering the importance of both populations for national economies. Therefore, the first objective of this study is twofold. First, we tend to validate the operationalization of EI and II proposed by Douglas and Fitzsimmons (2013) by using two populations: CLF and FLF. Second, as both populations provide valuable insights for the future, we investigate whether there is a difference between them regarding EI and II.

Furthermore, Douglas and Fitzsimmons's (2013) study was about EI and II as divergent constructs with different determinants. On the contrary, we take the approach of finding a common determinant of EI and II. As we argued that EA is not exhibited in a single form and mostly exhibited independently or within the organization, the focus is being set on the individual. One approach is to look at the entrepreneurial orientation (EO) of individuals, which can be observed as a set of attributes needed for different behaviors within a business context (Bolton and Lane, 2012). Unfortunately, when it comes to EI studies, EO have not been thoroughly examined (Koe, 2016). Moreover, in II studies, the research barely exists. Keeping in mind individual characteristics embodied within EO dimensions, we argue that they can be valid predispositions to entrepreneurial behavior. As behavior tends to be a distant outcome, a more proxy one can be observed through EI and II. Therefore, the second objective of this study is to investigate whether EO can be considered a common determinant for both EI and II.

Considering that EI are stronger among people from developing countries Rajh *et al.* (2016), there is a motivation to investigate both types of intentions (EI and II) among the labor force in Bosnia and Herzegovina (B&H) as this context is interesting for two reasons.

First, people tend to engage in EA due to both opportunity and necessity. In line with this, Stoica *et al.* (2020) found that opportunity-driven entrepreneurship in transition countries results in more economic growth than necessity-driven entrepreneurship. Second, as entrepreneurship is a resource-dependent occupation, it requires different forms of capital, such as financial, human and social. This is in line with the overlapping literature on EI, II and occupational choice, as all of them are enrooted in social cognitive career theory (Lent *et al.*, 1994). As such, Vladasel *et al.* (2021) argue that families and communities tend to provide a "salient context" for developing certain skills and preferences, such as entrepreneurial ones. In particular, social context is the one that complements individual intentions in career transitions. A more distant context is embodied within a larger economic environment that provides or constrains the market's opportunities and available resources (Meoli *et al.*, 2020). Although there is a growing popularity of entrepreneurship, when it comes to the Adriatic region, the entire region is overly characterized by low EA, and B&H is not an exception to the case (Palalić and Bičo, 2018). We might even say that entrepreneurship and awareness of the importance of entrepreneurship are low and reflected in overall economic health. As opportunities and limitations for entrepreneurship are sensitive to the environment (García-Rodríguez *et al.*, 2017), the third objective of this study is to discuss the implications of EI and II for society and businesses in B&H.

Literature review and hypotheses

Entrepreneurship and intrapreneurship

The terms entrepreneurship and intrapreneurship are very used in business literature and investigated in academic research. A large focus is given to entrepreneurship and intrapreneurship since they are the ones that directly affect the nation's productivity (Luchsinger and Bagby, 1987). Importance of entrepreneurship is of the essence for economies' overall well-being. According to Cadar and Badulescu (2015), the concept of intrapreneurship is rather new and, therefore, less attention has been given to it, while entrepreneurship has been present for over 200 years. An entrepreneur is a word of French origin (*"entre"* – between and *"prendre"* - to take) that defines a person who is taking a risk to start a new business. An entrepreneur is positioned between buyers and sellers and, in that relation, also absorbs the risk.

The literature recognizes the importance of individual entrepreneurship, but as well it emphasizes the importance of intrapreneurship for the renewal of large firms (Hagedoorn, 1996). Entrepreneurship and intrapreneurship are often the ones that generate innovations and help companies create new competencies. Stull (2005) describes entrepreneurship as the composition of particular intentions and behavior that employees exhibit at different levels of the organization, where they also exhibit some or all of the dimensions of EO. Intrapreneurship enables employees to act "entrepreneurially" but within an already existing organization. People who possess intrapreneurial attributes and behavior are characterized by leadership skills, creativity, self-motivation and proactiveness (PRA). The significant difference is that intrapreneurs benefit the organization and have no financial risk responsibility compared to entrepreneurs.

EI, II, and labor force

Although EI received significant attention in research, this was not the case with II since there are fewer of these studies available (Bičo *et al.*, 2022). Numerous studies measure intentions through the population and the labor force. Most present ones are among the employees and the students. Blanka (2019) confirms that there are differences in EI and II regarding three dimensions of theory of planned behavior (TPB) influencing the intentions. This is in line with earlier studies by Douglas and Fitzsimmons (2013) and Tietz and Parker (2012). When it comes to measuring the EI of youth in B&H, a study by Rajh *et al.* (2018) presented results on EI of B&H, Serbia, Macedonia and Croatia where B&H had the lowest EI measured among the four countries, but it has the highest percentage of early-stage entrepreneurial activities. Keeping in mind that FLF and CLF are two parts of the population that belong to entirely different generations; the effect of the generational aspect can influence the intentions. A study that adds to the possibility of differences between employees and students when it comes to intentions is performed by Hatak *et al.* (2015). The authors explained that as employees get older, they act less entrepreneurially. When developing II, companies' resource availability and capabilities are the keys (Alpkan *et al.*, 2010). Moreover, this means that if individuals work within a company that is not characterized by resource availability and capabilities, they are less likely to be intrapreneurial.

Regarding B&H, the labor market is not characterized by a high share of employment in the real sector. When comparing FLF and CLF in terms of EI and II, several differences can be emphasized. First, the generational perception of the company and its importance to the individual is different between different generations. For comparison, FLF is raised in the modern labor market where a free economy, entrepreneurship and business startups are being promoted. They were highly exposed to influences and success stories that presented them with a desirable modern lifestyle they highly wished to have, and that is a life of money, influence and power. On the contrary, in B&H, a large part of CLF belongs to a generation expected to start a career in the same company where they would retire. In particular, members of CLF possess a greater sense of belonging and identification with the company they work for and might be more ready to take the risk for the company in whose ownership structure they are not taking part. Second, FLF, as a relatively younger labor force, for the most part, are not family breadwinners. More often, they are the ones that require and can count on family support as their parents are the ones with savings. On the contrary, members of CLF are breadwinners but also the ones that experience fatigue and might be more risk-averse regarding opportunities in the market. In particular, there are differences in family expectations of individuals, job stability and risk avoidance, which are still part of the B&H narrative regarding "dream" job specifications. Third, the generations that comprise FLF are individualistic and self-confident, which, along with risk-taking (RSK), are important predispositions to act entrepreneurially. On the contrary, CLF, as part of the population that most likely possesses the experience, can be characterized by knowledge, abilities, skills and an already developed network and resources that can be used while starting a business. This results in overall better insights into the industry.

Overly, CLF and FLF in B&H are characterized by entirely different perceptions of entrepreneurship and intrapreneurship as career choices. Hence the intentions differ as well. Therefore, the following hypotheses are proposed.

H1. There is a significant difference between CLF and FLF regarding EI.

H2. There is a significant difference between CLF and FLF regarding II.

Entrepreneurial orientation

Many fast-growing companies accredit their growth, profitability, performance and product innovation to EO (Andrade-Valbuena *et al.*, 2019). In particular, Rauch *et al.* (2009) define it as "the strategy-making processes that provide organizations with a basis for entrepreneurial decisions and actions" (p. 762). This is the definition of EO at the organizational level, which has been translated to the individual level. As such, it represents a combination of individual characteristics required for the effective execution of EA (Abubakar *et al.*, 2019). At the individual level, the organizational five-dimensional construct is mostly observed through a three-dimensional (Bolton and Lane, 2012). This is in line with Dess and Lumpkin's (2005) work, where they argued that the autonomy and competitive aggressiveness of individuals in firms could result in coordination problems among work units, as well as a toxic work environment. Therefore, individual EO represents a three-dimensional construct that consists of RSK, innovativeness (INV) and PRA.

While EO as a construct has been operationalized in different settings, when it comes to the relationship between EO and EI, studies have been performed mostly on the student populations (Ibrahim and Lucky, 2014; Koe, 2016; Sahoo and Panda, 2019). On the contrary, there is a literature gap when it comes to EO and II. One of the rare studies that examined this relationship was by Razavi and Aziz (2017) in the Iranian Research and Development sector. In this study, it was found that dimensions of EO had a positive relationship with II.

The literature on EO in B&H is rather limited, especially for university students. Palalić *et al.* (2017) investigated the concept of students' EO in B&H. They found that the business environment and networking are positively related to EO. However, studies investigating the EO of employees in B&H are more present (Tatarski *et al.*, 2020; Alfirević *et al.*, 2018). The study by Tatarski *et al.* (2020) measured differences in EO between EU countries (Croatia and Slovenia) and Non-EU countries (Serbia, Montenegro, B&H and North Macedonia). There was only partial support for higher EO among employees at universities in the EU than in NonEU countries.

Generally, several assumptions can be made regarding EO dimensions in B&H. For example, EO dimensions in CLF can be very pronounced due to the work experience they possess. Besides, due to their experience, their PRA and INV could be high and higher than the RSK dimension. Such an assumption can be supported by the argument that this generation has the mindset from the previous system, where safe and governmental employment is preferred over any individual risk to be taken. On the contrary, FLF in B&H is characterized by the high dimension of EO, especially concerning the dimension of risk. Bosnia and Herzegovina's youth unemployment rate is among the highest in Europe, making these generations even more risk-takers since they feel they have nothing to lose already.

Regarding the relationship between EO dimensions and EI, it is expected that there is a positive one in both labor forces. In particular, CLF, as a relatively older sample, tends to be more risk-averse or engage in so-called "safe or controlled risk". However, those who exhibit higher RSK are more likely to engage in EI. Besides, members of CLF are more likely to act entrepreneurially because their PRA comes from being experienced and anticipating better future events. Moreover, the ability to anticipate comes hand in hand with the ability to be innovative and to be able to recognize the market need for innovations. When it comes to EO dimensions and their relation to II in CLF, they are presented in a milder form since II does not involve high-risk exposure levels as EI. This is primarily true regarding one's exposure to financial risk. However, as other types of risk exist, individuals who are characterized as risk-takers are more likely to exhibit II. When it comes to INV and PRA within organizations, CLF is often found to offer new solutions and help with new internal processes due to a relatively greater extent of experience. As such, the positive relationship between INV, PRA and II should hold.

Regarding FLF, being a risk-taker comes from the fact that young people are bolder and risk-loving, which positively relates to EI. Furthermore, FLF will be the first to embrace new technologies, have creative ideas, be the first mover and embrace novelty and experimentation, which are the foundations of both INV and PRA. Such individuals are more likely to work on their own and more likely to exhibit higher EI. Although most FLF is without actual experience within the organization, very often, their primary aim in joining the organization is to develop a set of needed skills for the future. Such individuals tend to risk more and be innovative and proactive, leading to higher creativity and, eventually, II. Therefore, the following hypotheses are proposed.

H3a. RSK is positively related to both EI and II.

H3b. INV is positively related to both EI and II.

H3c. PRA is positively related to both EI and II.

H4. The relationship between EO dimensions and EI and II is contingent on labor force membership (LFM).

Figure 1 presents a conceptual model that encompasses all the arguments stated earlier.

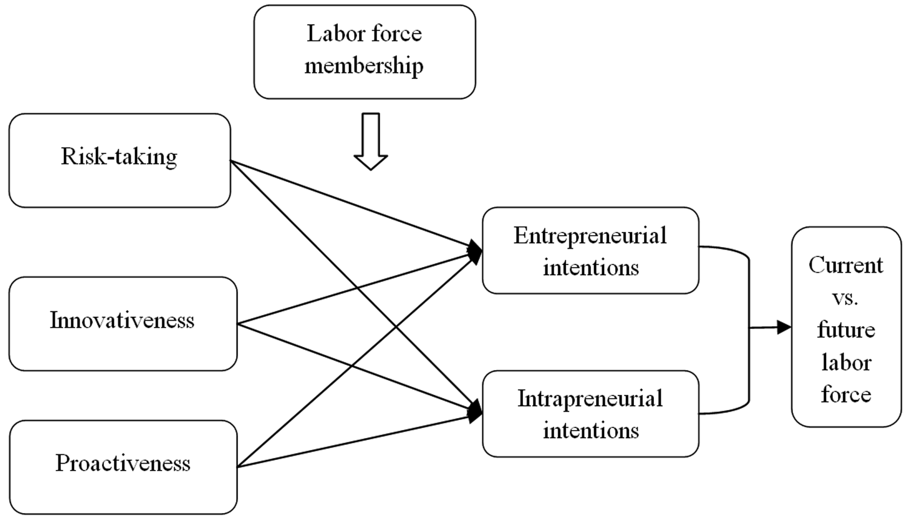
Methods

Participants and procedure

This study included two populations. First, CLF consisted of individuals aged 18–65 that were either employed or unemployed. Second, FLF consisted of university students. As there was no public database available for either CLF or FLF, we applied snowball sampling, which is very common in such situations (Vandekerkhof *et al.*, 2019). This was carried out in two phases. First, we approached individuals from our network, which made them initial participants. Second, they recommended, without bias, other participants apart from our own network. This allowed for a larger, more diverse and reliable sample, which helped in reducing possible sample bias (Creswell, 2012).

Since the original constructs were in English, we used a back-to-back translation to ensure content validity. After that, pilot testing was applied to several individuals who had the targeted population's characteristics. The final version of the questionnaire was delivered to participants using different mediums (i.e., email, social media, labor unions and universities). The participants received a cover letter explaining the purpose of the study, granting anonymity and requesting consent to use the data for research purposes. Together with a cover letter, participants got a link to the questionnaire.

The initial combined sample contained 788 responses. However, six of the responses were incomplete, and we had to remove them. Therefore, the final sample consisted of 782



Source(s): Author's visualization

Figure 1.
Conceptual model

respondents, where 472 were from CLF and 310 from FLF. In CLF, most of them were female (61%). The average age was 37, and the average experience of 13 years. Most of them were high-educated (85%) and employed (89%). In FLF, 65% were female with an average age of 23. Most of them were bachelor's students (82%), and the sample was very divergent regarding majors.

Measurement

The questionnaire included five main constructs. EI and II were measured with four and three-item constructs developed by Douglas and Fitzsimons (2013). The responses were scored on a seven-point Liker scale, ranging from "1" very unlikely to "7" very likely. The first item differed for CLF and FLF. For CLF, the question was about starting a business within two years, while for FLF, the question was about starting a business within two years after graduation. To measure EO dimensions, we used the scale developed by Bolton and Lane (2012). Namely, RSK and PRA were measured by three items each, while INV contained four items. The responses were based on a five-point Likert scale, ranging from "1" strongly disagree to "5" strongly agree. All scales are presented in Appendix. Finally, LFM was measured as a dummy variable (FLF = 1 and CLF = 2).

Analyses and results

To test the hypotheses, we analyzed the data in two stages: preliminary analysis and hypotheses testing. The preliminary analysis was performed on both datasets. The results are presented in Table 1.

Reliability was checked through Cronbach's coefficient alpha test using a threshold of 0.70 (Bekele *et al.*, 2014). The values were above the threshold for all constructs, indicating that the instrument provided a highly reliable measure. Since we used the already established constructs, confirmatory factor analysis (CFA) was performed. In particular, we checked for convergent and discriminant validity. For convergent validity, we checked standardized factor loadings (SFLs) and average variance extracted (AVE). All values were above 0.50, which is considered the common threshold (Bagozzi and Yi, 1988). Therefore, we can conclude there are no concerns regarding convergent validity. Concerning discriminant validity, the square root of AVE was higher than the paired correlation between observed constructs. Thus, we can state that discriminant validity was achieved. Finally, since we collected the data at a single point in time, there was a possibility for common method bias. To rule it out, we performed three tests as suggested by Podsakoff *et al.* (2003): Harman's single-factor test, common latent factor and common marker variable. The results showed that a single factor in extracting was below the common threshold of 50%. Therefore, we can conclude that there is no comment method bias.

The first two hypotheses were tested using an independent samples *t*-test or, more precisely, the type known as Welch's *t*-test. This was because we had unequal sample sizes where the standard *t*-test is not robust enough (Delacre *et al.*, 2017). The results are presented in Table 2.

From Table 2, we can see that both EI and II are higher within FLF and that the difference is statistically significant. Therefore, we can conclude that there is sufficient evidence to support H1 and H2.

Regarding the rest of the hypotheses, we developed two hierarchical regression models: one for EI and one for II. The independent variables were the same for each model, namely RSK, INV and PRA, while moderating variable was LFM. The results are presented in Table 3.

Regarding EI, RSK and INV are positively related, while in the case of PRA in negative. In the case of II, RSK and INV are positively related and PRA relationship is insignificant.

Table 1. Descriptive statistics, reliability, validity and correlations

		M	SD	A	CR	AVE	1	2	3	4	5	6
1	EI	5.276	1.554	0.869	0.872	0.631	*(0.794)*					
2	II	5.265	1.522	0.896	0.901	0.752	0.563	*(0.867)*				
3	RSK	3.697	0.811	0.782	0.791	0.559	0.534	0.374	*(0.748)*			
4	INV	3.907	0.770	0.853	0.859	0.606	0.408	0.357	0.683	*(0.778)*		
5	PRA	4.017	0.754	0.799	0.799	0.570	0.221	0.261	0.512	0.611	*(0.755)*	
6	LFM	–	–	–	–	–	−0.291	−0.167	−0.151	−0.107	0.017	–

Note(s): $N = 782$. All correlations are at $p < 0.01$, except LF and PRA. CR – Composite reliability; AVE – Average variance extracted; Square roots of AVE values are in parentheses. EI – Entrepreneurial intentions, II – Intrapreneurial intentions, RSK – Risk-taking, INV – Innovativeness, PRA – Proactiveness, LFM – Labor force membership
Source(s): Authors' original findings

	N	M	SD	SE	*t*	df	Sig
EI							
FLF	310	5.781	1.193	0.068	8.163	774.557	0.000
CLF	472	4.944	1.671	0.077			
II							
FLF	310	5.562	1.271	0.072	4.723	758.788	0.000
CLF	472	5.069	1.639	0.075			

Note(s): EI – Entrepreneurial intentions, II – Intrapreneurial intentions, FLF – Future labor force, CLF – Current labor force
Source(s): Authors' original findings

Table 2.
Welch's *t*-test

Therefore we can conclude that there is support for H3a and H3b while there is no evidence to support H3c. Overall, EO dimensions explain 25% of EI variance and 20% variance in II.

When it comes to LFM, it is negatively related to EI, meaning that being a part of FLF increases both EI and II. This in line with the findings regarding H1 and H2. However, regarding the moderating effect, it is limited as the significant moderation is only presented in the case of RSK and II. Therefore, there is only some support for H4. The interaction is presented in Figure 2.

Discussion and conclusions

Although the research on EI and II has existed for some time now, comparative studies between different populations are lacking. Therefore, this research aimed to offer information about EI and II regarding CLF and FLF in B&H.

First, we validated the constructs of EI and II proposed by Douglas and Fitzsimmons (2013) on two populations. This is an important outcome of the study, as this operationalization can be used in comparative studies between different populations. In comparison, Marchiori *et al.* (2018) replicated the same study on a sample of students in Brazil. However, their validation of the scales had to be adjusted in the case of EI. Besides, we can see that students' EI and II in B&H are higher than those reported by Douglas and Fitzsimmons. This is not a big surprise as recent generations of students are more exposed to entrepreneurial behavior through successful entrepreneurial stories, advertising organizational images and a higher presence of entrepreneurship-related programs and courses within the universities across the globe.

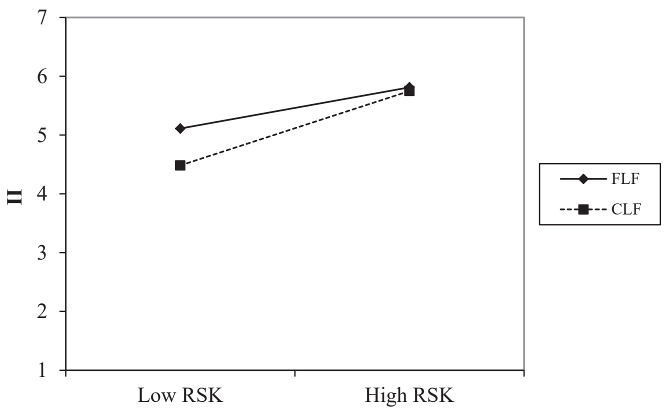
Second, the results demonstrated a difference in both EI and II regarding two populations where FLF exhibited EI and II significantly higher than CLF (H1, H2). As comparative studies between different populations have been highly neglected, this can be considered the study's main finding. This is in line with the recent research trend in EI and II, as more studies focus on the student population (Bolton and Lane, 2012; Koe, 2016). It is because this population is more "fertile" for future "entrepreneurial actions" independently or within a company. In particular, the lower EI among CLF may be due to the opportunity cost of time (Nguyen, 2018), a decrease in the risk tolerance that may come with age (Hatak *et al.*, 2015; Baluku *et al.*, 2020), or long payback periods (Fung *et al.*, 2001).

Third, when it comes to the common determinant of both EI and II, we found that EO could be considered one to a certain degree. This is essential since agreements around common determinants are debatable in interdisciplinary fields such as entrepreneurship (Panc *et al.*, 2012). While EO has been investigated concerning EI, its role in II is rather unexplored. Overall, these findings are contrary to the ones about different determinants for EI and II found

Table 3.
Multiple regression

	EI			II		
	M1	M2	M3	M1	M2	M3
RSK	0.722** (0.075)	0.659** (0.074)	0.232 (0.259)	0.389** (0.078)	0.354** (0.078)	−0.271 (0.271)
INV	0.402** (0.084)	0.379** (0.082)	0.212 (0.275)	0.425** (0.087)	0.412** (0.086)	0.640 (0.288)
PRA	−0.156* (0.076)	−0.109 (0.074)	0.156 (0.246)	0.063 (0.078)	0.090 (0.078)	−0.147 (0.257)
LFM		−0.600** (0.099)	−1.323* (0.620)		−0.338** (0.104)	−1.798** (0.649)
RSKxLFM			0.263 (0.153)			0.380* (0.160)
INVxLFM			0.110 (0.166)			−0.141 (0.174)
PRAxLFM			−0.173 (0.150)			0.146 (0.157)
ΔR^2	0.238	0.034	0.005	0.155	0.011	0.009
R^2	0.238	0.272	0.278	0.155	0.166	0.176
Adj. R^2	0.235	0.268	0.271	0.152	0.162	0.168
ΔF	80.856**	36.797**	1.932	47.504**	10.633**	2.909*

Note(s): $N = 782$. $^{**}p < 0.01$, $^{*}p < 0.05$. Standard errors are in parentheses. EI – Entrepreneurial intentions, II – Intrapreneurial intentions, RSK – Risk-taking, INV – Innovativeness, PRA – Proactiveness, LFM – Labor force membership
Source(s): Authors' original findings



Source(s): Authors' original findings

Figure 2.
Interaction plot

by Douglas and Fitzsimmons (2013). Besides, EO was slightly dominant when it came to EI. As EO and II were barely the focus of the past research, this study provides a new perspective.

Namely, INV (H3b) was found to be the most consistent determinant of EI and II across both populations, which is, in the case of FLF, congruent with Bolton and Lane (2012) and Koe (2016). Today's business environment requires both entrepreneurs and employees to be innovative and bring new ideas in terms of products, services and processes (Knezović and Drkić, 2021). In the case of EI, we might say that INV is always expected as most companies are started based on the innovations of certain individuals. However, the existing organizations tend not to rely only on one or a couple of individuals within the company but rather on the teams of people. Therefore, their human resource strategy in terms of acquiring, developing and retaining valuable human capital within the company is highly founded on innovation metrics. In particular, companies are searching for potential innovators when hiring, providing an innovative environment and keeping those who can cope with dynamic environments. Regarding RSK (H3a), the results are similar to INV, except in the case of II within FLF. Previous studies present mixed results. On the one side, RSK was a significant determinant of EI (Bolton and Lane, 2012; Kropp *et al.*, 2008), while its role was insignificant on the other side (Koe, 2016; Robinson and Stubberud, 2014). Our results support the view of entrepreneurship as a process that requires the assumption of risk. However, in the case of II, we see that RSK is significant with CLF but not FLF. We rationalize this by siding with Miron and McClelland (1979) and Hansemark (1998), who argue that certain individual characteristics (i.e., RSK) are modified over time. Therefore, members of CLF have more environmental and contextual information to make risky moves compared to FLF. This can result in a better fit between RSK and II. Although previous research is concentrated on PRA as a requirement for individuals looking for business opportunities, our results suggest that the role of PRA in EI and II is insignificant (H3c). Here, we may argue that our nation is rather not proactive and can be seen in different spheres of life. For the moderating role of LFM, we only found a significant effect in the relationship between RSK and II (H4). Although there is a significant difference between CLF and FLF in EI and II, the effect is not fully extended to the relationships between EO and EI and EO and II. Therefore, we can conclude that LFM divergence within EI and II is for some other reasons.

Finally, there is a contextual significance of this study. While intention studies have been extensively researched, especially in the case of EI, developing countries are lagging behind. This study fills this gap in B&H, characterized by relatively high unemployment and the extreme difficulty of "transiting" from FLF to CLF. These problems resulted in the significant migration of citizens to the west in the last decade. Considering social and economic context as a precondition for an effective transition to entrepreneurship or intrapreneurship as an occupational choice (Meoli *et al.*, 2020; Vladasel *et al.*, 2021) and that EI and II are related to higher employability, a better understanding of them is needed to provide concrete directions on national, social and organizational levels.

Implications for educators, policy and businesses

Overall, this study provides some essential implications for educators, policy-makers and businesses. First, the entrepreneurial focus of the universities in B&H is rather new, and usually, the courses and materials are present in business and business-related studies. Therefore, the educators might think about making entrepreneurial courses available to other fields as well. While doing so, they should incorporate a new approach to entrepreneurial mindset – intrapreneurship – and clearly differentiate it from the more traditional one. Obviously, some students are more fit to study and learn this concept as they are more suited for a career within the organization than one on their own. Furthermore, the course materials might emphasize the importance of EO. Since EO is defined as a set of attributes, this is definitely something to which more entrepreneurially designed university programs could contribute. For example, Sahoo and Panda (2019) argue that the universities should focus on "individual EO" while crafting more effective programs and curricula to equip more students with entrepreneurial skills and encourage them to act entrepreneurially. This would be a double-beneficial as this set of skills could be easily used within the firms.

Second, as students exhibit higher intentions, especially EI, there is a need for higher involvement of policy-makers. Keeping in mind that the "next generation" of the labor force has higher preferences for acting entrepreneurially, a better entrepreneurship ecosystem is needed at the national level. The biggest problem for running a business in B&H is regulation. It is well known that the B&H systems are characterized by extensive and long bureaucratic procedures, a high tax system, different legal regulations between entities, and a lack of proper government subsidies (Mulaosmanović *et al.*, 2018). Besides, there is no adequate awareness about entrepreneurship within society, and promoting it is essential for today's societies (Audretsch, 2007). This is in line with Obschonka *et al.*'s (2010) statement that promotion "should start early in life and that public measures should target the education of "the next wave of entrepreneurs" by fostering youths' early entrepreneurial competence" (p. 63). Considering that traditional business environments and organizational structures have faced serious changes, especially during and after COVID-19 (Al-Habaibeh *et al.*, 2021), promoting both entrepreneurship and intrapreneurship is vital to create and inductive environment in which individuals are encouraged to engage in entrepreneurial activities as their career choice.

Third, as intrapreneurial behavior is beneficial for the companies in several domains, such as the firm's EO or investment potential (Fellnhofer, 2018), the companies might invest more in detecting the potential of individuals in acting intrapreneurially. As this can be vital for organizational growth and sustainability, the companies might focus more on individual EO from an HR perspective. In particular, the firms should first investigate how much their organizational strategy, characteristics and capabilities are fertile for developing individual EO. As such, EO should be an important criterion while hiring, developing and retaining important human capital.

Limitations and future research

The study is not without limitations. First, students' usage as proxies for potential entrepreneurs and intrapreneurs is debatable, especially for undergraduate studies. Perhaps, focusing on the “near-graduation” students would provide a better insight into their intentions and, eventually, possible behavior. Second, cross-sectional data and snowball sampling limit the generalization of the results. While it would be almost impossible to draw a probability sampling from these populations, due to the lack of public databases, narrowing the population to particular companies or universities would allow researchers to draw conclusions about particular settings and provide specific recommendations. One thing that would be of particular interest is to use a longitudinal study, especially with FLF, and compare their intentions during and after the studies. Third, the study included only EO dimensions as possible common determinants. Future studies might check whether determinants such as entrepreneurial personality or entrepreneurial competence might play an important role, as suggested by Obschonka *et al.* (2010). Finally, the study is limited to a comparison between different populations and does not deal with factors that lead to higher or lower individual EO, both within and outside the organization. Further studies might focus on a variety of determinants or particular contextual factors. This would be very beneficial for the B&H context as certain recommendations could be provided at individual and national levels.

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Appendix

Entrepreneurial intentions

How likely is it that you would want to be self-employed within two years, assuming you had a good new business opportunity and you could raise the funding necessary to start your own business? – for CLF/ How likely is it that you would want to be self-employed within 2 years after graduation, assuming you had a good new business opportunity and you could raise the funding necessary to start your own business? – For FLF.
How likely is it that you would want to be self-employed at some later point in the future, assuming you had a good opportunity and could raise the funding necessary?
How likely is it that you would want to start your own business to exploit a radical innovation?
How likely is it that you would want to start your own business to introduce a new variant of an existing product or service?

Intrapreneurial intentions

How likely is it that you would want to manage (within your employer's business) a new division (or branch) that is set up to exploit a radical innovation?
How likely is it that you would want to manage (within your employer's business) a new division set up to introduce a new variant of an existing product or service?
How likely is it that you would want to manage (within your employer's business) a new division (or branch) set up to introduce an existing product into a new market?

Entrepreneurial orientations

Risk
I like to take bold action by venturing into the unknown.
I am willing to invest a lot of time and/or money in something that might yield a high return.
I tend to act "boldly" in situations where risk is involved.

Innovativeness
I often like to try new and unusual activities that are not typical but not necessarily risky.
In general, I prefer a strong emphasis in projects on unique, one-of-a-kind approaches rather than revisiting tried and true approaches used before.
I prefer to try my own unique way when learning new things rather than doing it as everyone else does.
I favor experimentation and original approaches to problem-solving rather than using methods others generally use for solving their problems.

Proactiveness
I usually act in anticipation of future problems, needs or changes.
I tend to plan ahead on projects.
I prefer to "step up" and get things going on projects rather than sit and wait for someone else to do it.

Corresponding author
Emil Knezović can be contacted at: eknezovic@ius.edu.ba

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Corporate social responsibility and firm performance: a threshold analysis of European firms

Abdelaziz Hakimi
Faculty of Law, Economics and Management of Jendouba, VPNC Lab, University of Jendouba, Jendouba, Tunisia
Rim Boussaada
Higher Institute of Management of Tunis, University of Tunis, Tunis, Tunisia and GEF-2A Lab, University of Tunis, Tunis, Tunisia, and
Majdi Karmani
Excelia Business School, CERIIM, La Rochelle, France

Abstract

Purpose – This paper aims to investigate the reciprocal nonlinear relationship between corporate social responsibility (CSR) and firm performance (FP).

Design/methodology/approach – The authors used a sample of 814 European firms over the period 2008–2017. The Panel Smooth Transition Regression (PSTR) model was performed as an econometric approach.

Findings – Firstly, results show a threshold effect in the CSR–FP relationships within the two directions. More specifically, the authors found that firms are more likely to engage in CSR by surpassing a threshold of 1.231% for return on assets (ROA) and 0.821% for Tobin's Q ratio. Secondly, the authors also found that the impact of CSR on FP is positive and significant only if the environment, social and governance score surpasses the threshold of 56.780% when the dependent variable is ROA and 41.02% when Tobin's Q ratio measures performance.

Research limitations/implications – A significant part of the literature supports the linear relationship between CSR and FP from the unique direction (CSR → FP). This study comes to fill this gap by assessing the possible nonlinear relationship. In addition, this nonlinear relationship is tested under the two directions. Therefore, defining the threshold of FP that allows companies to engage in CSR, on the one hand, and the threshold of engagement in CSR that improves FP, on the other hand, could be an exciting topic.

Practical implications – To get the full benefit from CSR effects, firms should be with better financial performance to be socially responsible.

Originality/value – To the best of our knowledge, few studies have explored the nonlinear relationship between CSR and FP. In addition, this study raises the question of whether this relation is causal. The authors assess the two nonlinear relationships between CSR ? FP and FP ? CSR by determining the optimal thresholds.

Keywords Firm performance, Corporate social responsibility, European firms, Nonlinear relationship, PSTR model

Paper type Research paper

1. Introduction

It is undoubtedly that corporate social responsibility (CSR) plays a central role for stakeholders, the environment and overall society. It is recognized today as a leading standard business practice. The fundamental purpose of CSR is to maximize the value creation for the owners, meet the stakeholders' requirements, offer work flexibility, improve

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the work conditions for their employees and ensure value creation for all of society (Matsumura and Ogawa, 2016; Fanti and Buccella, 2016; Arturo *et al.*, 2018).

In the age of the pandemic coronavirus 19 (COVID-19), companies that are socially responsible play a crucial role.

To protect their employees, most worldwide companies give more work flexibility to their employees to carry out their work from home. However, not all jobs are suited to such an arrangement. For this reason, some companies operating in vital sectors have continued working to ensure customer services (banks, postal offices, etc.), product distribution and market supply. Since companies are socially responsible toward their employees, even if there is no effective work, they have been committed to paying their employees' wages.

Moreover, some large and profitable companies in all sectors have supported their government with donations to combat COVID-19. This COVID-19 pandemic was considered a concrete example confirming that most firms are socially and economically responsible. In this respect, the questions that deserve to be addressed are the following: What about the financial aspect? How CSR and firm performance (FP) can interact among themselves?

Previous studies have focused heavily on the effect of CSR on FP from a unique perspective (Liu and Lu, 2019; Yoon and Chung, 2018; Rodriguez-Fernandez, 2016; Muñoz *et al.*, 2015; Madueño *et al.*, 2016). However, we also believe that to be in a better position to undertake CSR, firms should have better financial performance. In other words, a certain level of performance must be satisfied to engage in CSR practices. Therefore, investigating the FP threshold that allows companies to engage in CSR and defining the CSR threshold that improves FP could be an exciting topic.

This paper aims to investigate the nonlinear reciprocal relationship between CSR and FP. To achieve this goal, we used a dataset of 814 European firms over the period 2008–2017. CSR and financial data are collected from the DataStream of the Thomson Reuters ASSET4 database. This study performs the Panel Smooth Transition Regression (PSTR) model as an econometric approach.

This study fills the nonlinear gap in the CSR–FP relationship and contributes to the literature in several ways. First, it extends the work of Nollet *et al.* (2016) and Lin *et al.* (2020), which investigates the nonlinear relationship between CSR and FP. These two studies used an inverted V-shaped relationship. However, in the current study, we performed the PSTR model that defines an optimal CSR threshold that affects FP. In addition, it allows us to discuss the effect of CSR on FP below and above the defined threshold. The second originality of this paper is that it investigates this relationship within two directions: (1) the nonlinear relationship between CSR and FP and (2) the nonlinear relationship between FP and CSR. No prior studies have investigated these two reciprocal relationships. Besides the positive effect of CSR on FP, we think that firms should have a better financial performance to undertake CSR. In other words, a certain level of performance should be achieved to engage in CSR practices. Hence, searching for the threshold of FP that allows firms to engage in CSR and defining the threshold of CSR that improves FP could be an exciting topic.

The remainder of this paper is structured as follows: Section 2 presents a brief literature review. In Section 3, we describe the sample and the econometric approach. We discuss the empirical results in Section 4. Section 5 concludes and addresses some policy implications.

2. Literature review

While prior studies focused on the relationship between CSR and FP have addressed this question only from one direction, CSR→FP, in the current study, we aim to explore this relationship within the two directions. In this literature review section, we will try to theoretically justify how the level of performance is critical to engage in CSR practices firstly. Secondly, we review studies focused on the effect of CSR on FP using either linear or nonlinear approaches.

2.1 From firm performance to engagement in CSR: theoretical background

The theoretical discussion about the relationship between CSR and FP continues to animate academic debate. Studies testing the CSR–FP relationship give contradictory conclusions (Bruna and Ben Laouhel, 2022). Indeed, prior researchers have found mixed results suggesting a positive (Rodriguez-Fernandez, 2016; Muñoz *et al.*, 2015; Madueño *et al.*, 2016), negative (Peng and Yang, 2014), or even U-shaped or neutral relationship (Baird *et al.*, 2012; Peng and Yang, 2014). These inconsistencies can be explained through recognition of the potential for CSR to be both a predictor and a consequence of financial performance (Waddock and Graves, 1997; Saridakis *et al.*, 2023). The incoherent empirical results challenge the logic underlying the causal relationship between CSR and FP. Indeed, it is imperative to investigate if financial performance drives a firm's participation in CSR.

Higher financial performance would predict better social performance to the extent that high FP allows firms to divert their focus from short-term financial objectives to social objectives (García-Sanchez and Martínez-Ferrero, 2019; Mattingly and Olsen, 2018). Consequently, improvements in FP will lead to higher engagement in socially responsible activities (Melo, 2012).

Moreover, some authors put into evidence the role of slack resources on engagement in CSR activities. According to the slack resource theory (Mcguire *et al.*, 1988), firms might increase their engagement in CSR activities when the availability of financial resources increases (Waddock and Graves, 1997; Surroca *et al.*, 2010; Zhang *et al.*, 2021*et al.*).CSR is considered a cost-saving strategy that needs substantial resources (Farooq *et al.*, 2017). Indeed, CSR activities may be considered a firm expense that diverts valuable resources to activities that do not directly enhance shareholder value (Kotchen and Moon, 2012; Tang *et al.*, 2015).

However, empirical research studying how FP influences CSR engagement is still relatively rare. Preston and O'bannon (1997) investigate the relationship between indicators of CSR and financial performance with large American firms and show that better financial performance results in superior CSR activities and disclosures. Gautam *et al.* (2016) reveal that the Indian firm's financial performance has a cause-and-effect relationship with the CSR disclosure and vice versa. Tang *et al.* (2015), (2018) find that FP positively impacts CSR. More recently, based on a large sample of US firms, Saridakis *et al.* (2023) conclude that historical and social performance comparisons have differential effects on CSR engagement.

From the development above, the following hypothesis can be raised:

H1. Firms should attain a certain performance threshold to engage in CSR practices.

2.2 From CSR to firms' performance: related studies

Literature on the CSR–FP relationship provides mixed results. An important part of literature supports CSR's positive effect on FP (Margolis *et al.*, 2007; Orlitzky *et al.*, 2003; Barnett and Salomon, 2012; Rodriguez-Fernandez, 2016; Muñoz *et al.*, 2015; Madueño *et al.*, 2016). Less abundant studies found a negative association between CSR and FP (Peng and Yang, 2014). In contrast, some other studies found no significant or U-shaped relationship (Soana, 2011; Sun *et al.*, 2010; McWilliams and Siegel, 2000; Baird *et al.*, 2012; Peng and Yang, 2014).

For the American context, Liu and Lu (2019) tested the impact of CSR on the performance and risk of US firms. The dataset used in this study is based on 15,328 firm-year observations observed during the period 2004–2012. Results show that firm reputation positively influences both CSR and FP, while it is negatively related to firm risk. The authors also conclude that firm reputation could play a mediating role in the CSR–performance–risk relationship. In the same context, Yoon and Chung (2018) concluded that external CSR increases a firm's market value but is negatively related to operational profitability.

In addition, they found that internal CSR improves firms' operational profitability but does not affect their market value.

An important part of studies is carried out in the European context (Rodriguez-Fernandez, 2016; Muñoz *et al.*, 2015; Madueño *et al.*, 2016; Madorran and Garcia, 2014; Battaglia *et al.*, 2014; Fischer and Sawczyn, 2013). Most of these studies empirically supported the positive impact of CSR on FP. Rodriguez-Fernandez (2016) investigated the causal relationship between CSR and FP. Findings support strong evidence of the bidirectional relationship between CSR and Spanish FP. In a recent study, Lu *et al.* (2020) investigated the relationship between CSR and firm competitiveness. They used a sample of 33 Lithuanian companies. The authors found that individual scores, such as environmental, social and economic affect financial capacity, efficiency, innovation and company's reputation differently.

When reviewing the literature, we have noticed that studies on the CSR–FP relationship are intensely abundant in the Asian context. Like the American and the European contexts, the empirical findings of these studies supported the positive association between CSR and FP (Han *et al.*, 2016; Laskar and Maji, 2016; Nadeem *et al.*, 2019; Soewarno, 2018; Dyck *et al.*, 2018). In this vein, Nadeem *et al.* (2019) examined the channel through which CSR affects FP. They used a large sample of 1,021 Asia Pacific firms from 2006 to 2016. Findings show that CSR is positively and significantly associated with FP. Similarly, Rasheed *et al.* (2018) used a sample of 70 nonfinancial firms listed in the Karachi Stock Exchange over the period 2008–2013 to examine the impact of CSR on firms' performance in Pakistan. The empirical results provide strong evidence of the positive impact of CSR on FP.

Moreover, it was found that firms investing in CSR have better financial performance. More recently, using a sample of 577 publicly listed companies [1] during the period 2008–2017, Garas and El-Temtamy (2020) explored the dynamic and causal relationship between CSR and FP. The authors found that the extent of environmental disclosure improves the FP.

To examine the effect of CSR on small and medium enterprises' innovation capability and financial performance, Bahta *et al.* (2020) used a sample of 402 Eritrean firms. They performed the partial least squares (PLS) structural equation modeling. Empirical findings indicate that CSR has a positive and significant effect on the innovation capability of SEMs and the level of financial performance.

Besides studies based on linear approaches, other works focus on the nonlinear relationship between CSR and FP (Lin *et al.*, 2020; Nollet *et al.*, 2016). Some other studies supported the existence of a U-shaped or an inverted U-shaped relationship between CSR and FP (Brammer *et al.*, 2006; Barnett and Salomon, 2006, 2012; Lankoski, 2008; Miras-Rodríguez *et al.*, 2014).

Recently, Lin *et al.* (2020) tested the effect of market differentiation on the nonlinear relationship between CSR and FP. They used a sample of 132 firms over the period 2011–2017, and performed an inverted V-shaped relationship. Findings indicate that surpassing a certain threshold of CSR engagement can boost FP through market differentiation. Nollet *et al.* (2016) analyzed the linear and nonlinear relationship between CSR and FP for a sample of S&P500 firms in the period 2007–2011. Empirical results of linear regression support a negative association between CSR and FP.

On the contrary, the nonlinear regressions provide a U-shaped relationship between CSR and the accounting-based measures of FP. This leads to confirmation that in the long run, CSR exerts a positive effect on FP.

Barnett and Salomon (2006) tested the curvilinear relationship between CSR and financial performance. To achieve this goal, they used a panel of 61 socially responsible investment funds from 1972 to 2000. The main empirical findings of this study indicate that there is a curvilinear relationship. For example, at first, financial return declines but rebound as the number of CSR screens reaches the maximum.

In another paper, Barnett and Salomon (2012) tested the U-shaped relationship between CSR and FP. They used an initial unbalanced panel of 3,100 firms from 1991 to 2006. The empirical results show that the level of FP differs across the reached score of CSR. For example, firms with low CSP registered higher CFP than firms with moderate CSP; however, firms with high CSP recorded the highest CFP.

Using a sample of 89 firms in the electrical industry from 26 different countries for the period studied, 2008–2011, Miras-Rodríguez *et al.* (2014) investigated whether CSR engagement affects the firm level of performance. The authors conclude that a U-shaped curve explains the relationship between CSR and FP. More precisely, larger performance is registered for companies with the lowest and highest CSR scores. However, firms with less extreme scores are less profitable. In the same line of idea, Brammer *et al.* (2006) tested the relationship between CSR and stock returns in the United Kingdom. The authors found a U-shaped relationship. Firms with higher social performance scores tend to record lower returns. Firms with lower CSR scores or zero tend to achieve higher returns.

Lankoski (2008) states that the overall relationship between CSR practices and managerial revenues is concave. He reports that if the marginal costs of CR outcomes increase, the marginal revenues will decrease. Hence, an inverted U-shaped relationship exists between CSR activities and economic performance. Based on the development above, we can raise the following hypothesis:

H2. There is a threshold effect in the CSR–FP relationship.

The observation of existing literature on the CSR–FP relationship reveals two observations. First, the majority of these studies are based on a linear framework. Previous studies generally used either fixed or random effects (Laskar and Maji, 2016; Javeed and Lefen, 2019), dynamic panel data analysis (Javeed and Lefen, 2019) and Smart PLS (Madueño *et al.*, 2016). Few empirical research works investigate the nonlinear framework. Second, most studies addressed the CSR–FP relationship from one direction, CSR→FP; however, nothing was said about the inverse relationship FP→CSR. The current study checks whether the CSR–FP relationship could be nonlinear. Hence, we used a nonlinear model based on the PSTR approach.

3. Data and method

3.1 The sample

To assess the nonlinear relationship between CSR and FP within the two directions CSR→FP and FP→CSR, we used a large sample of European firms belonging to the ASSETS 4 index over the period 2008–2017. The initial sample covers 1,116 firms, however, due to the problem of availability and continuity of CSR information, several firms have been excluded. We excluded firms for which the ESG scores information was missing for over two years. Hence, the sample was then reduced to only 814 firms located in 20 European countries [2]. Data related to CSR that was measured by the ESG score are collected from the DataStream of Thomson Reuters ASSET4 database.

3.2 The econometric approach

The PSTR model proposed by González *et al.* (2005) is a nonlinear model that aims to define an optimal threshold between the dependent variable $(VD_{i,t})$ and the main independent variable called the transition variable $(q_{i,t})$. It also allows discussing the transition variable's effect on the dependent variable below and above the defined threshold.

While most studies on CSR–FP performance are focused on the linear relationship based either on static or dynamic panel data, the current study differs from the previous ones and performs the PSTR approach as a nonlinear model. We think that there is a threshold from which CSR can affect FP either positively or negatively. Initially proposed by González *et al.* (2005), the PSTR model was considered an extension of the panel threshold regression (PTR) model of Hansen (1999). Theoretically, the PSTR is given by Equation (1).

$$y_{i,t} = \mu_i + \beta_0' x_{i,t} + \beta_1' x_{i,t} g(q_{i,t}, \gamma, c) + \varepsilon_{i,t}, \tag{1}$$

where $i = 1, \ldots, N$ and $t = 1, \ldots, T$. N and T denote the cross-section and time dimensions of the panel, respectively. In the PSTR model of González *et al.* (2005), $y_{i,t}$ is the dependent variable and u_i indicates the vector of the individual fixed effects. $g(q_{i,t}, \gamma, c)$ is the transition function that depends on a transition variable denoted as (q_{it}). (C) and (γ) represent the parameter of the threshold and the smooth transition parameter, respectively. $x_{i,t} = (x^1_{i,t}, \ldots \ldots, x^k_{i,t})$ is a vector of k explanatory variables and $\varepsilon_{i,t}$ is a random disturbance. β_0 and β_1 indicate the parameter vector of the linear and the nonlinear models, respectively.

To define the transition function, following Granger and Teräsvirta (1993), Teräsvirta (1994), Jansen and Teräsvirta (1996) and González *et al.* (2005) propose the logistic form of m orders shown in Equation (2).

$$g(q_{i,t}, \gamma, c) = \left[1 + \exp\left(-\gamma \prod_{j=1}^{m} (q_{i,t} - C_j)\right)\right]^{-1}, \tag{2}$$

where $\gamma > 0, c_1 < \ldots < c_m$ and $c = (c_1 \ldots \ldots c_m)$ is a vector of the level parameter. γ represents the supposed positive smooth parameter. To assess the nonlinear relationship between CSR and FP within the two directions, we use the following econometric models, and the transition function is given in Equations (3) and (4).

$$\begin{aligned} FP_{i,t} = {} & \mu_i + \alpha FP_{i,t-1} + \beta_0^1 ESGS_{i,t} + \beta_0^2 SIZE_{i,t} + \beta_0^3 SALGR + \beta_0^4 TANG_{i,t} + \beta_0^5 LEVR_{i,t} \\ & + \beta_0^6 DIVP_{i,t} \left[\beta_1^1 ESGS_{i,t} + \beta_1^2 SIZE_{i,t} + \beta_1^3 SALGR + \beta_1^4 TANG_{i,t} + \beta_1^5 LEVR_{i,t} \right. \\ & \left. + \beta_1^6 DIVP_{i,t}\right] g(ESGS_{i,t}, \gamma, c) \end{aligned} \tag{3}$$

where FP is the dependent variable measured by return on assets (ROA) and Tobin's Q. Environment, social and governance score (ESGS) is the transition variable. To study the inverse relationship that assesses the FP→CSR association, we used the following model given in Equation (4).

$$\begin{aligned} ESGS_{i,t} = {} & \mu_i + \alpha ESGS_{i,t-1} + \beta_0^1 FP_{i,t} + \beta_0^2 SIZE_{i,t} + \beta_0^3 SALGR + \beta_0^4 TANG_{i,t} + \beta_0^5 LEVR_{i,t} \\ & + \beta_0^6 DIVP_{i,t} \left[\beta_1^1 FP_{i,t} + \beta_1^2 SIZE_{i,t} + \beta_1^3 SALGR + \beta_1^4 TANG_{i,t} + \beta_1^5 LEVR_{i,t} \right. \\ & \left. + \beta_1^6 DIVP_{i,t}\right] g(FP_{i,t}, \gamma, c) + \varepsilon_{i,t} \end{aligned} \tag{4}$$

where ESGS is the dependent variable that represents the CSR score. FP is the transition variable measured by both ROA and Tobin's Q ratio. All variables' definitions and measurements are given in Table 1.

4. Empirical results

This section is devoted to first analyzing descriptive statistics and checking for multicollinearity problems. Secondly, we conducted some *pre*tests before testing the PSTR model. Finally, we discuss the empirical findings.

Acronyms	Variables	Definition
TobinQ (%)	Tobin's Q ratio	Total market value of firm/total asset value of firm
ROA (%)	Firm performance	Net income/total assets
ESGS	Environmental, social and governance score	ESG score is an overall company score based on the self-reported information in the environmental, social and corporate governance pillars
SIZE	Firm size	The natural logarithm of total assets
SALGR (%)	Sales growth	The growth rate of total sales
TANG (%)	Tangible	Fixed assets in % of total assets
LEVR (%)	Leverage	Total debts/total assets
DIVP (%)	Dividends payout ratio	Dividends/net income

Source(s): Table inserted by authors

Table 1.
Variables definition

4.1 Descriptive statistics and correlation matrix

Descriptive statistics are displayed in Table 2. This table gives more information about data on European firms observed from 2008 to 2017.

Statistics indicate that the average ROA for European firms is 5.536% with a maximum value of 100.826% and −122.057% as a minimum value. Furthermore, the mean value of Tobin's Q is 0.927%, with a maximum value of 14.710 and 0.009% as a minimum value. These statistics indicate that among the whole sample, there are firms that recorded a higher level of performance, but this does not prevent the existence of other firms that recorded lower and negative performance levels.

Regarding the CSR measures, the mean value of the ESG score is 58.990%. The European firms recorded 95.97% as a maximum score and 6.66% as a minimum score. This means that, on average, European firms are socially responsible. Nevertheless, from the same statistics, we notice that some firms recorded lower than 7% scores.

As firm specifics, we introduced firm size, sales growth, tangible and leverage ratio and dividend payout ratio in the econometric model. Statistics indicate that the average size is 3.94, with a maximum of 7.12 and 0.226 as a minimum value. The European firms also recorded a lower rate of growth sales, with only 0.072% as a mean value. However, some firms registered higher rate of growth sales of 98.13% and others with negative rate of sales growth with a value of −5.68%. The average value of fixed assets in % of total assets is equal to 26.31%. The ratio of total debt in % of total assets registered a mean value of 0.26% and a maximum value of 2.53%.

Variables	Mean	Std. dev	Min	Max
TobinQ	0.927	1.14	0.009	14.710
ROA	5.536	8.662	−122.057	100.826
ESGS	58.990	16.385	6.66	95.97
SIZE	3.947	0.885	0.226	7.120
SALGR	0.072	1.195	−5.685	98.135
TANG	26.317	25.333	0.000	170.113
LEVR	0.266	0.185	0.000	2.538
DIVP	36.278	27.004	0.000	100

Source(s): Table inserted by authors

Table 2.
Descriptive statistics

After analyzing descriptive statistics and checking for the multicollinearity problem, Table 3 presents a correlation matrix between independent variables used in this study.

From Table 3, we notice that there is no high correlation between variables. All correlations between independent variables are lower than 30%. This leads to confirming that there is no significant problem of multicollinearity.

4.2 Results of the pretest of the PSTR model

Before testing the PSTR model, some initial conditions should be checked before. The relationship between the dependent variable and the transition variable should be nonlinear. It is for this reason that we first conduct a test of linearity. Once the nonlinearity is confirmed, we should test the number of regimes. Finally, the threshold value makes it possible to define the optimal level of ESG that affects the level of FP. In addition, it becomes possible to analyze results below and above a certain threshold.

Three tests are applied to check for nonlinearity. These tests are the Lagrange Multiplier (Wald test), the Lagrange Multiplier (*F*-test) and the Likelihood-ratio test (LRT). The null hypothesis is H0: $\beta_1 = 0$ and the alternative is H1: $\beta_1 \neq 0$. Table 4 summarizes the statistics of the three tests for linearity.

Statistics in Table 4 show that the null hypothesis is rejected at the 1% level for the three tests. These statistics confirm that the relationship between CSR and FP in European countries is nonlinear either for the impact of CSR on FP or for the inverse relationship from FP to CSR.

When the nonlinearity hypothesis is confirmed, we can test for the number of regimes. This test is used to check if the PSTR model has one function of transition *(m = 1)* (null hypothesis) or if it has at least two functions of transition *(m = 2)* (alternative hypothesis). Statistics of the LRT and LMF tests are used to make this decision. Table 5 presents the result of the number of regimes.

	Size	Salgr	Tang	Levr	Divp
SIZE	1.0000				
SALGR	−0.0173	1.0000			
TANG	−0.1461*	0.0016	1.0000		
LEVR	−0.0198	−0.0083	0.2570*	1.0000	
DIVP	0.0590*	−0.0231	−0.0272*	−0.0638*	1.0000

Source(s): Table inserted by authors

Table 3. Correlation matrix

Transition variables	*CSR (ESGS) → Performance*				*Performance → CSR (ESGS)*			
	ROA		*Tobin's Q ratio*		ROA		*Tobin's Q ratio*	
Tests	Statistics	*p*-value	Statistics	*p*-value	Statistics	*p*-value	Statistics	*p*-value
Lagrange multiplier wald test	40.145	0.000***	35.128	0.000***	25.363	0.000***	48.296	0.000***
Lagrange multiplier *F*-test	5.837	0.000***	5.109	0.001***	3.679	0.001***	7.039	0.001***
Likelihood-ratio test	40.277	0.000***	3.892	0.000***	25.416	0.000***	48.485	0.000***

Note(s): ***indicates level of significance at 1%
Source(s): Table inserted by authors

Table 4. Linearity tests

Table 5.
Test for the number of regimes

Transition variables		*CSR (ESGS) → Performance*				*Performance → CSR (ESGS)*			
		ROA		*Tobin's Q ratio*		*ROA*		*Tobin's Q ratio*	
Hypotheses	Tests	Statistics	p-value	Statistics	p-value	Statistics	p-value	Statistics	p-value
(1)H_0: $r = 0$;H_1: $r = 0$	LRT	103.764	0.000***	151.299	0.000***	303.701	0.000***	492.336	0.000***
	F	9.942	0.000***	14.596	0.000***	27.413	0.000***	50.335	0.000***
(2)H_0: $r = 1$;H_1: $r = 2$	LRT	134.446	0.000***	205.614	0.000***	395.421	0.000***	523.692	0.000***
	F	7.220	0.000***	11.154	0.000***	24.587	0.000***	30.002	0.000***

Note(s): ***indicates level of significance at 1%
Source(s): Table inserted by authors

Table 5 shows that both the hypothesis without a threshold *(r = 0)* and the hypothesis with at least two thresholds *(r = 2)* are rejected at the 1% significance level for the two tests. Hence, we reject the null hypothesis and we admit that there exists at least two functions of transition and the model has one threshold for the two relations: CSR→ FP and FP→CSR.

4.3 Threshold values

The third step consists of defining the threshold values. One of the fundamental objectives of the PSTR model is to study the possible nonlinear relationship based on a certain threshold. Table 6 summarizes the results of the threshold values of CSR and FP.

Results displayed in Table 6 indicate that the threshold of ESGS is 56.780% when ROA is the dependent variable and 41.02% when Tobin's Q ratio is the dependent variable. In addition, the values of the smooth positive parameter γ are equal to 0.200 and 1.400. These weak values of γ confirm the good quality of the PSTR model that requires weak value of γ to well consider it as smooth model. Within a high value of parameter γ, the model becomes PTR. We also notice that the mean value of the ESG score of 58.990% is greater than the two thresholds of 56.780 and 41.02%. Hence, we can consider that European firms have attained the necessary thresholds on average.

However, since the minimum value of ESGS is 6.66%, some other firms are invited to improve this score to surpass these thresholds and get full benefits from its effects on FP.

With regard to the threshold of performance that encourages firms to engage in CSR, we found that European firms should surpass the threshold of 1.23% for ROA and 0.821% for Tobin's Q ratio.

4.4 Results of the PSTR model

In this subsection, we present the results of the CSR–FP relationship taking into the two directions. The first one is from FP to CSR (Table 7) and the second is from CSR to FP (Table 8). We think that to get full benefit from CSR effects, firms should have better financial performance to undertake CSR.

4.4.1 FP→CSR: a threshold effect. Results in Table 7 indicate that below the thresholds of 1.231% for ROA and 0.821% for Tobin's Q ratio, FP is found to be without any significant effect on CSR. However, surpassing these thresholds, FP exerts a positive and significant effect on ESGS. To meet the requirements and standards of CSR, a firm should support some costs and expenses due to implementing some different proceedings and modes of operation. In addition, training employees, improving work conditions, thinking, and acting for the safety of the environment and the whole society would be costly for companies. In this case, firms that recorded lower or negative levels of performance cannot better undertake the requirements of CSR. Hence, we think an initial stage of performance is required before a firm can engage in CSR practices. Better financial performance would predict better social performance (García-Sanchez and Martínez-Ferrero, 2019; Mattingly and Olsen, 2018). Some authors argue that any improvement in FP will lead to higher engagement in socially

	CSR (ESGS) → Performance		*Performance → CSR (ESGS)*	
	Performance is ROA	*Performance is Tobin's Q*	*Performance is ROA*	*Performance is Tobin's Q*
γ	0.200	0.200	0.200	1.400
C	*56.780%*	*41.02%*	*1.231%*	*0.821%*
AIC	3.096	0.069	3.684	3.667
BIC	3.117	0.084	3.699	3.682

Note(s): The italic values represent the threshold level
Source(s): Table inserted by authors

Table 6. Results of threshold values

Variable	Performance is ROA Coeff	T-stat	Performance is Tobin's Q ratio Coeff	T-stat
First regime	*ROA < 1,231%*		*TobinQ < 0.821%*	
FP	0.858	1.376	1.809	1.425
SIZE	1.281	4.943***	1.330	3.342***
SALGR	1.817	2.564***	0.322	2.048**
TANG	2.426	0.099	0.005	0.170
LEVR	−2.080	−2.321**	1.899	1.675*
DIVP	1.320	3.063***	0.039	2.523**
Second regime	*ROA > 1.231%*		*TobinQ > 0.821%*	
FP	0.574	4.323***	1.662	2.857***
SIZE	2.991	5.399***	2.789	5.160***
SALGR	1.932	2.550**	1.647	2.502***
TANG	2.451	0.096	0.036	0.814
LEVR	−2.917	−2.381**	−2.386	−1.897*
DIVP	0.420	3.073***	0.090	3.791***
AIC	3.684		3.667	
BIC	3.699		3.682	
C	1.231%		0.821%	
Γ	0.200		1.400	
F (11, 6,139)	65.521 (0.000)		79.185 (0.000)	
Obs	8.129		8,129	

Table 7. Results of the threshold effect of FP on CSR

Note(s): ***, ** and * indicate level of significance at 1%, 5% and 10%. ESGS is the dependent variable. The italic values represent the first and the second regimes
Source(s): Table inserted by authors

Variable	Performance is ROA Coeff	T-stat	Performance is Tobin's Q ratio Coeff	T-stat
First regime	*ESGS < 56.78%*		*ESGS < 41.02%*	
ESGS	−0.022	−1.523	2.493	0.683
SIZE	−1.200	−2.174**	−1.700	−0.082
SALGR	2.688	7.834***	1.372	3.074***
LEVR	−1.951	−2.070***	−0.284	−3.068***
TANG	0.005	0.036	−2.671	−1.331
DIVP	0.009	1.962**	2.050	2.167**
Second regime	*ESGS > 56.78%*		*ESGS > 41.02%*	
ESGS	0.040	2.413**	0.031	3.683***
SIZE	0.082	0.352	2.829	4.082***
SALGR	0.513	1.077	2.873	0.074
LEVR	−0.201	−5.229***	−0.596	−5.032***
TANG	−0.026	−3.028***	−1.231	−1.831*
DIVP	0.020	3.418***	0.100	0.467
AIC	3.096		0.069	
BIC	3.117		0.084	
C	*56.78%*		*41.02%*	
γ	0.200		0.200	
F (11, 6,139)	53.447 (0.000)		9.219 (0.000)	
Obs	8.129		8,129	

Table 8. Threshold effect of CSR on FP

Note(s): ***, *** and * indicate level of significance at 1, 5 and 10%. ROA and Tobin's Q ratio are the dependent variables
Source(s): Table inserted by authors

responsible activities. This result is in line with the findings of Preston and O'bannon (1997), Melo (2012), Tang *et al.* (2018) and Saridakis *et al.* (2023).

We also found that large firms are likely to be more engaged in CSR. We found that firm size is positively and significantly correlated with ESGS. This positive effect is confirmed either below or above the threshold of performance. Firms with big sizes are generally more experienced and look to improve their performance and reputation. They are more likely to meet the standards and practices of CSR to maximize the value creation for the owners, offer more work flexibility, protect the environment and ensure the value creation for all of society. Considering the more extensive resource availability at relatively low costs, larger firms can more easily afford CSR disclosures (Brammer and Millington, 2006; Udayasankar, 2007). Additionally, large firms are more likely to communicate their commitments to CSR practices (Baumann-Pauly *et al.*, 2013). This result is similar to the findings of Ting (2021), who found that firm size positively affects firms' CSR disclosure.

Sales growth and dividends payout ratio are positively and significantly associated with the dependent variable within the two regimes. Firms that experience high growth sales rates and distribute high dividend payout ratios are generally financially stable and profitable. Firms with better performance can easily engage and undertake CSR standards. According to the slack resource theory, when the availability of financial resources increases, firms might increase their engagement in CSR activities (Mcguire *et al.*, 1988).

Contrary to the effect of firm size, sales growth and dividends payout ratio, we found that engagement in CSR standards is negatively sensitive to an increase in the leverage ratio. More leveraged firms should pay a high level of financial expenses. A high leverage ratio limits the ability of firms to implement some new differed proceedings and modes of operation. Furthermore, undertaking CSR through ensuring training of employees, improving work conditions and searching for the safety of the environment and the whole society will be difficult.

4.4.2 CSR→FP: a threshold effect. Findings of the PSTR model are displayed in Table 8. From these results, we notice that surpassing the threshold of 56.780% for ROA and 41.02% for Tobin's Q ratio, ESGS exerts a positive and significant effect on FP. In addition, results show that only sales growth and dividends payout ratio exert a positive and significant effect on the level of FP for both ROA and Tobin's Q ratio. Conversely, firm size and leverage ratio are negatively associated with the dependent variable measured by ROA. However, we found that tangible does not exert any significant impact.

From Table 8, we notice that the CSR effect differs from the first regime to the second one. Below the threshold of 56.780% for ROA and 41.02% for Tobin's Q ratio, results indicate that the effect of ESGS is insignificant. However, surpassing the previously mentioned thresholds, the effect becomes positive and significant. An increase by 1% in the ESGS leads to an increase in the level of FP by 4% for ROA and almost 3% for Tobin's Q ratio. In order to get full benefits from the effect of CSR on FP, European firms should improve their CSR scores and surpass the threshold of 56.780% for ROA and 41.02% for Tobin's Q ratio. Companies that respect CSR practices provide good working conditions and more flexibility in workplace. This creates more incentives for employees that become more productive in order to improve financial and social performance. The reputation of companies that consistently prove their commitment to CSR initiatives will significantly increase. In this case, it results in an increase in sales growth that positively affects FP. According to the 2016 Neilson survey, more than 50% of customers are willing to purchase more products from companies that are socially responsible. This finding is in line with the work of Rodriguez-Fernandez (2016), Muñoz *et al.* (2015) and Madueño *et al.* (2016).

In addition to the positive effect of CSR, results indicate that the dividends payout ratio is positively and significantly correlated with the dependent variable for both ROA and Tobin's Q ratio. Contrary to studies that report that high dividends payout ratio leads to more dividends and fewer funds for expansion and growth, we found that the dividends payout ratio is positively and significantly associated with FP. In general, dividend policy is an instrument of wealth distribution that can attract actual and potential investors. Firms' dividend payout offers information about current and future performance. More precisely, the cash dividends announcement leads to more information disclosure regarding firm's future performance. Hence, information asymmetry between shareholders and manager will be reduced. Having enough and necessary information makes the assessment of the firm's financial performance easy and improves investment decisions. This result is convergent with the works of Zhou and Ruland (2006), Murekefu and Ouma (2012) and Pandey (2010).

Contrary to the effect of CSR and dividend payout ratio, findings indicate that below the optimal threshold, firm size negatively and significantly affects FP only for ROA. The task of control and governance becomes more complicated with larger firms. The ineffectiveness of governance and control leads to more risk-taking and speculative behaviors that adversely affect FP. This result is divergent from Brammer and Millington (2006), Udayasankar (2007), Baumann-Pauly *et al.* (2013) and Ting (2021).

In addition, the level of bureaucracy increases when the firm becomes larger. This situation results in a stiff resistance to change that generally decreases the FP. Larger firms require a strong level of coordination that makes managerial and control tasks more difficult and inefficient and decreases the level of performance. This result is in line with the works of Amato and Burson (2007) and Maja and Josipa (2012).

Regarding the effect of leverage ratio, we found that European FP is more sensitive to an increase in the debts-to-assets ratio either below or above the optimal threshold. This negative effect is confirmed for both ROA and Tobin's Q ratio. High level of leverage ratio increases financial expenses that decrease FP. In periods of crisis and financial instability, strongly debt-financed firms do not find creditors, bankers and suppliers. This limits the funding sources that affect firm investment and FP. This finding is similar to the results of Rajan and Zingales (1995), Majumdar and Chhibber (1999), Ghosh (2008) and Pandey (2002).

5. Conclusion and policy recommendations

The main purpose of this study was to investigate the nonlinear relationship between CSR and FP in the European context. More precisely, we assess the threshold of FP that makes it possible for firms to engage in CSR standards first. Secondly, we define the threshold of CSR that affects the level of FP. We used a sample of 814 located in 20 European countries and observed from 2008 to 2017. As a nonlinear approach, we performed the PSTR model of González *et al.* (2005).

The results of this paper support three main conclusions. First, it was shown that firms should register a certain level of performance to undertake CSR. European firms should surpass the threshold of 1.231% for ROA and 0.821% for Tobin's Q ratio to engage in CSR practices. Second, we found an association between CSR and FP is nonlinear, and we have defined a threshold of ESGS of about 56.780% when ROA is the dependent variable and 41.02% for Tobin's Q ratio. Below these thresholds, the effect of CSR is insignificant. However, surpassing this optimal threshold, the effect becomes positive and significant. In other words, above the threshold of 56.780% for ROA and 0.821% for Tobin's Q ratio, the ESGS significantly increases the level of FP in the European context. Third, firm specifics, sales growth and dividends payout ratio are positively and significantly associated with the dependent variable (ROA). However, firm size and leverage ratio decrease the level of FP substantially.

This paper's findings could be considered important and address some policy recommendations for policymakers or European firms. First, to get the full benefit from CSR effects, firms should have better financial performance to undertake CSR. Hence, a certain level of performance is required before engaging in CSR standards. Second, as CSR significantly increases the level of FP within a certain threshold, it was recommended that European firms improve their CSR scores and respect the CSR standards and practices.

More precisely, European firms are invited to surpass the defined threshold of CSR to get full benefits from the effect of CSR on FP. Additionally, strong work is needed to improve the ESG score to achieve the optimal threshold from which CSR can positively affect the level of FP. Third, European firms should grant more importance to the sales activity and the dividends payout. These two variables are considered the main drivers of FP in the European context. The fourth policy implication appeals to streamlining the leverage ratio. A high ratio of debt to total assets is considered a harmful factor that decreases the level of performance.

While the results of this paper are interesting and could bring some important policy implications for policymakers, this study has some limitations. First, this study is based on developed countries (European countries), and there is no comparison between developing countries. Due to several economic, social, financial and doing business differences, companies in these countries record different levels of performance; hence they are less likely to engage in CSR practices. So, one of the limitations is that we cannot generalize this paper's results concerning the defined thresholds of performance and CSR. Second, since we found that sales growth and dividend payout significantly increase FP and incentive engagement in CSR practices, an interaction between these two variables could affect the defined threshold either of FP or CSR.

As future research, comparing developed and developing countries, including some interactional variables and using large sample and updated period of study, could improve this paper's findings.

Notes

1. Bahrain 22, Kuwait 159, Oman 126, Qatar 43, Saudi Arabia 102 and UAE 125.
2. For more details on the list of countries, the number of firms and the % in the total sample, see Appendix.

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Appendix

Countries	Codes	Number of firms	%
Austria	Aut	15	1.84
Belgium	BEL	24	2.95
Switzerland	CHE	58	7.13
Czech Republic	CZE	4	0.49
Germany	DEU	75	9.21
Denmark	DNK	24	2.95
Spain	ESP	41	5.04
Finland	FIN	25	3.07
France	FRA	87	10.69
United Kingdom	GBR	242	29.73
Greece	GRC	17	2.09
Hungary	HUN	4	0.49
Ireland	IRL	12	1.47
Italy	ITA	42	5.16
Netherlands	NLD	26	3.19
Norway	NOR	23	2.83
Poland	POL	17	2.09
Portugal	PRT	9	1.11
Sweden	SWE	46	5.65
Turkey	TUR	23	2.83
	20 countries	814 firms	100%

Source(s): Appendix inserted by authors

Table A1. Description of the sample: number of firms by countries

Corresponding author
Abdelaziz Hakimi can be contacted at: abdelazizhakimi@yahoo.fr

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Do corporate social responsibility practices have an impact on employer attractiveness – an approach to corporate volunteering programs

Margarida Seara
Faculty of Economics, University of Porto, Porto, Portugal
Teresa Proença
Faculty of Economics, CEF.UP, University of Porto, Porto, Portugal, and
Marisa R. Ferreira
ESTG, CIICESI, P.PORTO, Felgueiras, Portugal

Abstract

Purpose – The purpose of this study is to understand the impact that Corporate Social Responsibility (CSR) practices have on the perceived attractiveness of companies in the eyes of their employees and potential candidates. Moreover, this study assesses the mediation role that Extrinsic (EA) and Intrinsic Attributions (IA) about Corporate Volunteering (CV) have on this relationship.

Design/methodology/approach – Three hundred and five responses were collected in an online questionnaire and a Structural Equation Modelling model was designed to explain the proposed relationships of the variables under study.

Findings – The authors found that the IA that employees/candidates make about CV programs have a direct and positive impact on the company's attractiveness; it was not possible to conclude the same about EA.

Originality/value – Unlike studies already existing in the area of corporate attractiveness that focus on the perspective of companies and customers, with a high focus on the organizational implementation of CSR and organizational benefits, this study has adopted a different perspective that focuses on the opinion of company employees, as well as the perspective of possible candidates. By not limiting participation to anyone, it covers a wide range of participants, allowing a broader knowledge of the labor market.

Keywords Corporate social responsibility, Corporate volunteering, Employer attractiveness, Employer branding, Attributions, Human resources

Paper type Research paper

1. Introduction

Corporate citizenship is introduced in companies through Corporate Social Responsibility (CSR), which represents a set of good citizenship practices that companies have toward society with the ultimate goal of creating value, mainly for society and later for themselves (Glavas and Kelley, 2014; Jones *et al.*, 2014). One way of implementing CSR practices in

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companies is through Corporate Volunteering (CV) programs. This type of company involvement in society represents a set of actions organized and developed by companies in order to promote their employees' involvement in society through volunteering activities (Allen, 2000; Kotler and Lee, 2004; Pajo and Lee, 2011). The involvement between companies and their employees contributes to the construction of a favorable working environment, which in turn is positive for companies in terms of competitive advantage and image improvement. In this sense, one of the essential factors to attract and retain the best employees is through the branding and corporate reputation (Saz-Gil *et al.*, 2020).

Defined as a long-term strategy to manage the awareness and perceptions of current employees, potential candidates and other stakeholders about an organization (Backhaus and Tikoo, 2004), Employer Branding (EB) allows companies to distinguish themselves from other competitors and develop a recognizable and desired identity (Backhaus and Tikoo, 2004; Jiang and Iles, 2011; Lievens *et al.*, 2007). Likewise, Employer Attractiveness (EmpAt) is related to the affective assessment of an organization by candidates and, therefore, it is considered an important factor in the recruitment attraction stage (Duarte *et al.*, 2015). Corporate image and reputation are mechanisms that mediate the relationship between the perception of CSR and EmpAt.

As the study of this social aspect of a company is extremely relevant to the Human Resource Management (HRM) of companies, it also proves to be important for management and for the academia since most studies have been carried out from the perspective of companies (Dreesbach-Bundy and Scheck, 2017; Ellen *et al.*, 2006; Gatignon-Turnau and Mignonac, 2015; Gilder *et al.*, 2005), with few studies (Ahmad *et al.*, 2019; Berthon *et al.*, 2005; Gatignon-Turnau and Mignonac, 2015; Vlachos *et al.*, 2013) taking into account the perspective of potential candidates and current employees [1] when evaluating a company's social strategy and its contribution to their attractiveness. In this study, we intend to focus on the micro level of analysis, considering the employees/candidates' attributions on CSR practices, in particular CV programs. We aim to evaluate the impact of CV programs on EmpAt. Additionally, we will assess whether internal attributions toward these practices, such as recognizing a company's genuine motivations for creating social value, intensify this relationship.

2. Literature review and hypotheses development

2.1 Corporate social responsibility, corporate volunteering and employer attractiveness

Companies use CSR in their corporate strategies to increase their competitiveness and strengthen their positioning, improving the psychological involvement of employees (Aguinis and Glavas, 2012; Greening and Turban, 2000; McWilliams and Siegel, 2001; Vanhamme and Grobben, 2008). As countries have experienced job and work crises during the pandemic, issues like jobs, work, workplace locations, and health care are topics that should be part of the corporations' CSR agenda, being that companies' commitment to CSR must become more strategic and solid in the future (Carroll, 2021). CSR is, on the one hand, a management philosophy seen as a form of pure profit maximization, improving reputation, creating competitive advantage and generating win-win-win situations through value creation (Carroll and Shabana, 2010). On the other hand, CSR is a philanthropic initiative in which the focus is on the corporate environment and its stakeholders, paying attention not only to maximizing the value of the shares and the economic benefit but also orienting toward a wide range of pro-social activities and policies (Sekar and Dyaram, 2017).

CV may be considered as a branch and a strategic CSR activity (Mozes *et al.*, 2011), and one of the most used instruments by companies to contribute to a fairer and more sustainable global development (Mozes *et al.*, 2011; Peloza *et al.*, 2009). It constitutes an increasingly salient CSR activity that demonstrates proactive corporate citizenship (Maignan and Ferrell, 2001) and engages internal and external stakeholders (Plewa *et al.*, 2015), allowing companies to become more socially responsible by integrating social, environmental, ethical, consumer and human rights concerns into their strategy (European Commission, 2019). CV refers to volunteer activities that employees perform in the community with some form of assistance or encouragement from their employer (Mayer and Silva, 2017), it can be formal or informal (more flexible relationships where there is no commitment to a particular organization) or formal (relationships that are established with specific organizations and joint CV programs are developed) (Magalhães and Ferreira, 2014).

CV provides new sources of talent to solve community problems and encourage corporate citizenship (Pajo and Lee, 2011) allowing employees to share their knowledge and skills with society as part of the employer's community service (Gilder *et al.*, 2005; Rodell, 2013). These programs are often described as win-win-win situations, since there are gains for employees, for companies and for society (Caligiuri *et al.*, 2013; Peloza and Hassay, 2006).

Since CV is an important CSR activity strongly related to a company's reputation and brand image (Coombs and Holladay, 2013; Gatignon-Turnau and Mignonac, 2015; Houghton *et al.*, 2009; Kumari and Saini, 2018; Peloza and Hassay, 2006), it is expected that when a company has successful CV programs, it becomes more attractive to potential candidates, as well as to their own employees (Peterson, 2004; Tuffrey, 1995; Padhi and Joshi, 2022). In this sense, we can expect a strong relationship between the possibility of involvement in a CV program and the attractiveness of a company.

H1. For employees/candidates, the opportunity to participate in a CV program is positively related with the perceived employer attractiveness.

EmpAt, Perceived Organizational Attractiveness or Organizational Attractiveness (Aiman-Smith *et al.*, 2001) can be defined as the advantages that candidates perceive, and might influence the beginning of a relationship with an organization (Aiman-Smith *et al.*, 2001; Berthon *et al.*, 2005; Jiang and Iles, 2011; Pingle and Sharma, 2013). EmpAt is seen as the benefits that candidates perceive in a company with which they potentially want to work (Berthon *et al.*, 2005), which is positively related to a company's brand equity, because the more attractive the company is, the greater the company's brand equity (Berthon *et al.*, 2005).

Researchers have found different ways to classify and measure a company's attractiveness attributes (Alnıaçık and Alnıaçık, 2012; Berthon *et al.*, 2005; Cable and Turban, 2003; Lievens and Highhouse, 2003; Srivastava and Bhatnagar, 2010; Tanwar and Prasad, 2017). Ambler and Barrow (1996) proposed a three-party model where they highlighted the benefits the EB offers to employees, which include instrumental and symbolic attributes of the company and work perceived by employees (Charbonnier-Voirin *et al.*, 2016; Lievens and Highhouse, 2003).

It was based on this study by Ambler and Barrow (1996) that Berthon *et al.* (2005) developed and validated a scale that is currently the most used to measure the attractiveness of the employer, from the perspective of employees/candidates (Tanwar and Prasad, 2017). The Employer Attractiveness Scale, also known as "*EmpAt Scale*" (Berthon *et al.*, 2005), is a multi-item scale that operationalizes the dimensions of EmpAt (Santiago, 2019). According to these authors, the attractiveness of an employer's brand is measured by five core values: Social value, Economic value, Interest value, Application value and Development value.

The EmpAt Scale results from the combination of the previous values and allows companies to understand what attracts employees in the labor market, giving them the opportunity to compete fiercely in attracting new and quality employees in the labor market (Kumari and Saini, 2018).

2.2 Perceptions about organizations' CSR programs

When a company implements a CSR program, it is likely that the stakeholders will look for the meaning of that company's action, often speculating on the company's real reasons and motivations behind these programs (Fein, 1996; Gilbert and Malone, 1995; Nishimura and Tristán, 2011; Parcha, 2017; Roeck and Delobbe, 2012). These assessments of the company's true intentions behind the implementation of social programs in its corporate strategy are known as attributions.

Most of the papers show that CSR–employee research has been dominated by focuses on the organizational implementation of CSR and organizational benefits, and employees are generally seen as implementers of top-down sustainability policies and as mediators regarding organizational CSR-related benefits. The focus has been placed on how employees can contribute to CSR within their employing organizations (Onkila and Sarna, 2022). In this sense, individuals' attributions regarding their companies' CSR initiatives are vital to understanding when the perceived CSR generates favorable employee outcomes (Donia *et al.*, 2017). CSR attributions provide important information about an organization's character (Donia *et al.*, 2019). In this way, it is postulated that employees' attributions have significant implications for their work-related motivation (Martinko *et al.*, 2011), as well as in the CSR communication process (Buil *et al.*, 2012; Parcha, 2017). Based on the Attribution Theory, Gatignon-Turnau and Mignonac (2015) anticipated that corporate volunteers' responses to CV and commitment to the company depend not only on the amount of support for CV but also on their perceptions and attributions about the company's objective in the implementation of the volunteer program (Gatignon-Turnau and Mignonac, 2015).

From the general point of view, the organization's intentions behind the implementation of CV programs and, consequently, employees' attributions in relation to them, can be of two types: "*intrinsic*" (Ahmad *et al.*, 2019; Vlachos *et al.*, 2013) also known as public-serving (Gatignon-Turnau and Mignonac, 2015) or altruistic (de Groot and Steg, 2008): seen as sincere practices of solidarity, in which employees believe that the organization is genuinely involved in the cause in question (Choi *et al.*, 2016; Donia *et al.*, 2017; Jong and Meer, 2017). For the company, the objective is to help and contribute socially, focusing on the potential benefit for the community (Haski-Leventhal, 2009). The other attribution is "*extrinsic*" (Ahmad *et al.*, 2019; Vlachos *et al.*, 2013) also known as self-serving (Gatignon-Turnau and Mignonac, 2015) or egoistic (de Groot and Steg, 2008): when CSR is used only as a marketing tool with no substantial contribution to doing good (Jahdi and Acikdilli, 2009). CSR activities are believed to mainly benefit the company and the company is focused only on making profits (Barone *et al.*, 2000; Choi *et al.*, 2016; Donia *et al.*, 2017; Jong and Meer, 2017). Thus, it is proposed that

H2a. The opportunity to participate in a CV program is positively related with the employees/candidates' intrinsic attributions of the intentions of the company with CV programs.

H2b. The opportunity to participate in a CV program is negatively related with the employees/candidates' extrinsic attributions of the intentions of the company with CV programs.

Different stakeholders perceive CSR practices differently (Lee and Seo, 2017). As suggested by the Fairness Theory (Cropanzano *et al.*, 2001), the attitudes and behaviors of employees are highly influenced by how fair employees consider their organization's actions. They hope their organization meets the standard of morality and value they expect, interpreting this as a sign that the company will treat them equally by responding positively in terms of behavior (Glavas and Kelley, 2014; Lee and Seo, 2017). When expectations are not met, people start to focus on why companies are carrying out social initiatives rather than what those initiatives are doing because the lack of information about companies generates a climate of distrust about their true motives behind their CSR practices (Gilbert and Malone, 1995; Nishii *et al.*, 2008; Parcha, 2017). Some authors (Gilbert and Malone, 1995; Glavas and Godwin, 2013) argue that the perception of a company's socially responsible behavior may be more important than the actual behavior itself; therefore, it is important for organizations to engage in an extensive communication program to provide the information needed to help shape employees' views on CSR. Therefore, it is expected that

H3a. The employees/candidates' intrinsic attributions of the companies' intentions with the CV programs are positively related with the perceived employer attractiveness.

H3b. The employees/candidates' extrinsic attributions of the companies' intentions with the CV programs are negatively related with the perceived employer attractiveness.

Intrinsic motives are said to be more altruistic and reflect good citizenship, extrinsic motives tend to be more instrumental and motivated by more materialistic gains, which is also known as social washing practices (Troje and Gluch, 2020). Intrinsic attributions (IA) are associated with evaluations that the organization treats its external stakeholders fairly, which leads employees to expect the same fair treatment for them, as stated by the Fairness Theory (Cropanzano *et al*., 2001). Extrinsic attributions (EA) use CSR only as a marketing tool with no substantial contribution to doing good (Jahdi and Acikdilli, 2009). They are practices with specific intentions, generally related to reputation improvement objectives (Coombs and Holladay, 2013; Gatignon-Turnau and Mignonac, 2015; Houghton *et al.*, 2009; Kumari and Saini, 2018; Peloza and Hassay, 2006). Therefore, we propose the following hypotheses:

H4a. The relationship between the opportunity to participate in a CV program and the perceived employer attractiveness is positively mediated by intrinsic attributions about the company's intentions with the CV programs.

H4b. The relationship between the opportunity to participate in a CV program and the perceived employer attractiveness is negatively mediated by extrinsic attributions about the company's intentions with the CV programs.

So, our hypotheses are presented in Figure 1.

3. Methodology, measures and data collection

The questionnaire consisted of 50 questions divided into four sections: Sociodemographic Information, Attributes of Employer Attractiveness, Corporate Volunteering and Corporate Social Responsibility Attributions.

In the first section, respondents would have to provide their sociodemographic information such as gender, age, education, professional status, sector activity and nationality. In the second section, entitled "Attributes of Employer Attractiveness", we assessed the respondents' attributions in relation to EmpAt, which was our dependent variable. Also in this section, we asked the respondents six questions regarding their knowledge of CSR, CV and Traditional Volunteering. They were asked if their company had CSR practices, if they were familiar with the concept of CV and if they ever did traditional

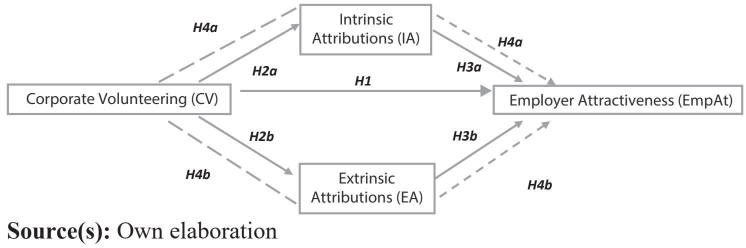


Figure 1.
Proposed model

Source(s): Own elaboration

volunteering and the answers were coded in a dummy variable (0 = No, 1 = Yes). If they responded positively to the practice of traditional volunteering, they were asked to say how many initiatives were involved, in an open and nonmandatory answer. Table 1 shows all the questions used.

In the third section designated, we questioned respondents about their interest in CV programs, our independent variable. Table 2 shows all the questions used.

In the last part of the questionnaire, we asked respondents to rate their agreement on nine statements related to the CSR attributions they made about a company. Table 3 shows all the questions used.

The questionnaire was aimed at a very broad spectrum of people, since we seek people who are already in the labor market such as current employees and unemployed, but also those who are not yet in the labor market, such as students. We excluded retired individuals from our study since they have already exited the labor market. Data were collected during the COVID-19 pandemic period from March to May 2020, and therefore, caution should be exercised when interpreting the results. To focus solely on the Portuguese case, we conducted the questionnaire in Portuguese. The survey was made available online via a Google Forms link and was disseminated through social media platforms such as Facebook, Instagram and LinkedIn, as well as email.

Our questionnaire had a total of 305 valid responses, of which about 57% were women and 43% were men. The average age was 27.61 years and the respondents had higher education,

Value	Question	Bibliographic source
Development Value	Recognition/appreciation from management	Berthon *et al.* (2005)
	A springboard for future employment	
	Feeling good about yourself as a result of working for a particular organization	
	Feeling more self-confident as a result of working for a particular organization	
	Gaining career-enhancing experience	
Social Value	A fun working environment	
	Having a good relationship with your superiors	
	Having a good relationship with your colleagues	
	Supportive and encouraging colleagues	
	Happy work environment	
Interest Value	Working in an exciting environment	
	Innovative employer – novel work practices/forward-thinking	
	The organization both values and makes use of your creativity	
	The organization produces high-quality products and services	
	The organization produces innovative products and services	
Economic Value	Good promotion opportunities within the organization	
	Job security within the organization	
	Hands-on interdepartmental experience	
	An above-average basic salary	
	An attractive overall compensation package	
Application Value	Humanitarian organization – gives back to society	
	Opportunity to apply what was learned at a tertiary institution	
	Opportunity to teach others what you have learned	
	Acceptance and belonging	
	The organization is customer-orientated	

Source(s): Own Elaboration

Table 1. Employer attractiveness scale

of which 55.1% were from the areas of Legal Social Sciences; most of the participants were also employed (more details in Appendix – Table A1).

4. Results and discussions

4.1 Results

The attributions that employees/candidates make about companies' intentions behind CV programs constitute an improved measure that is a junction of two scales previously elaborated upon and, as such, an Exploratory Factor Analysis (EFA) for this scale was conducted and its internal consistency proven. Subsequently, a Confirmatory Factor Analysis (CFA) was performed in order to validate the scale. From the EFA it was possible to extract two factors that make up the variable attributions: Factor 1 called "Extrinsic Attributions (EA)" and Factor 2 called "Intrinsic Attributions (IA)". First, item EA3 was eliminated because it was causing too many correlations between factors and according to Marôco (2014) this item must be eliminated. Next, the modification indexes were analyzed and this allowed for an improvement in the adjustment of the model.

Table 2. Questions regarding corporate volunteering programs

Question	Bibliographic source
I would be interested in enrolling in a corporate volunteering program	Oliveira *et al.* (2021)
I would be interested in learning more about corporate volunteering programs	
Corporate volunteering programs are a viable way for me to get involved with volunteering	

Source(s): Own Elaboration

Table 3. Questions regarding corporate social responsibility attributions

CSR attributions	Question	Bibliographic source
Public Relations Attributions	Companies use their volunteer programs to strengthen their reputation with the general public	Ahmad *et al.* (2019)
	Companies expect that employees' volunteering activities will have positive spin-off in terms of their external image	
	Companies communicate to the outside world about their volunteering activities in order to show that they are concerned by social matters	
Intrinsic Attributions	Companies are genuinely concerned about being socially responsible	Gatignon-Turnau and Mignonac (2015)
	Companies engage in socially responsible initiatives because they feel morally obligated to help	
	Companies engage in socially responsible initiatives in order to give back something to the community	
Extrinsic Attributions	Companies engage in socially responsible initiatives in order to get more customers	
	Companies engage in socially responsible initiatives because they feel competitive pressures to engage in such activities	
	Companies hope to increase their profits by engaging in socially responsible initiatives	

Source(s): Own Elaboration

For the EmpAt variable, we only did a CFA since the scale already existed. The model reliability was confirmed with Cronbach's Alpha and composite reliability values greater than 0.6. We also made a second-order CFA in order to confirm the good adjustment of the model.

After the factorial analysis, an analysis was made of the descriptive statistics and the correlations of the model variables between them and with the sociodemographic variables based on the Pearson correlations (see Table 4). It is important to highlight the CV variable that has positive relationships with the EmpAt, the IA and with each of the values of the EmpAt scale and it just does not show any correlation with the EA. It is also interesting to note that the variables in the model are practically all statistically significant and that they are all positively related to each other, except for the relationship between IA and EA which is negative (−0.007) and between CV and EA (0.045) which is in line with what was seen in the CFA of the attributions.

Through Structural Equation Modelling (SEM), which resulted from the previous steps, we were able to conclude that the model was well adjusted, and we were able to analyze the relationships between variables, proposed in the study hypotheses (see Figure 2). By testing the hypotheses, it was possible to conclude the direct relationships between the variables: CV-IA, CV-EmpAt, IA-EmpAt and EA-EmpAt; and the indirect effect of CV in the EmpAt, mediated by IA. Thus, it was possible to prove the hypotheses H1, H2a, H3a, H3b and H4a, while hypotheses H2b and H4b were not supported (see Table 5).

As seen previously, in recent decades, companies have been betting on CSR programs as an attraction strategy, since several studies (Donia *et al.*, 2017; Turban and Greening, 1997) have shown that both candidates and employees are more attracted to a company that has a strong social impact. Thus, in this study, the relationship between CSR and EmpAt was evaluated through the CV programs, where it was attempted to understand if this relationship actually exists and if its impact is direct and positive.

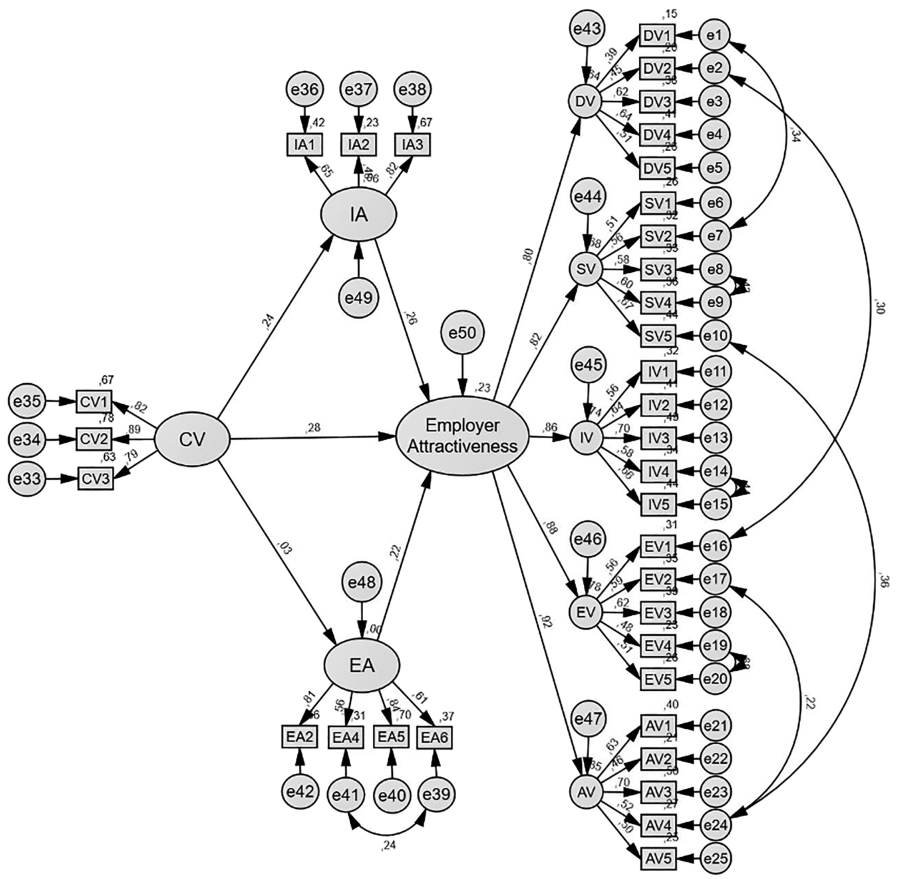
Based on the validation of H1 (which evaluated this direct relationship) and since the results prove that this relationship is positive and statistically significant, it is concluded that, in fact, the CV programs have an impact on the attractiveness of a company. The relationship between the CV programs and the candidates/employees' attribution results was more apportioned since the direct relationship between CV and IA has been proven through H2a, this relationship being positive and statistically significant (0.181). On the other hand, the H2b that hypothesized the relationship between the CV and the EA has not been proven, since this was not statistically significant ($\rho = 0.649$). Additionally, there was also no statistically significant correlation between the two variables, and therefore, this hypothesis has not been proven.

As we have seen, both types of attributions presented mean values close to four, with the extrinsic (3.939) having a slightly higher value than the intrinsic (3.349), which means that both types of attributions have a high importance for employees/candidates. This can be useful to companies as they realize that they should pay more attention to the attributions that employees/candidates make about them. According to this, H3a and H3b were assessed, respectively, the direct relationship between IA and EA with the EmpAt. H3a was confirmed, and H3b was rejected, as the relationship is not negative. On the contrary, it is positive. These relationships are also explicit with significant correlations observed between the IA (0.268) and the EA (0.166) with EmpAt. Hence, this proves that IA does in fact have a positive and direct impact on the attractiveness of companies, while EA also influences this attractiveness, but to a lesser extent. Through the analysis of the direct and indirect effects of the variables, we could conclude that there was an indirect relationship between CV and EmpAt through IA, and therefore H4a was proven. On the other hand, and due to the lack of a relationship between CV and EA that resulted in H2b not being validated, H4b was also not validated since there was no indirect effect of EA between CV and EmpAt.

Table 4.
Descriptive statistics and Pearson correlations

Variables	Descriptive statistics Mean	SD	Pearson correlations 1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	0.57	0.496	1	–	–	–	–	–	–	–	–	–	–	
2. Age	27.61	9.090	−0.033	1	–	–	–	–	–	–	–	–	–	
3. Academic Degree	2.19	0.722	−0.133*	0.057	1	–	–	–	–	–	–	–	–	
4. CV	3.568	0.924	0.202**	−0.007	−0.028	1	–	–	–	–	–	–	–	
5. EmpAt	4.416	0.352	0.201**	0.033	−0.151**	0.294**	1	–	–	–	–	–	–	
6. IA	3.349	0.659	0.124*	0.021	0.107*	0.181**	0.268**	1	–	–	–	–	–	
7. EA	3.939	0.655	0.056	0.067	−0.004	0.045	0.166**	−0.007	1	–	–	–	–	
8. DV	4.597	0.373	0.195*	−0.109	−0.037	0.156**	0.716**	0.204**	0.169**	1	–	–	–	
9. SV	4.554	0.420	0.110	0.005	−0.124*	0.150**	0.744**	0.144*	0.162**	0.515**	1	–	–	
10. IV	4.378	0.473	0.103	0.107	−0.158**	0.245**	0.801**	0.143*	0.090	0.449**	0.488**	1	–	
11. AV	4.192	0.528	0.193**	0.116*	−0.089	0.300**	0.812**	0.269**	0.090	0.403**	0.480**	0.627**	1	
12. EV	4.359	0.480	0.174**	−0.032	−0.162**	0.257**	0.779**	0.263**	0.149**	0.515**	0.448**	0.489**	0.530**	1

Note(s): Gender: 0 = Male, 1 = Female; Academic Degree: 0 = Basic Education, 1 = Secondary Education; 2 = Bachelor; 3 = Master/Ph.D.
*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)
Source(s): Own Elaboration



Note(s): X2(542) = 866,627; X2df = 1,599; RMSEA = 0.044; P(rmsea<=0.05) = 0.956
CFI = 0.910; TLI = 0.902; GFI = 0.862; AGFI = 0.840
Source(s): Own elaboration

Figure 2. Structural equation model (SEM)

4.2 Discussion

Looking at the sociodemographic data of our study, we can see some interesting correlations. Regarding gender, we highlight the positive correlations with CV (0.202), EmpAt (0.201) and IA (0.124), which shows that, on average, it is the women who give the most importance to CV programs and to EmpAt. It is also interesting to note the negative correlation between Academic Degree and EmpAt (−0.151), which turned out to be an interesting and curious fact. We also find it interesting to analyze the correlations between the EmpAt scale values individually with the other variables. Thus, we saw that they are all correlated between them, as we expected. It was also noted that all values are positively and significantly correlated with the model variables, with the exception of IV and AV values with EA, what turned out to be curious and interesting.

Hypotheses	Empirical evidence
H1) For employees/candidates, the opportunity to participate in a CV program is positively related with the perceived EA	Yes
H2a) The opportunity to participate in a CV program is positively related with the employees/candidates' intrinsic attributions of the intentions of the company with CV programs	Yes
H2b) The opportunity to participate in a CV program is negatively related with the employees/candidates' extrinsic attributions of the intentions of the company with CV programs	No
H3a) The employees/candidates' intrinsic attributions of the companies' intentions with the CV programs are positively related with the perceived EA	Yes
H3b) The employees/candidates' extrinsic attributions of the companies' intentions with the CV programs are negatively related with the perceived EA	No
H4a) The relationship between the opportunity to participate in a CV program and the perceived EA is positively mediated by intrinsic attributions about the company's intentions with the CV programs	Yes
H4b) The relationship between the opportunity to participate in a CV program and the perceived EA is negatively mediated by extrinsic attributions about the company's intentions with the CV programs	No

Source(s): Own Elaboration

Table 5.
Hypotheses

As seen previously, in recent decades, companies have been betting on CSR programs as an attraction strategy, since several studies (Donia *et al.*, 2017; Kim *et al.*, 2010; Turban and Greening, 1997) have shown that both candidates and employees are more attracted to a company that has a strong social impact. Thus, in this study, the relationship between CSR and EmpAt was evaluated through the CV programs, where it was attempted to understand if this relationship actually exists and if its impact is direct and positive. Based on the validation of H1 (which evaluated this direct relationship), it is concluded that CV programs have an impact on the attractiveness of a company, which is in line with what is stated in the literature (Oliveira *et al.*, 2021; Tuffrey, 1995; Turban and Greening, 1997).

For companies, this relationship represents a valuable contribution as they can use these results to engage more in these initiatives, improving and developing them so that they bring the best possible results. As this is still a recent practice in the business world and, particularly in Portugal (Magalhães and Ferreira, 2014), the assessment of its status for employees/candidates is important for companies. We can see that this variable demonstrated an average value close to four (3.568), which reveals that the study participants attach significant importance to CV and show interest in these programs. The results also show what was previously mentioned in the literature (Donia *et al.*, 2017; Klimkiewicz and Oltra, 2017) regarding the importance given by young people in relation to CSR since the average age of the respondents was around 27 years.

Before assessing the indirect impact of attributions on the relationship between CV programs and EmpAt, we analyzed the direct relationship that programs have on IA and EA. We have already seen that the general public is often suspicious of companies' intentions with CV programs (Nishii *et al.*, 2008; Parcha, 2017; Roeck and Delobbe, 2012) and that they often evaluate these intentions as being illegitimate, self-promoting and social washing (Gatignon-Turnau and Mignonac, 2015; Lange and Washburn, 2012; Troje and Gluch, 2020). It was proposed by Gatignon-Turnau and Mignonac (2015) that CV programs grow not only by the support that companies give to these programs but also by the evaluations made about them by the stakeholders. This idea has been analyzed in this study, and we tried to understand these attributions from the perspective of employees/candidates.

The direct relationship between CV and IA was proven through H2a, this relationship being positive and statistically significant (0.181), as the literature predicted (Gatignon-Turnau and Mignonac, 2015). On the other hand, the H2b that hypothesized the relationship between the CV and the EA has not been proven, since this was not statistically significant. So, the willingness to participate in CV programs within firms is related with IA but is not related with EA.

Another important direct relationship analyzed in this study was between the attributions and EmpAt. As we have seen, both types of attributions presented mean values close to four, with the extrinsic (3.939) having a slightly higher value than the intrinsic (3.349), which means that both types of attributions have a high importance for employees/candidates. Moreover, H3a and H3b assessed, respectively, the direct relationship between IA and EA with EmpAt. Both relationships are also corroborated by the significant correlations observed between the IA (0.268) and the EA (0.166) with EmpAt. Hence, this proves that IA does in fact have a positive and direct impact on the attractiveness of companies as predicted in the literature (Bhattacharya *et al.*, 2008; Clary and Snyder, 2002; Cui *et al.*, 2003; Strahilevitz, 2003; Yoon *et al.*, 2006). Moreover, EA also has a positive impact on the attractiveness of companies, contrary to what was initially envisaged. A detailed analysis of the EA scale items reveals that the respondents consider it appropriate for a company to use volunteering initiatives as a way of responding to competition and strengthening its reputation and thus attracting more customers and more profits. We can consider that the respondents consider these motivations legitimate since they also explain the attractiveness of the company for them. For a negative relationship to be more expectable, some more illegitimate motivation on the part of the company would have to be attributed, namely, motivations that can damage the image of the company that happens to be seen as manipulative and self-promoting (Allen *et al.*, 2011; Campbell and Kirmani, 2000; Holt, 2002; Yoon *et al.*, 2006).

These results are important for companies as they get to know the perspectives of employees/candidates about them, allowing them to modify and develop efforts to improve their image and attractiveness, in the eyes of these stakeholders.

The main relationships that this study intended to analyze had to do with the relationship between the CV and EmpAt, mediated by the attributions, from the perspective of employees/candidates. With H4a, the effect of IA mediation was analyzed, while with H4b, we analyzed the mediation effect of EA. Through the analysis of the direct and indirect effects of the variables, we could conclude that there was an indirect relationship between CV and EmpAt through IA, and therefore H4a was proven. On the other hand, and due to the lack of relationship between CV and EA that resulted in H2b not being validated, H4b was also not validated since there was no indirect effect of EA between CV and EmpAt. These results open the way for the need for further investigations about these relationships.

4.2.1 Theoretical contributions and research implications. The main contribution of our research is to the HRM department. The labor market is increasingly facing a war for talent, so in order to compete fiercely against its competition and to gain a competitive advantage, HRM has to be aware of what happens in the job market and the preferences of potential candidates for companies.

At the same time, progressively more today than ever before, the younger workforce – generation Z and millennials – not only want but expect their employers to offer distinctive workplace environments, where rewarding, engaging and meaningful as well as proportionately positive workplace experiences exist. For the companies that offer possibilities of CV, some benefits may arise, such as attracting and retaining talent, increasing productivity, introducing a sense of purpose, generally satisfying the employee engagement challenge.

Since the concept of CV is relatively recent in the Portuguese business environment (Magalhães and Ferreira, 2014), this study provides important information for companies wishing to have this type of program and allows companies that already have them, to improve and to adapt them. In theoretical and methodological terms, this study has allowed for an improvement in scale resulting from the joining of items from two previously validated scales associated with the EA and IA that employees make about the companies' actions.

5. Conclusions, contributions and limitations

A significant limitation of this study has to do with the fact that the study sample is a convenience sample that, despite having its advantages, also has the disadvantage that it may not be representative of reality and therefore it is necessary to be cautious in generalizing the results. Another major limitation is the fact that the questionnaire was applied only online and through social networks, which limited our sample as many people do not have social networks, which prevented them from participating in the study. As for the sample, the fact that most respondents (55.1%) belonged to the areas of Social Sciences and Law greatly limited the generalization of our study since, in reality, many people belong to other areas of study. For future research, it is advisable to analyze these limitations and adapt them to other studies. It is also suggested that other possibilities of approach be considered, for example, in terms of time, as this study was limited to a short period of time. Thus, it may be interesting to do it from a longitudinal perspective.

It is also recommended that different approaches to CV be considered, for example, it would be interesting to see how companies integrate these practices and programs in their strategies. It would also be interesting to change the focus of the study and focus only on companies that already have these programs, in order to accurately evaluate the results of these and the opinions of their stakeholders.

Literature has proved the strong relationship that a company's image has with its social aspect through the positive impact that these programs have on the company's image and its attractiveness (Duarte *et al.*, 2015; Greening and Turban, 2000; Klimkiewicz and Oltra, 2017). In summary, in addition to the proof of the relationship between CV and EmpAt supported in the literature, it has been possible to conclude that the IA that employees/candidates make about companies' intentions with CV programs positively influence their attractiveness; the same was not possible to prove regarding EA.

This study aims to reinforce this relationship, analyzing the influence that the CV programs have an impact on the attractiveness of companies, this relationship being mediated by the attributions that employees/candidates make about the true intentions of companies, that is, whether the intentions of companies with the implementation of these programs are extrinsic or intrinsic, showing the importance of respondents recognizing genuine or intrinsic motivations of social responsibility on the part of organizations.

Note

1. Henceforth, employees/candidates.

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(The Appendix follows overleaf)

Appendix

Sociodemographic characteristics	Items	Frequency	Percentage
Gender	Female	174	57%
	Male	131	43%
Age	<20	38	12.5%
	20–40 years	230	75.4%
	40–60 years	37	12.1%
Nationality	Portuguese	296	97%
	Others	9	3%
Employment Status	Student	93	30.5%
	Unemployed	18	5.9%
	Intern	27	8.9%
	Employed	143	46.9%
	Independent employee	24	7.9%
Activity Sector	Financial and Insurance Activities	28	9.2%
	Retail Trade	40	13.1%
	Consulting, Scientific, Technical and Similar	77	25.2%
	Education	36	11.8%
	Manufacturing Industries	31	10.2%
	Human Health and Social Support Activities	25	8.2%
	Accommodation, Catering and Similar	14	4.6%
	Logistics	14	4.6%
	Information and Communication Activities	19	6.2%
	Artistic Activities, Shows, Sports and Recreational	5	1.6%
	Others	16	5.2%
Academic Degree	Secondary Education	56	18.4%
	Higher Education (Bachelor)	136	44.6%
	Higher Education (Master/Ph.D.)	113	37%
Study Area	Social Sciences and Law	168	55.1%
	Engineering, Sciences and Environment	47	15.4%
	ICT	31	10.2%
	Arts and Sports	11	3.6%
	Health, Humanities and Education	33	10.8%
	No Answer	15	4.9%

Source(s): Own Elaboration

Table A1.
Sociodemographic characterization of the sample

Corresponding author
Marisa R. Ferreira can be contacted at: mferreira@estg.ipp.pt

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Customer engagement and loyalty: the moderating role of involvement

Jesica Yanet Perez Benegas
Facultad de Turismo, Universidad Nacional del Comahue, Neuquen, Argentina and Sede Alto Valle, Universidad Nacional de Río Negro, General Roca, Argentina, and
Marina Zanfardini
Facultad de Turismo, Universidad Nacional del Comahue, Neuquen, Argentina and Instituto Patagónico de Estudios en Ciencias Humanas y Sociales, CONICET, Neuquén, Argentina

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Abstract

Purpose – The purposes of the present study were to analyse: (1) if there is a hierarchical relationship between cognitive dimension (attention) and emotional dimension (enthusiasm); (2) to what extent the cognitive and emotional dimensions of the customer engagement (CE) affect loyalty to consumer brands in traditional settings and in social media; and (3) if involvement moderates the relationships between cognitive and emotional dimensions of CE and between each CE dimension and the two kinds of loyalties (offline and social media).

Design/methodology/approach – The authors applied structural equation model on a sample of 272 passengers of main airlines operating the domestic Argentinian market in 2018. The authors also used multigroup analysis to combine involvement as a moderator variable.

Findings – Cognitive dimensions of engagement (attention) had a direct and positive effect on the emotional engagement (measured by enthusiasm). Capturing the attention of passengers is key to maintaining their loyalty both in offline and online environments, especially if they are lowly involved with brands.

Research limitations/implications – The present study suggests and tests a model for the consequences of CE as a multidimensional construct in a specific service context.

Originality/value – Following the attitude formation approach and the hierarchy of effect of advertising theory, this study researched the dynamic of relationship between cognitive and emotional dimensions of CE. The results contribute on the line of considering CE as a process, including stages that consumers go through until they achieve the engagement with the brand. The results offer evidence of the specific impact of each CE dimension on loyalty at two environments (offline and social media).

Keywords Airlines, Customer engagement, Loyalty, Social media, Involvement, Attention

Paper type Research paper

1. Introduction

Air transport is central to world tourism and trade, moving beyond 4.5 billion passenger journeys (IATA, 2020). Tourists travelling internationally by air are estimated to have spent about $900 billion in 2019. In the last three decades, liberalisation and deregulation have played an important role driving to the actual airline competitive landscape, which is characterised by three driving trends: hybridisation of business models following low-cost carriers' entry, consolidation through the proliferation of alliances, and high exposure to financial distress and government intervention (OECD, 2014). As an indicator of this process,

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International Civil Aviation Organization (ICAO, 2019) reports that low-cost carriers carried approximately 31% of the world's total scheduled passengers.

Airlines are highly affected by perishability, as their service capacity cannot be stored for sale in the future. Besides, the intense competition of this market has led to a small profit margin. So, investment in passengers' loyalty can benefit the long-term financial performance of the airlines. Even though the use of loyalty programmes is a common practice in most airlines around the world, their members are far from loyal, and they fall far short in achieving their objectives (Deloitte, 2013). In other words, it seems that airline loyalty programmes fail to engage passengers.

Customer engagement (CE) represents an important concept for research in marketing and service management. CE is a psychological state that occurs by virtue of a customer's interactive and co-creative experiences with an agent/object (e.g. a brand) in service relationships (Brodie *et al.*, 2011). From a relationship marketing perspective, a CE strategy overcomes the analysis of linear relationships between companies with their customers focused on exchange and advance on the co-creation of value and the behavioural intention of brand loyalty.

Hospitality and tourism scholars have displayed divergent understandings of the CE construct as there are numerous operationalisation (Rather *et al.*, 2019; So *et al.*, 2020); however, the CE's cognitive and emotional dimensionally have found widespread acceptance in the literature (Harrigan *et al.*, 2018; Rasoolimanesh *et al.*, 2021). From the perspective of hierarchy of effects in advertising (Lavidge and Steiner, 1961; Wijaya, 2012) as well as the attitude formation process (Fishbein and Ajzen, 1975), CE can be considered not only a multidimensional but also a hierarchical construct. However, the relationship hierarchical effects between the cognitive and emotional CE have not been sufficiently examined.

By getting engaged, consumers exhibit dispositions that go beyond traditional consumer behaviours. CE generates behavioural outputs, as advocacy (Sashi *et al.*, 2019), intention of loyalty (So *et al.*, 2014, 2016; Harrigan *et al.*, 2017), as well as the brand usage intent (Harrigan *et al.*, 2018). Additionally, with the emergence of social media, companies have new opportunities to connect with their customers through interactions other than service and experience (So *et al.*, 2014).

In this study we focus on behavioural intention of loyalty, and because of the relevance of social media as an environment for manifestation of CE, we propose two kinds of CE behavioural outputs: offline loyalty and social media loyalty.

Besides, the process of CE can be influenced by involvement with the brand (Harrigan *et al.*, 2018). Although moderator research of CE in the tourism context is highly desirable from a practical and conceptual standpoint (So *et al.*, 2020), the involvement moderating role in the relationship between each dimension level and in CE impact on behavioural outputs has not been studied.

Considering these gaps in knowledge, we suggest a model that analyses (1) if there is a hierarchical relationship between cognitive dimension (attention) and emotional dimension (enthusiasm); (2) to what extent the cognitive and emotional dimensions of the CE affect loyalty to consumer brands in traditional settings and in social media; and (3) if involvement moderates the relationships between cognitive and emotional dimensions of CE and between each CE dimension and the two kinds of loyalties (offline and social media).

This study is an interesting contribution for the integration of CE psychology theories, a necessary step for the generation of studies on this topic (Chen *et al.*, 2021). Likewise, it is relevant to study how CE is effectively translated into real consumer loyalty actions, beyond the loyalty programmes developed by airline brands to achieve their objectives (Deloitte, 2013).

Besides its originality is based on the contribution to the study of hierarchical dependence between cognitive and emotional dimensions of CE, which is a gap in the tourism marketing literature.

The contribution to the tourism services sector is relevant because it is a topic rarely addressed in hotel and tourism magazines (So *et al.*, 2020), and particularly, studying the commercial airline market in Argentina.

In the following sections, the paper presents the literature review and hypotheses development. Later, the research methodology and empirical results are presented. We close the paper by discussing the research conclusion, implications, limitations and further research directions.

2. Literature review and hypotheses development

2.1 Customer engagement: a hierarchical and multidimensional construct

The initial conceptualisations of CE came from other fields of social sciences, such as educational psychology and organisational behaviour. In the marketing literature, this construct has recently acquired importance. CE is an individual-level and motivational variable, it is a psychological state that emerges from two-way interactions between subject and the brand (Brodie *et al.*, 2011). As an outcome may exist at different intensities and as a process develops over the time (Hollebeek, 2011a).

Because the concept of attitude has provided a significant contribution in explaining the consumer behaviour in service context, we use this theory for a better explanation of CE dimensionality. Attitude is defined as “learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object” (Fishbein and Ajzen, 1975, p. 6). Attitude model consists of three components, namely cognitive, affective and conative. The cognitive component refers to knowledge or beliefs about the attitude object. The affect (or emotional) refers to a person’s feelings towards and evaluation of some object. The conative component reflects the behavioural tendencies towards the attitude object.

The CE’s cognitive-emotional dimensions have found widespread acceptance in the literature (Hollebeek, 2011a, b; Rasoolimanesh *et al.*, 2021). In CE context, the cognitive dimension is related to the customer’s attention and interest in a brand; and the emotional dimension is linked to the feelings of inspiration or pride caused by a brand. The CE’s literature still lacks the theoretical foundation to specify the relevant variables that represent each dimension as well as their interrelationships. A contribution for the first of these problems in the tourism context, is the work of Harrigan *et al.* (2017). They merged previous conceptualisations of CE (So *et al.*, 2014) for the study of tourism brands in social media context, proposing attention as a cognitive dimension of CE; and enthusiasm as an emotional dimension of CE. Attention is the customer’s level of focus, consciously or subconsciously, on the brand (Harrigan *et al.*, 2017) while enthusiasm is a strong excitement or zeal about the brand (Vivek, 2009).

Based on the Fishbein model and the theory of hierarchy of effects in advertising (Lavidge and Steiner, 1961; Wijaya, 2012), we propose that CE is not only a multidimensional, but also a hierarchical construct. This approach considers that customers do not change instantaneously from disinterested people to engaged customers. Instead, we propose a two-stage process: cognitive and emotional.

According to the hierarchy of effects model, the cognitive stage of customer engagement begins with the perception of the company (Lavidge and Steiner, 1961) and leads to the second emotional stage. This means that a direct and positive relationship is expected between attention and enthusiasm (Figure 1).

Attention is a customer’s level of focus, consciously or subconsciously, on the brand (Harrigan *et al.*, 2017). It is related to the amount of cognitive resources that the consumer spends thinking about the brand, and can be thought of as a finite cognitive resource that individuals can choose to allocate in different ways (Ho *et al.*, 2011). Information appears in consciousness through the selective investment of attention, and one once attended to,

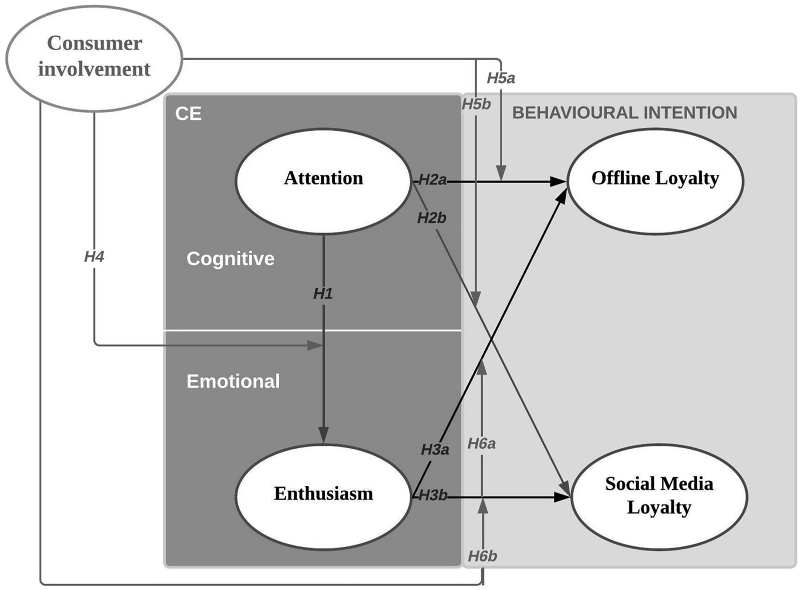


Figure 1. Research model

Source(s): Figure by the authors

information enters awareness. The system encompasses all of the processes that take place in consciousness, such as thinking, willing and feeling about this information (i.e. cognition, motivation and emotion) (Nakamura and Csikszentmihalyi, 2014).

In line with the above, we propose that:

H1. Attention directly and positively influences enthusiasm.

2.2 Behavioural intention: offline and social media loyalty

Although CE literature is growing significantly, there is limited empirical research on the outcomes (Leckie *et al.*, 2016), and this knowledge gap is more observable when it comes to services.

Considered as the focal point of interest for marketing researchers and practitioners, brand loyalty has been widely studied. Customer loyalty is the result of psychological processes and has behavioural manifestations; therefore, it should incorporate both attitudinal and behavioural components. From the research stream of service marketing, brand intention of loyalty measures a customer's intention to say positive comments about a brand, to recommend a brand and to purchase this brand in the near future (Zeithaml *et al.*, 1996).

Considering that the CE, by definition, encompasses a consumer–brand relationship that exceeds the time of purchase, the behavioural intention loyalty seems to be the most expected output when consumers are engaged. In fact, there is evidence that CE is a predictor of the behavioural intention of loyalty (Bowden, 2009; Hollebeek, 2011b), even in the specific context of airline services.

In addition, because of the importance of digital media for the interaction between customers and brands, much of the CE occurs on the internet (Li *et al.*, 2020) and the social media facilitates the behavioural intention of customer loyalty (Harrigan *et al.*, 2017). There is evidence that consumer loyalty can differ depending on the environments (online vs. offline)

(Shankar *et al.*, 2003), which led to proposing differentiated hypotheses for each type of environment in which loyalty develops. In this research, we focus on both kinds of loyalty (online and offline) as consequences of CE.

Social media loyalty extends traditional brand loyalty to online consumer experience to the social media environment. It comes from e-loyalty, a previous and broader concept (Gommans *et al.*, 2001). In this study, social media loyalty is defined as perceived loyalty towards the airline networks, with intent to comment positively about them and to recommend following the brand.

2.2.1 Attention as antecedent of loyalty. Cognitive psychology proposes that attention is related to behaviour (Skavronskaya *et al.*, 2017). The control of action demanded a mechanism which could allow relevant information to control behaviour and decouple irrelevant information from interfering (Styles, 2006). Doing this, attention guide behaviour. For example, if an airline promotes a new route or a sale promotion, passengers filter this information using attention and this cognitive process guides them in future behaviours such as intention to flight or to recommend or give advice to other passengers.

The attention dimension of engagement with an airline brand denotes a level focused attention on it. Therefore, when consumers allocate cognitive capacity by concentrating and/or engrossing on the brand they are more likely to develop loyalty towards the focal brand (Leckie *et al.*, 2016).

Previous studies of tourism context have proved the relationship between cognitive engagement as an antecedent of offline loyalty intention (Harrigan *et al.*, 2017; Ahn and Back, 2018), and the specific relationship between attention and offline loyalty (Rasoolimanesh *et al.*, 2021). Besides, the study of Kanje *et al.* (2019) revealed that the cognitive CE relates positively with electronic word-of-mouth (eWOM) passing intentions.

These antecedents lead as to propose that attention, as a cognitive variable of CE, will impact on loyalty at both environment:

H2a. Attention directly and positively influences offline loyalty.

H2b. Attention directly and positively influences social media (SM) loyalty.

2.2.2 Enthusiasm as antecedent of loyalty. As tourist experiences are increasingly affective, emotions play a central role in determining tourists' future intentions (Bigné *et al.*, 2005). Prayag *et al.* (2013) proved that emotions such as love, positive surprise and unpleasantness had a direct relationship with behavioural intentions as willingness to recommend and word-of-mouth. Affective CE positively relates to vacationers' eWOM seeking, giving and passing behaviours in tourism-related sites (Kanje *et al.*, 2019).

This study proposes that enthusiasm with the airline brand may have an impact on consumers' loyalty. If consumers perceive strong excitement or zeal about the brand (Vivek, 2009), they will seek to recommend it offline and at social media; thus, it will become an antecedent of offline loyalty and SM loyalty. Based on previous antecedents, we propose the following:

H3a. Enthusiasm directly and positively influences offline loyalty.

H3b. Enthusiasm directly and positively influences SM loyalty.

2.3 Moderating role of involvement

Involvement represents the level of interest or importance of a brand for an individual (Russell-Bennett *et al.*, 2007), and it is also related to the amount and type of information that a consumer processes in making decisions regarding their choice to purchase a brand (Ramírez-Angulo and Duque-Oliva, 2013). This information depends mainly on the perceived risk in the consequences of making a wrong purchase decision. As a multidimensional construct, involvement includes aspects such as interest, perceived pleasure, symbolic value, product importance, risk importance and risk probability (Vera-Martínez, 2003).

There is evidence that involvement impacts on CE dimensions (Harrigan *et al.*, 2018), but its influence over the hierarchical cognitive-affective relationship is not studied.

The elaboration likelihood model explains why different levels of involvement result in varying degrees of extensiveness in information processing (Petty and Cacioppo, 1986). As involvement with the brand increases, consumers are likely to search information about the products more intensively (Wang and Wu, 2011). This results in a greater willingness to apply more cognitive resources to processing information. Besides, the findings of Krishnamurthy and Kumar (2018) suggest that consumers with high versus low involvement go through more information and spend more time with brand's information to develop an expectation or idea of it.

The affective dimension is also related to involvement. Previous studies showed that the mood of consumer when interacting with the brand can affect the effectiveness of its communications (Wen, 2021) and that involvement has a direct impact on CE affective dimension (Harrigan *et al.*, 2018).

Based on these antecedents, we propose that involvement can be a moderator of the relationship between CE cognitive and emotion variables. We expect that when costumers are highly involved with the brand, their attention will generate enthusiasm to the brand in comparison to those consumers whose are lowly involved, because they will find the brand services as personally relevant to their needs and values. On the other hand, when passengers are lowly involved with the airline, attention will generate less enthusiasm. This leads us to propose the following H4:

H4. For highly involved consumers, the positive effect of attention to enthusiasm will be stronger.

The CE can be influenced by involvement with the brand and generates consequences in the consumer behaviour (Harrigan *et al.*, 2018). Rasty *et al.* (2013) found that involvement as a moderator had the greatest effect on the relationship between travel advertising attitude and travel advertising effect in the internet environment.

In the airline context, involvement plays an important moderating role on the relationships within the airline loyalty programmes (Wang *et al.*, 2015). However, the moderating role of involvement for the relationship between each cognitive or emotional dimension of CE and loyalty has not been studied. We want to know if the effects of the dimensions of CE on behavioural intention of loyalty (both, offline and in social media) are different for highly and lowly involved consumers.

According to our H4, we expect that when consumers are highly involved with the airline brand, the cognitive-affective relationship will be stronger. This means that, in that situations where the purchase decision is complex and passengers need to process more information (e.g. when buying tickets for the summer vacation for a family group or for a more expensive destination), they need to be enthusiastic with the brand to be engaged. So, we expect that only when they are more enthusiastic, they will generate behavioural intention loyalty.

On the other hand, when the consumers are lowly involved with the airline brand, the affective engagement (enthusiasm) will not be so affected by cognitive engagement (attention). In situations, where the purchase decision is more routine and less risky for passengers (e.g. when tickets are purchased for work trips or frequently visited routes) they do not need to be so enthusiasm with the airline to generate behavioural intention of loyalty. Attention can serve as "sufficient" engagement dimension to generates loyalty. Just being attentive to what the airline communicates generates engagement and will cause behavioural intention loyalty.

Based on these arguments, we propose the following:

H5. For highly involved consumers, the positive effect of attention on (a) offline loyalty and on (b) social media loyalty will be weaker than on lowly involved consumers.

H6. For highly involved consumers, the positive effect enthusiasm on (a) offline loyalty and on (b) social media loyalty will be stronger than on lowly involved consumers.

3. Method

3.1 Selection of the airlines and study population

The study was applied to consumers of airlines in Argentina, specifically to the domestic market that is made up of 14.2 million passengers (ANAC, 2018). The global airline industry trends also affected the domestic airline market in Argentina. In 2018, the national government developed a commercial air policy that aimed to double the number of people flying, through the entry of low-cost airlines.

As when developing this study, Aerolíneas Argentinas and LATAM were the carriers with the highest market share, the study population was defined as Argentinean residents who have recently (last 5 years) and domestically travelled using one of these airlines.

3.2 Data collection and research sample

The data collection instrument was a structured online survey. It was applied in two versions, with identical questionnaires, but each referred to one of the airlines under study. The questionnaires were previously pre-tested with a sample of 50 students of tourism degree and by two senior researchers.

Due to the lack of a sampling frame to apply a random sampling of the study population, a quota sampling was used, seeking to complete similar representation for each airline. Each participant answered only one of the two versions of the questionnaire, and the respondent was reached by email and social networks. Through filter questions at the beginning of the questionnaires, we confirmed that the respondent corresponded to the population to be studied.

The data were collected between the months of April and July 2018, obtaining 272 completed and valid questionnaires, 133 (49%) about LATAM airlines and 139 (51%) about Aerolíneas Argentinas.

The sample included 34.56% of males and 65.44% of females. About 34.56% of the passengers were 18–34 years old and 40% were 35–49 years old, mostly with high levels of formal education (54% had university studies and 38% had postgraduate studies). This profile was similar for each airline subsample as Chi-square showed that differences between them were no significant (gender Chi-square $_{1df}$ = 0.600, sig. = 0.439; Age Chi-square $_{3df}$ = 4.439, sig. = 0.219; Education Chi-square $_{2df}$ = 0.938, sig. = 0.625).

4. Measurements

The measures of the relevant constructs primarily were based on scales taken from previous works. The scale of So *et al.* (2014) was used for measuring each dimension of CE, an adaptation of Vera-Martínez (2003), for customer involvement, and Harrigan *et al.* (2018) and Zeithaml *et al.*, (1996), for social media loyalty and offline loyalty, respectively.

4.1 Descriptive, normality and multicollinearity analysis

An analysis of descriptive statistics and extreme scores was carried out, as well as an inspection of the correlation matrix in order to assess that the collinearity assumption is met and rule out the existence of multicollinearity (see Table 1).

Table 1.
Descriptive statistics and exploratory factor analysis

Latent variables and items	Descriptive and assessment of normality							Exploratory factor analysis			
	M	SD	S	c.r	K	c.r.	r_{CIT}	F1	F2	F3	F4
Attention											*16.72%*
I like to learn more about X	3.45	1.977	0.322	2.158	−1.083	−3.654	0.728				0.530
I pay a lot of attention to anything about X	3.40	1.893	0.320	2.144	−0.999	−3.376	0.860				0.856
Anything related to X grabs my attention	3.43	1.904	0.329	2.201	−1.045	−3.529	0.799				0.633
Enthusiasm										*17.91%*	
I am passionate about airline X	2.42	1.829	1.087	1.081	0.001	−0.071	0.839			0.770	
My flights would not be the same without airline X	2.54	1.762	0.907	0.902	−0.247	−0.889	0.769			0.667	
I love X	2.25	1.726	1.184	1.177	0.234	0.699	0.847			0.811	
Offline loyalty								*23.26%*			
I would make positive comments about X face-to-face to other people	4.39	1.827	−0.295	−1,976	−0.919	−3.113	0.889	0.850			
I would recommend X to others seeking my advice	4.53	1.783	−0.371	−2.483	−0.789	−2.682	0.891	0.858			
I encourage my friends and family to choose X for their flights	3.75	1.946	0.057	0.384	−1.153	−3.884	0.806	0.656			
Social media loyalty									*21.56%*		
I would comment positively on social media about X	3.65	1.963	0.166	1.111	−1.142	−3.849	0.756		0.573		
I would recommend following the social networks of X	3.29	1.998	0.402	2.694	−1.024	−3.458	0.848		0.846		
I encourage my friends and family to follow X on social media	2.60	1.866	0.906	6.066	−0.346	−0.362	0.753		0.698		
Multivariate						46.522	20.929				

Note(s): M = Mean, SD= Standard Deviation, S = skewness, K= Kurtosis, c.r. = critical ratios, r_{CIT}= Corrected Item-Total Correlation, F = Factor. Italic values are percentages of explained variance of each factor. Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalisation. Rotation converged in six iterations
Source(s): Table by the authors

Regarding the descriptive analysis of the items, it was found that they present adequate indicators of skewness and kurtosis, considering that they do not exceed the range ± 1.5.

However, the critical ratios analysis showed that in many variables univariate normality was not achieved. The critical ratios are formed by taking the ratio of the estimate (for skew or kurtosis) to its standard error. This ratio is distributed as a unit normal variate or *z*-score. Adopting a conventional alpha of 0.05, then a c.r. < -1.96 or >1.96 for a given test may be an indicator of departure from normality. Besides, the multivariate kurtosis, used to assess whether the data are departing from multivariate normality, resulted in higher than 5. So, we assume that the variables in this analysis reflect a departure from multivariate normality.

Table 1 also allows us to examine the degree of association between the items that make up the test and total scale score for latent variables. The items on the scales present item-total correlations ranging from 0.728 (Attention item "I like to learn more about X") up to 0.889 (offline loyalty item I would make positive comments about X face-to-face to other people), which accounts for an adequate homogeneity.

To have an overview of the state of multicollinearity, the Pearson correlation matrix was analysed. The bivariate correlations that are observed in the matrix range from 0.446 to 0.834.6% of them indicate low collinearity (correlation up to 0.5), 76% medium collinearity (correlation between 0.5 and 0.7) and 18% high collinearity (correlation between 0.7 and 0.9). The determinant of the matrix was 1.150E-5, typical of a matrix with medium collinearity, although it was not equal to zero (non-singular matrix).

In order to analyse the feasibility of the use of factor analysis for the determination of the construct validity were used the Kaiser–Meyer–Olkin (K-M-O) measurement and the Barlett's Sphericity test. The measure of K-M-O adequacy gets a score of 0.918 value considered adequate (Hair *et al.*, 2010), while that the Barlett's Sphericity test presents a significant value of 3027.197 (df $= 66$, $p = 0.000$). These determinations indicate that it is factor analysis possible exploratory.

The varimax rotation confirms the total independence (item discrimination) of the four latent variables.

4.2 Reliability and discriminant validity

Confirmatory factor analysis was performed to test the psychometric properties of the scales using AMOS 23.0. This software provides bootstrap analysis for situations where the assumptions underlying the standard errors and maximum likelihood Chi-square may be violated. As our data departure from multivariate normality, we applied bootstrapping.

As observed in Table 2, the standardised loadings were all higher than 0.70. The bootstrapping analysis also resulted in satisfactory results. The standard error bias, which is the difference between the average of loading estimates obtained from 500 bootstrap samples, and the single estimate obtained from the original sample, resulted in low values. Besides, the bounders of the bias-corrected of 95% confidence interval do not include 0 value, and estimated probability was below 0.05.

To assess the reliability, Cronbach's alpha coefficients (α), composite reliability (CR) and average variance extracted (AVE) were estimated. Most of the factors exceeded the threshold of 0.7 suggested by Nunnally and Bernstein (1994), indicating that the scales used to measure each of the latent variables were reliable. The interpretation of the CR is carried out in the same way, so that the results obtained are satisfactory for all the factors. In relation to the extracted variance, Fornell and Larcker (1981) suggest that it is desirable for each factor to obtain an extracted variance equal to or greater than 0.5. This value was surpassed by all factors, as they presented an average explained variance between 0.728 and 0.883.

In order to assess discriminant validity, four statistical tests were performed: Chi-square differences (Bagozzi and Phillips, 1982; Anderson and Gerbing, 1988), Satorra-Bentler scaled

Constructs and items (α. CR. AVE)	SL	*t*-value		Bootstrap analysis SE bias	Lower	Upper	*p*
Attention (0.896. 0.902. 0.756)							
I like to learn more about X	0.786	15.161	***	0.001	0.717	0.851	0.004
I pay a lot of attention to anything about X	0.926	19.622	***	0.002	0.883	0.955	0.009
Anything related to X grabs my attention	0.890	18.395	***	0.001	0.829	0.934	0.007
Enthusiasm (0.909. 0.911. 0.774)							
I am passionate about airline X	0.910	19.069	***	0.000	0.862	0.949	0.005
My flights would not be the same without airline X	0.813	15.969	***	−0.002	0.729	0.877	0.004
I love X	0.912	19.121	***	−0.001	0.872	0.954	0.003
Offline Loyalty (0.932. 0.937. 0.833)							
I would make positive comments about X face-to-face to other people	0.946	20.645	***	0.000	0.922	0.966	0.005
I would recommend X to others seeking my advice	0.946	20.643	***	−0.001	0.920	0.967	0.004
I encourage my friends and family to choose X for their flights	0.842	17.011	***	0.000	0.797	0.883	0.005
Social media Loyalty (0.890. 0.889. 0.728)							
I would comment positively on social media about X	0.884	18.009	***	−0.001	0.806	0.932	0.007
I would recommend following the social networks of X	0.884	17.988	***	−0.001	0.812	0.938	0.005
I encourage my friends and family to follow X on social media	0.789	15.123	***	0.000	0.701	0.861	0.005

Note(s): S-B^2 (48df) = 168.035 (p < 0.05); normed fit index (NFI) = 0.945; comparative fit index (CFI) = 0.966; root mean square error of approximation (RMSEA) = 0.096; SL = Standardised Loadings; SE = Standard error ***p < 0.001; α: Cronbach's Alpha coefficient; CR: composite reliability; AVE: average variance extracted; SL: standardised loadings
Source(s): Table by the authors

Table 2.
Reliability and convergent validity

Chi-square (Satorra and Bentler, 2001), confidence interval (Anderson and Gerbing, 1988) and extracted variance (Fornell and Larcker, 1981). The Chi-square difference test starts from analysing the covariances between the factors, and detecting which are the most correlated with each other. In this case, the relationship between the attention and enthusiasm factor is the highest (correlation = 0.777). This situation could ask whether the attention items would serve to measure enthusiasm or vice versa, so the discriminant validity of the two scales could be questioned.

The Chi-square difference test was then performed between the original model and a more constrained model in which the covariance between attention and enthusiasm was set to 1. The difference obtained is 177.600 (df = 1), therefore the difference between the two models is clearly significant. However, as our data depart from multivariate normality, the Satorra-Bentler scaled Chi-square statistic was used to provide an improved estimate of the fit of a model. Using Crawford and Henry (2003) computer program, we compared the more constrained model (correlation between attention and enthusiasm = 1) with our model. Satorra-Bentler scaled difference resulted in 19.4232 (df = 1) and significant (p = 0.000). In other words, the standard measurement model in which the factors attention and enthusiasm are correlated, but are treated as two different latent variables, is significantly better than the model that considers both in a single factor.

The Anderson and Gerbing test consists of calculating a confidence interval of ±2 standard errors of the correlation between the factors and determining whether this interval includes 1. This situation was not detected, thus confirming discriminant validity.

Finally, the third analysis to test discriminant validity consisted of comparing the variance extracted for each pair of factors versus the square of the correlation between them. If the variances extracted from the factors are greater than the square of the correlation between them, there is discriminant validity. As can be seen in Table 3, for all the factors, its AVE is greater than the squared correlations with other factors.

5. Results

5.1 Relationships between CE's cognitive-emotional dimensions and impact on loyalty

To contrast H1-H3, an analysis of the structural equation model (SEM) was carried out with the total sample ($N = 272$). Bootstrapping analysis was also performed.

The resulting path diagram and the causal relationships are presented in Figure 2. As attention has direct and positive effects on enthusiasm ($\beta = 0.780$; $p < 0.001$; bias-corrected $p < 0.01$) H1 was supported. Our results provide support to the hierarchical relationship between cognitive and emotional CE's dimensions. The more attention to the airline brand, the greater enthusiasm with it.

Regarding the consequences of CE dimensions on behavioural intention of loyalty, attention to the brand impacts positively on offline loyalty ($\beta = 0.565$, $p < 0.001$, bias-corrected $p < 0.01$) and on social media loyalty ($\beta = 0.497$, $p < 0.001$, bias-corrected $p < 0.01$). Enthusiasm impacts positively only on social media loyalty ($\beta = 0.322$, $p < 0.001$, bias-corrected $p < 0.05$) but the impact on offline loyalty is not significant ($\beta = 0.214$, $p < 0.05$, bias-corrected $p = 0.069$).

These results support the hypotheses H2a, H2b and H3b. In other words, the more attentive consumers are with the airline brand, the more loyal they are in offline and social media environments. In addition, the more enthusiastic the brand consumers are, the more loyal they are to social media.

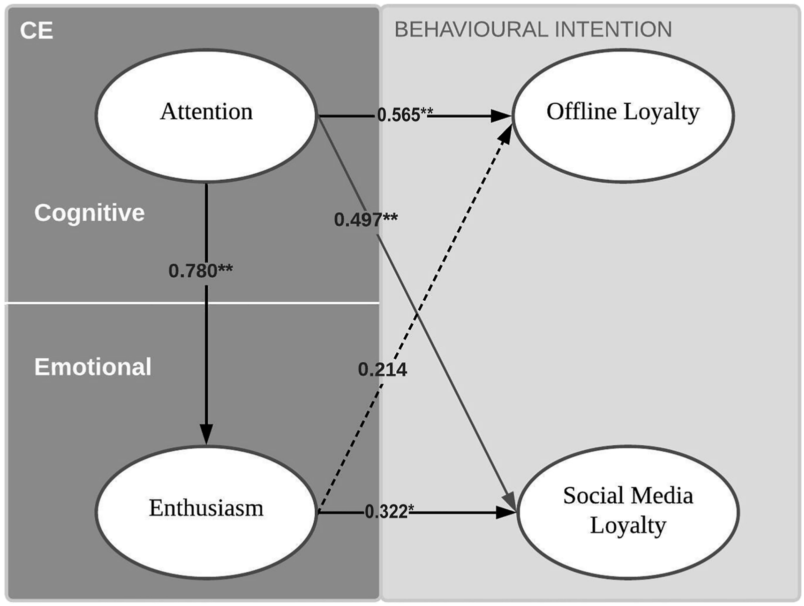
5.2 Consumer involvement as moderator

We ran a confirmatory factor analysis (CFA) for the involvement items ("I am interested in brand X", "I give a lot of importance to the purchases I make of brand X because of the security it generates for me", "When I shop at X, I know if I'm making the right purchase", "Using the X services is very valuable to me", "Using the service of brand X says what I am"), and we found that they reached reliability requirements ($\alpha = 0.899$, CR $= 0.904$, AVE $= 0.653$). The involvement factor scores for each respondent were saved and, through a k-media cluster analysis, the sample was divided into two significantly different groups ($F_{(1/270)} = 479.877$, $p = 0.000$): lowly involved consumers ($N = 110$, Mean $= -0.969$)

	Attention	Enthusiasm	Offline loyalty	Social media loyalty
Attention	*0.756*	0.604	0.513	0.548
Enthusiasm	(0.717; 0.837)	*0.774*	0.419	0.516
Offline loyalty	(0.648; 0.784)	(0.567; 0.727)	*0.833*	0.561
Social media loyalty	(0.672; 0.808)	(0.646; 0.79)	(0.685; 0.813)	*0.728*

Note(s): The diagonals are AVE: average variance extracted; above the diagonal are the squared correlations between factors; below the diagonal, the 95% confidence intervals for the correlation between the factors are presented
Source(s): Table by the authors

Table 3.
Discriminant validity



Note(s): $x2$ (df = 49) = 197.787 (p < 0.01); RMSEA = 0.106 (0.091; 0121); CFI = 0.951; TLI = 0.934. ** bias-corected p < 0.01; * bias-corected p < 0.05. Bold lines for beats significant at bias-corrected p < 0.05

Source(s): Figure by the authors

Figure 2.
Path diagram and causal relationships

and highly involved consumers (N = 162, Mean = 0.658). The pertinence of individuals to each cluster was saved in a new categorical variable and was included in the model as a moderator variable to test H4 to H6.

We performed a new discriminant validity analysis, this time for each segment (see Table 4). Results were mostly satisfactory. Only the correlation between offline loyalty and social media loyalty factors in the lowly involved segment resulted higher (0.714) than the AVE of social medial (0.699).

Then, we assessed the measurement invariance. The testing strategy began by running a CFA within each group separately for evidence of fit (Byrne, 2010; Aldás Manzano, 2013). The fit of the model in the lowly involved group is rather low (comparative fit index [CFI] = 0.925, root mean square error of approximation [RMSEA] = 0.123) while the model fits better in the highly involved group (CFI = 0.969, RMSEA = 0.084).

Assuming a reasonably good fitting model, we proceeded to test for evidence of configural invariance (M1), metric invariance or equal factor loading (M2), scalar invariance or equal intercept (M3) and invariance of residuals/measurement errors, also referred to as strict invariance (M4). When checking the moderation effects on the structural coefficients, it is essential to corroborate at least M2 (Aldás Manzano, 2013).

Results are presented in Table 5, and they suggest that M1 to M3 did not make significantly worse adjustment. However, the residual invariance was not reached (M4). According to Hair *et al.* (2010), the equality of covariances, variances of factors and variances of errors do not only rarely exist, but their effect is minimal for most research problems we face.

	Attention	Enthusiasm	Offline loyalty	Social media loyalty
Lowly involved segment				
Attention	*0.660*	0.252	0.508	0.578
Enthusiasm	(0.336; 0.668)	*0.698*	0.205	0.323
Offline loyalty	(0.599; 0.827)	(0.287; 0.619)	*0.821*	0.714
Social media loyalty	(0.652; 0.868)	(0.418; 0.718)	(0.771; 0.919)	*0.699*
Highly involved segment				
Attention	*0.783*	0.721	0.445	0.489
Enthusiasm	(0.791; 0.907)	*0.770*	0.441	0.584
Offline loyalty	(0.569; 0.765)	(0.564; 0.764)	*0.808*	0.475
Social media loyalty	(0.603; 0.795)	(0.682; 0.846)	(0.591; 0.787)	*0.738*

Note(s): The diagonals are AVE: average variance extracted; above the diagonal are the squared correlations between factors; below the diagonal, the 95% confidence intervals for the correlation between the factors are presented
Source(s): Table by the authors

Table 4. Discriminant validity for each moderation segment

Then, for the multigroup path analysis, we proceeded to test a fully unconstrained model – where there are no equality constraints imposed – and several constrained models with those coefficients we wish to test according to our hypotheses (one at a time). In Table 5, the Chi-square difference test associated with each parameter is an examination of whether the model fit improves significantly because of relaxing the constraint. The assumption behind these tests is that if the fit of the model improves significantly with the relaxation of a constraint, then the parameter is non-invariant across groups. If significance is found, we assume the parameter is non-invariant (i.e. unequal) across groups, so the constrained model is worse than the unconstrained one.

Considering the size of the samples in both groups (110 and 162) we consider statistically significant $p < 0.10$ in the comparison of the relationships between groups. Table 6 shows that if we assume that highly and lowly involved groups have equal relationships between attention and enthusiasm, attention and offline loyalty, attention and social medial loyalty, and enthusiasm and social medial loyalty, it significantly worsens the model. As these relationships differ between the groups (lowly and highly involved), H4, H5a, H5b and H6b were supported at a $p \leq 0.10$ significance level, while hypothesis (H6a) was rejected.

Figure 3 shows that the hierarchical relationship between attention and enthusiasm grater when consumers are highly involved with the brand. Besides, in lowly involved consumers, the effect of attention on offline loyalty and on social media loyalty is considerably higher than the effect of enthusiasm (on offline loyalty: 0.721 vs. 0.088; on social media loyalty: 0.712 vs. 0.207). However, in highly involved consumers, the effects of attention and enthusiasm on offline loyalty seem similar (0.331 vs. 0.400), and on social media loyalty, the effect of enthusiasm is considerably higher (0.621 vs. 0.169).

6. Conclusion and implications

Following the attitude formation approach (Fishbein and Ajzen, 1975) and the hierarchy of effect of advertising theory (Lavidge and Steiner, 1961), this study researched the dynamic of the relationship between cognitive and emotional dimensions of CE. Our results contribute on the line of considering CE as a process, including stages that consumers go through until they achieve the engagement with the brand. Besides, to the authors' knowledge, no study has investigated the hierarchical dependence between cognitive and emotional dimensions of CE.

Table 5.
Invariance of the measurement

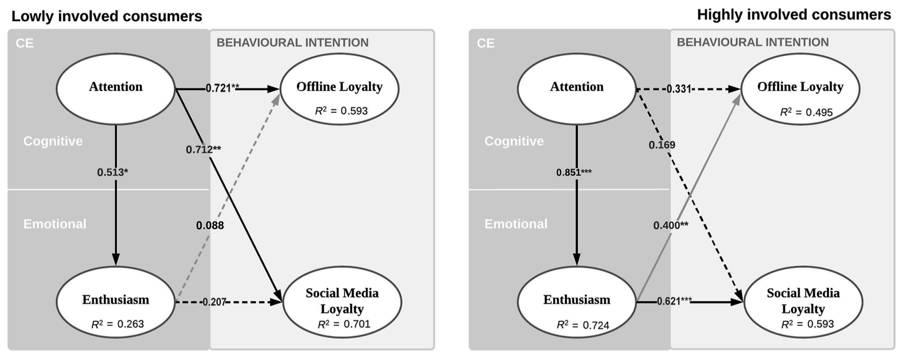
Model	χ^2 (*df*)	CFI	RMSEA (90% CI)	SRMR	Model comp	$\Delta\chi^2$ (Δdf)	ΔCFI	ΔRMSEA	ΔSRMR	Result
M1: Configural Invariance	229.000 (96)	0.953	0.072 (0.060–0.084)	0.052	–	–	–	–	–	–
M2: Metric Invariance	241.341 (104)	0.951	0.070 (0.058–0.082)	0.058	M1	12.341 (8)	0.002	0.002	0.006	Accept
M3: Scalar Invariance	250.209 (112)	0.951	0.068 (0.056–0.079)	0.056	M2	8.868 (8)	0.000	0.002	0.002	Accept
M4: Residual Invariance	288.130 (124)	0.942	0.070 (0.059–0.081)	0.051	M3	37.921** (12)	0.009	0.002	0.007	Rejected

Note(s): SRMR: standardized root mean square residual. $N = 272$; group 1, $n = 110$; group 2, $n = 162$. $^{**}p \leq 0.01$
Source(s): Table by the authors

Table 6. Test of moderation hypotheses

		Multigroup model (Unconstrained)											
		Whole sample✳			Lowly involved			Highly involved			Δx^2 (df = 1)	p	
Hypothesis	Description	*B*	*t*	*B-C p*	β	*t*	*B-C p*	β	*t*	*B-C p*			Result
H4	Attention →Enthusiasm	0.780***	12.611	0.004	0.513**	4.568	0.015	0.851***	10.915	0.006	5.068**	0.024	✔
H5a	Attention →Offline loyalty	0.565***	6.441	0.003	0.721***	5.945	0.009	0.331	2.307	0.122	10.914***	0.001	✔
H5b	Attention →SM loyalty	0.497***	5.629	0.003	0.712**	5.807	0.026	0.169	1.223	0.514	12.797****	0.000	✔
H6a	Enthusiasm →Offline loyalty	0.214*	2.574	0.069	0.088	0.979	0.557	0.400**	2.781	0.011	1.668	0.197	✘
H6b	Enthusiasm →SM loyalty	0.322**	3.804	0.022	0.207	2.365	0.230	0.621***	4.306	0.004	3.583*	0.058	✔

Note(s): ✳ x^2 (df = 49) = 197,787 (p < 0.01); RMSEA = 0.106 (0.091.0.121); SRMR = 0.0700; CFI = 0.951; TLI = 0.934
x^2 (df = 98) = 266.713 (p < 0.01); RMSEA = 0.080 (0.068 0.091); SRMR = 0.0836; CFI = 0.940; TLI = 0.920; B-C p = Bias-corrected
****p < 0.001; ***p < 0.01; **p < 0.05; *p < 0.10
✔ Supported ✘ Rejected
Source(s): Table by the authors



Note(s): $x2(df = 98) = 266.713$ ($p < 0.01$); RMSEA = 0.080 (0.068 0.091); CFI = 0.940; TLI = 0.920.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$ Bold lines for betas significant at bias-corrected $p < 0.10$.
Black lines for tested moderation effect

Source(s): Figure by the authors

Figure 3.
Involment moderation results

As proposed by Rothbard (2001) and Dessart *et al.* (2016), the results showed that attention, as cognitive dimension of CE, generates emotional consequences that, in our model, was measured through enthusiasm. Our results are in line with the dynamic of attention-flow-feelings proposed by Nakamura and Csikszentmihalyi (2014) about cognitive process as an antecedent of emotion with the airline. If airlines want their passengers to be enthusiastic about the brand, they need to optimise the cognitive process. Their communication channels and messages must be focused on capturing consumers attention and achieving immersion states with the brand.

Prior studies have examined the CE influences on brand loyalty in the tourism services context (Harrigan *et al.*, 2017, 2018; Li *et al.*, 2020). However, these studies do not offer results of the specific impact of each CE dimension on behavioural intentions, an issue that we consider essential for a better understanding and prediction of consumers future behaviour.

Our results show that attention is a predictor of loyalty in offline and social media environments. When customers have high levels of focus on the brand, they tend to make positive comments of the brand and recommend it to other people in traditional ways (face-to-face) or even on social media networks.

We also conclude that behavioural intention is achieved by the influence of the cognitive and emotional dimensions of the CE. Similarly to previous investigations (Bigné *et al.*, 2005; Kanje *et al.*, 2019) that found positive relationships between emotions and behavioural intentions in consumers, our results offer evidence that enthusiasm impacts on loyalty in social media context.

So, as suggested by Shankar *et al.* (2003), the impact of CE dimensions on loyalty is differentiated according to the environment. The offline loyalty is generated by attentive passengers, while social media loyalty is generated for attentive and enthusiastic passengers.

Following suggestions of new lines of research about CE made by So *et al.* (2020), the inclusion of involvement as a moderator variable is a novelty that this study offers to previous evidence. Involvement as moderator was introduced to explain how relationships between cognitive and emotional dimensions of CE, and between each dimension of CE and loyalty, change under certain conditions (lowly and highly involved passengers).

Once empirically supported, moderations tend to define the boundaries of a proposed model (So *et al.*, 2020). In our study this was particularly evident in the cognitive-emotion CE's hierarchy. We conclude that when passengers are highly involved, their attention to the airline brand generates more enthusiasm to it, in comparison to those passengers who are lowly involved.

Lowly involved passengers are consumers that have a low level of interest in the brand or that process a low level of information when making decisions with respect to the brand. They can be frequent travellers, business travellers or even passengers that usually fly routes operated by a single airline (i.e. they only have one alternative of purchase).

For this group, the hierarchical relationship between attention and enthusiasm is direct but weaker than for the group of high involvement. As regards the consequences of CE on behavioural intention and the moderating role of involvement, we found that attention is particularly important and sufficient for generating loyalty within these individuals. As this type of consumer is less interested in being involved with the brand, only capturing their attention is enough to obtain their loyalty. So, the more the airline brand can get their attention, the more it will obtain their loyalty in both environments (offline and social media).

On the other hand, highly involved passengers are consumers that go through more information and spend more time with airline's information to develop an expectation or idea of it (Krishnamurthy and Kumar, 2018), so cognitive dimension (e.g. attention) generates enthusiasm with the airline. In this case, attention is more influential on enthusiasm, showing a more intense cognitive process, which is expected from passengers that need more information. However, attention alone is not enough to build loyalty, they need to get excited about the brand. For highly involved consumers, they need to be enthusiastic with the brand to generate offline and, especially, social media loyalty. If airlines can enthusiasm those passengers making complex purchase decisions, they will probably obtain more recommendations specially at the social media environment.

So, involvement is a crucial variable for segmenting consumers and, in turn, the communication process provided to them. For those frequent or routine travellers, the communication strategy must emphasis on capturing their attention and they will be loyal to the airline (recommending face-to-face, or even on social media). While for those infrequent travellers, or travellers passing for a riskier circumstances of consumption (as travelling in big groups, to new or distant destinations), the airline communication must enthusiasm due to obtaining loyalty, which will be reflected specially at social media.

7. Limitations and future studies

This study collected data on both the independent and dependent variables from the same respondents at one point in time, thus raising potential common method variance as false internal consistency might be present in the data. Although the measurements showed satisfactory reliability and discriminant validity, and the model showed a good fit allowing us to test our hypothesis, an experimental design study is suggested for the future to corroborate our results through a different research method.

Our study was conducted in Argentina and for domestic airline services. Thus, future research should test the suggested model in other countries and contexts to support the development of a more generalised theory. Further work should be performed to validate the model across other tourism services to assess its general stability, especially for going deep around relationships between emotional dimensions of CE and intention of behaviour.

We also recommend replication studies which focus exclusively on the influence of the moderating variables and might include other influencing variables such as the generation of the consumers. By understanding how customer generations use social media and how this moderates the effects of CE on offline and social media loyalty, airlines may be able to better target their passengers' needs, which may give them a competitive edge in a turbulent business environment.

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About the authors

Jesica Yanet Perez Benegas Teaching Assistance in Marketing at the National University of Río Negro, Argentina. She is researcher and tutor in the Specialisation in Services Marketing at Facultad de Turismo, National University of Comahue. Her research interests include tourism consumer behaviour, corporate social responsibility and destination marketing.

Marina Zanfardini Associate Professor in Tourism Marketing, Senior Researcher and Director of the Master in Services Marketing at the National University of Comahue, Argentina. She is researcher at Patagonian Institute of Humanities and Social Sciences (IPEHCS - CONICET). Her research interests include tourism consumer behaviour, corporate social responsibility, tourism information management, destination marketing and digital marketing. Marina Zanfardini is the corresponding author and can be contacted at: marina.zanfardini@fatu-uncoma.com.ar

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How compulsive and impulsive buying affect consumer emotional regulation. Is anxiety a differential element?

Gabriel Cachón-Rodríguez, Alicia Blanco-González and Camilo Prado-Román
Department of Business Economics, Universidad Rey Juan Carlos, Madrid, Spain, and
Antonio Fernández-Portillo
Department of Financial Economy and Accounting, Universidad de Extremadura, Caceres, Spain

Abstract

Purpose – Academic literature calls for research on the impact of psychological states derived from mental illness on detrimental consumer behaviour. The purpose of this study is to assess the impact of anxiety on the consumer's buying processes (compulsive and impulsive) and emotional regulation.

Design/methodology/approach – To carry out the statistical analysis, the data were obtained through an online survey ($n = 726$) of supermarket consumers. The treatment of the data was using partial least squares structural equation modelling (PLS-SEM).

Findings – The results obtained show that anxiety influences the generation of harmful behaviour, as it has a positive impact on compulsive and impulsive buying. In addition, compulsive and impulsive buying generate higher levels of consumers' emotional regulation.

Originality/value – This study contributes to the management of anxiety as a priority element to reduce harmful behaviour. Therefore, it provides useful information for marketing managers and professionals in psychological and healthy consumer processes.

Keywords Anxiety, Compulsive buying, Impulsive buying, Emotion regulation

Paper type Research paper

1. Introduction

The increase in psychological disorders has made mental health a priority objective for governments in all countries and for the population itself, as reflected in goal 3 of the 2030 sustainable development agenda. According to the Global Health Service Monitor (Ipsos, 2022), mental health is the biggest health problem faced by the Spanish population (51%), 16 points more than in 2021, thus placing it in the top 6 of the global ranking of countries most concerned about this issue, together with Sweden (63%), Chile (62%), Ireland (58%), Portugal (55%) and the United States (51%). Globally, despite a significant drop of 23 points in 2022,

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COVID remains the main concern for 47% of people, on average. Mental health (36%) comes second in the ranking, with an increase of five percentage points in those who consider mental health to be a major health problem.

The most common mental health problems are anxiety and depressive disorders (Santomauro *et al.*, 2021). According to the World Health Organisation (WHO), COVID-19 increased anxiety and depressive disorders by 26 and 28% in a single year (WHO, 2022a), which represents 76 million more people affected by anxiety than expected (Santomauro *et al.*, 2021). These figures clearly reflect that the impact of anxiety on mental health disorders goes beyond a temporary problem.

This epidemiological evidence has identified anxiety as an illness that was not discussed openly, and which now appears on television programmes, in newspapers and is even recognised by athletes, singers and celebrities (Sachdeva, 2022). It has in turn attracted the attention of academics in relation to consumer impact, which has led to an increase in research in this field (Blanco-González *et al.*, 2022). Anxiety disorders are characterised by excessive fear and worry and related behavioural disorders. Symptoms are severe enough to cause significant distress or functional disability (WHO, 2022b). Academic literature has identified that during COVID-19 in the US and Europe, people increased their consumption driven by panic or anxiety (Arumugam, 2020). Consumers compulsively increased their consumption of products such as food, hygiene products or DIY products (Blanco-Gonzalez *et al.*, 2022).

These mental disorders triggered by COVID-19 have led to changes in consumer behaviour, not only in the products that are purchased, but also in their purchasing behaviour (Blanco-González *et al.*, 2023). Previous research states that in these situations of perceived arousal, consumers developed positive behaviours towards compulsive and impulsive buying of products (Islam *et al.*, 2021). Compulsive buying is that which is addictive and uncontrollable, and impulsive buying is that which responds to a spontaneous and unplanned buying impulse (Darrat *et al.*, 2016). Previous reports indicate that the number of people who suffer from compulsive purchases is around 7% of the population, this data rises to 30% if we talk about a certain degree of lack of control, excessive purchases and not a disorder itself. Being women and young people between 18 and 30 years old, who present the highest levels of compulsive purchases (Top Doctors, 2020; World Health Organization, 2021). According to a study published by The NPD Group, 70% of purchases are made on impulse, with the 18–35 age group being the most likely to make impulse purchases (Start_Emprendedores|UC3M, 2021).

COVID-19 has been found to influence the life and thinking patterns of consumers, being a key factor in the impact on impulsive buying behaviour (Ahmed *et al.*, 2020). In turn, compulsive behaviour arises to reduce the level of stress, ignore or avoid negative mental pressures (Darrat *et al.*, 2016), such as anxiety caused by COVID-19. Other investigations have suggested that the level of purchases is linked to consumer anxiety, as an instrumental element that allows coping with their emotional disturbances (Kemp *et al.*, 2021). Kemp and Kopp (2011) identify this concept as consumer emotional regulation (ERC), which refers to the consumption of a good or service to alleviate, repair or manage a negative emotion, i.e. a situation of anxiety. However, this previous research has not shown whether anxiety is an antecedent of compulsive and impulsive buying, such that when the consumer perceives such a state of anxiety, it positively affects increased spontaneous and unplanned purchases. Moreover, these investigations have not identified whether impulsive and compulsive buying derived from a state of anxiety allow consumers to down-regulate these negative emotions derived from states of anxiety, and consequently, lead to a greater emotional balance of the consumer.

The aims of this study to fill these gaps are: First, to analyse the consequences of anxiety on two key consumer behaviour variables: compulsive and impulsive buying, and second, to analyse the effect of compulsive and impulsive buying on the positive aspects of emotions, i.e. consumer emotional regulation. Specifically, this research assesses: How can anxiety affect consumer behaviour? How do compulsive and impulsive purchases influence consumers' emotional regulation? The results derived from these questions will serve as a reference point to evaluate the validity of the implementation of marketing policies aimed at managing mental illnesses and the consumer's shopping experience to positively associate them with the emotional regulation of consumption.

This research shows an original contribution to the area of emotions and consumer behaviour in response to such an extreme psychological state as anxiety, which has an impact on countries around the world. It provides a new intellectual framework by identifying anxiety as a driver of compulsive and impulsive buying behaviour and investigates how buying behaviour impacts on emotional states of positive compliance. Ultimately, this research provides important insights for marketers to implement policies that help them positively tailor their purchasing processes and experience to consumer health.

The research is initially organised by the theoretical framework and hypotheses. Subsequently, the methodology and the results are presented. Finally, the results and implications for management are discussed.

2. Theoretical framework

2.1 Anxiety and compulsive buying

The data provided at the beginning of this study presents anxiety as a negative emotional state linked to depression, fear, and anger arising from a context of uncertainty (Wang *et al.*, 2021; Winter and Lavis, 2022). The concept of anxiety is associated with an imbalance caused by states of unease, tension, worry and fear of some event or situation that "may" occur (Roseman, 1984; Scherer *et al.*, 2001). It is a transient emotional disorder, representing physical arousal, tension, apprehension and fear of future events (Endler and Kocovski, 2001). Emotion Theory (Lazarus, 1991) states that emotions are the different cognitive, motivational and relational states that an individual expresses through the perception and evaluation of the environment. They are events that respond to changes in cognitive, attitudinal and behavioural components in response to the organism's evaluation of an internal or external, but relevant stimulus (Scherer *et al.*, 2001). In anxiety states, the evaluation of these internal or external stimuli provokes a "threat", even if it is not real (Stephan *et al.*, 1999). In other words, anxiety may not have an object, or the intensity of the negative feeling may not be in proportion to the to the actual events (Spielberger, 1975). Anxiety is the consequence of a threat, which has an impact on individual's happiness, self-esteem and ability to make sense of information from his or her experience (Dobson, 1985; Wagner and Morisi, 2019).

Compulsive buying is one in which the buyer feels concerned with "buying for the sake of buying" and is generated by frequent buying events or overwhelming impulses to buy, which are experienced as irresistible and meaningless (Müller *et al.*, 2015). From a psychological point of view, compulsive buying is a disorder in which an individual expresses the need to buy, which cannot be controlled (Faber, 2010). It represents a repetitive and uncontrolled shopping urge (Ridgway *et al.*, 2008). Compulsive shoppers show a lack of impulse control when shopping by expressing obsessive behaviour (Faber and O'Guinn, 1992; Kukar-Kinney *et al.*, 2016). Neurological research shows significant differences between compulsive and non-compulsive shoppers with respect to brain activity in regions known to be involved in control and decision-making (Raab *et al.*, 2011).

In the marketing field, this loss of control in compulsive shoppers is expressed by an extreme need to buy, greater awareness of shop prices, greater sensitivity to promotions, and propensity to use online shopping channels versus non-compulsive shoppers (Darrat *et al.*, 2016; Duroy *et al.*, 2014).

Academic literature has associated anxiety and compulsive buying with different theories (see for a review Redine *et al.*, 2023). Expectancy Theory establishes that a person has a predisposition to behave in a way according to the evaluation of reward that he expects to obtain (expectancy) after performing a behaviour (Vroom, 1964). Specifically, anxiety is a response caused by a stimulus (negative) that prevents relaxing behaviour and leads consumers to avoid certain behaviours (Omar *et al.*, 2021). Reactance theory states that when an individual's freedom is threatened, psychological reactance arises (Brehm and Brehm, 2013). Reactance is an emotional state aimed at restoring or ensuring freedom (Mühlberger and Jonas, 2019). Based on this theory, anxiety is explained as an emotional factor affecting consumer recovery. These theories provide a valid theoretical framework in considering the effects of anxiety on compulsive buying, since in these theories, consumers continue to buy to satisfy their internal psychological and social needs.

Previous research suggests that states of anxiety may be a cause to compulsive buying due to the continuous depressive state caused by anxiety (Darrat *et al.*, 2016). Medical studies have indicated that people diagnosed with depression have higher purchasing needs than those who are not (Duroy *et al.*, 2014). Compulsive buying is characterised by lack of control over concerns or impulses that lead to distress and may be related to mood and anxiety disorders (Black, 2022). In fact, compulsive buying behaviour should be classified as a type of impulse control disorder (Faber, 2010). The compulsive shopper is generally more anxious than the average shopper and tends to have lower self-esteem (Valence *et al.*, 1988). Japutra *et al.* (2019) report three causes that stimulate compulsive buying: material ideals, self-discrepancies and ideal-self buying motivation. Other authors suggest that compulsive buying occurs due to an emotional "failure" in the perception of the consumer and through the purchase they seek to correct this situation (Gallagher *et al.*, 2017). Along these lines, Duroy *et al.* (2014), point out that consumers engage in compulsive buying motivated by a lack of control of control and immediate feelings. Thus, it is likely that individuals who buy compulsively are characterised by pre-purchase anxiety. Therefore, the following hypothesis is determined:

H1. The level of consumer anxiety generates a higher probability of compulsive buying.

2.2 Anxiety and impulse buying

Impulsive and compulsive buying are two buying behaviours that are often incorrectly defined (Darrat *et al.*, 2016). Whilst compulsive buying is a recurrent loss of self-control in purchasing encounters, impulse buying is one that is generally sporadic (Faber, 2010). Impulsive buying arises when a consumer experiences an immediate, strong, and continuous impulse to buy (Rook, 1987). Impulsive buying represents unplanned and thoughtless purchasing decision making (Jones *et al.*, 2003). Therefore, impulsive buyers and compulsive buyers are on opposite ends. On the one hand, compulsive buying represents a continuous need to buy, and on the other hand, impulsive buying represents the urge to buy (Darrat *et al.*, 2016).

In relation to decision-making, impulsive buying represents a quick action in favour urgent consumption, in which consumers buy suddenly, thoughtlessly, immediately and quickly (Kacen and Lee, 2002). Previous studies have suggested that the increase in impulse buying may be motivated by situational elements such as increased availability of time and money (Jones *et al.*, 2003), but also by the psychological states of the consumer (Ozer and

Gultekin, 2015). Blanco-González *et al.* (2023) argue that consumer anxiety represents a psychological state of mind characterised by loss of control in the face of a “real or non-real” threat that leads to an increased desire in the purchase intention. Thus, if the impulsive consumer persistently reflects these behaviour, symptoms of lack of control are shown (Darrat *et al.*, 2016), i.e. anxiety. Previous research has pointed out that a core feature of anxiety is that it increases difficulties in managing uncertainty (Van den Bergh *et al.*, 2005). Thus, when consumers have high levels of anxiety, they are predisposed to make impulsive purchases in order to reduce uncertainty (Japutra *et al.*, 2022). Other studies have found that individuals with anxiety disorders showed significantly higher levels of impulsivity compared to those without an anxiety disorder (Japutra *et al.*, 2022). Therefore, when a consumer exhibits high levels of anxiety, and in order to reduce uncertainty, they are more likely to develop greater impulsive buying behaviour.

H2. The consumer’s level of anxiety generates a higher probability of making impulse purchases.

2.3 Compulsive buying and emotional regulation

The consumer’s emotional regulation specifically Consumer emotion regulation is specifically defined as the purchase of a product in order to alleviate, repair, or manage an emotion (Kemp and Kopp, 2011). Coping Theory states that individuals develop reactive behaviours to cope with stressful emotional states (Darrat *et al.*, 2016; Lazarus, 1991). Escape Theory suggests that when faced with certain negative emotional situations, individuals make compulsive purchases as a mechanism to alleviate that tension (Yi, 2012). Compulsive purchases are accompanied by pleasure, but also followed by remorse and guilt due to inappropriate spending behaviour and its negative consequences (Bui and Kemp, 2013). In this way, compulsive buying causes consumers to hinder the long-term negative consequences of their actions and to improve their emotional state in the short term due to the positive reinforcement that it provides (Faber and O’Guinn, 1992).

Different studies have associated compulsive buying with the consumer’s search for emotional states. Compulsive buyers show a predisposition to distort objective reality, higher levels of depression, material consumption, and obsession in relation to non-compulsive buyers (Faber, 2010). Müller *et al.* (2015) claim that the compulsive consumer focusses on the pleasure produced by the process of buying, researching, choosing and ordering, but not on the use of the products. As a result, compulsive consumers can reach a high level of indebtedness leading to personal distress, family and social problems (Achtziger *et al.*, 2015). These situations create a negative and undesirable stress for the buyer that is only dissipated by the purchase (Faber, 2010). Darrat *et al.* (2016) state that compulsive shoppers express high feelings of negative affect and low positive affect, in which negative affect decreases after compulsive buying behaviour. Consequently, compulsive buying is configured more as a short-term pleasure of negative emotions than a demand to obtain certain products. This is why individuals who engage in compulsive buying are likely to show positive emotional states derived from the purchase. Therefore:

H3. Compulsive buying generates higher levels of consumer emotional self-regulation.

2.4 Impulsive buying and emotional regulation

Another relevant factor associated with emotional regulation is impulse buying. Impulsive buying as a predisposition to buy suddenly, thoughtlessly, and urgently; represents a behavioural characteristic associated with positive cognitive states (Kemp *et al.*, 2014). Previous studies have suggested that consumers show positive emotions when buying impulsively, such as feeling happy, joyful and lucky (Verplanken and Herabadi, 2001).

Furthermore, due to the positive feelings it generates in the consumer (Japutra *et al.*, 2022), people who experience negative emotions may also consume or buy impulsively with the purpose of restoring or "undoing" negative emotions, in other words, to achieve greater emotional regulation (Kemp *et al.*, 2021). Atalay and Meloy (2011) point out that consumers often use unplanned hedonic purchases to mitigate bad moods or strengthen good moods. Verplanken and Sato (2011) suggest that impulse buying is often linked with positive and negative emotions of psychological states, particularly as an instrumental self-regulatory mechanism. Kemp *et al.* (2014) demonstrated that when faced with negative emotional states, such as fear or anxiety, consumers make emotional regulation efforts to mitigate their effects through hedonic purchases. Therefore, impulse buying behaviour could be understood as an instrument that allows a search for positive emotions or to mitigate negative ones, i.e. a greater regulation of the consumer's psychological functioning. Therefore:

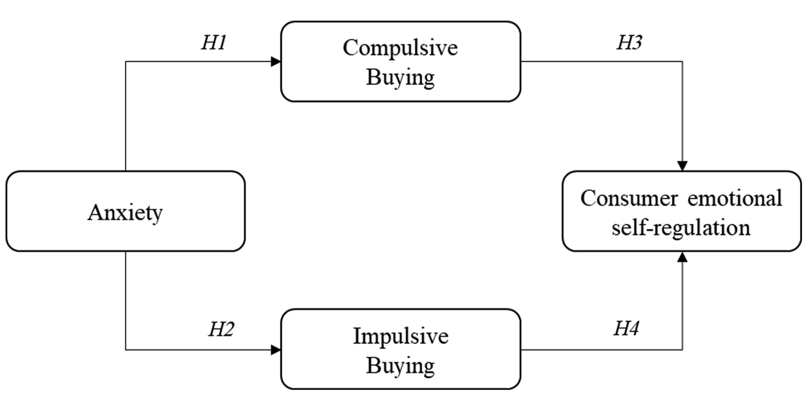
H4. Impulsive buying generates higher levels of consumer emotional self-regulation.

In relation to the literature review and the hypotheses proposed, the model to be tested with the empirical study is presented (Figure 1). The model shows graphically that anxiety has a direct and positive effect on compulsive buying (H1) and impulsive buying (H2); compulsive buying has a direct effect on consumer emotional self-regulation (H3); impulsive buying has a direct and positive effect on consumer emotional self-regulation (H4).

3. Sample and methodology

3.1 Sampling and data collection

To carry out our research, we focussed on the retail sector, specifically on Spanish supermarkets, such as Mercadona, Carrefour, Lidl, Dia, Eroski, Alcampo and Hipercor, since they represent over the 60% of the retailing market (Kantar, 2021). This is due to the fact that these establishments concentrate a large volume of purchases, as they are of primary necessity. These are companies where the purchase intention is frequent, unplanned, there is a strong interaction with service providers and other customers, and they have not been strongly affected by the online market (Panzone *et al.*, 2021). In addition, during periods of uncertainty and health crises, many customers have turned to supermarkets to make purchases derived from a state of anxiety due to a possible threat of stock-outs of certain products (Omar *et al.*, 2021) as mechanisms that allow them to regulate this emotional state. These reasons justify the choice of this type of establishment as a valid framework to



Source(s): Authors' own elaboration

Figure 1. Proposed model and hypotheses

evaluate the effect of anxiety on compulsive and impulsive purchases and consumer emotional regulation.

Initially, an on-line pre-test was distributed, and 70 responses were gathered with the aim verifying the scale and adapt any unclear question of the questionnaire. After the analysis of the pre-test results, a few items of the final survey where modified. The final data were collected between June and November 2022 through an online questionnaire about the retail sector (specifically supermarket consumers). The online questionnaire was sent through a market research consultancy that ensured a probabilistic random method and representation of the Spanish population over 18 years old, 726 responses were obtained from regular consumers. This sample allows us to infer the population results with an error of ±3.64% for a level of confidence of 95% considering the situation of the most unfavourable population variance p = q = 50%.

Control variables (Table 1) were incorporated to the questionnaire related to: frequency of purchase, supermarket brand, and socio-demographic and socio-economic characteristics of the respondents. In addition, an IP address control was established to prevent the same user from sending more than one response.

The evaluation of data by means of PLS requires a minimum sample size with the objective of the method being robust and the results being valid (Hair and Alamer, 2022). Authors such as Chin and Newsted (1999) suggest using the power method instead of the traditional method of 10 cases (Barclay *et al.*, 1995), due to its low precision. The G*Power 3.1.9.2 software was used to obtain the minimum sample size necessary to have sufficient test power (Faul *et al.*, 2007), recommended by authors as Hair *et al.* (2018). The results require a

Characteristics	Total	(%)
Gender		
Male	348	48
Female	378	52
Age		
18–24	109	15
25–34	145	20
35–44	167	23
45–65	189	26
Over 66	116	16
Have you made any purchase of products for your home in the last 2 months in a supermarket?	Yes	100
	No	
Purchase frequency		
Rarely	3	1
Occasionally	62	9
Once a week	312	43
Twice a week	232	32
Daily	116	16
Name of supermarket		
Mecadona	240	33
Carrefour	174	24
Lidl	116	16
Dia	80	11
Others (Alcampo, Consum, Hipercor, etc.)	116	16
Total sample	*726*	–

Source(s): Authors' own elaboration

Table 1.
Sample profile

minimum sample size of 68 cases for a power test of 80%, minimum requirement (Cohen, 1988). Our research meets these requirements by obtaining 726 valid cases, which shows a power test clearly superior to the minimum required.

3.2 Measurement of variables

Table 2 presents the measurement of the proposed variables, which was carried out through items adapted to those of previous studies. Likert-type scales (1–7) are used for all items, where 0 refers to strongly disagree and 7 to strongly agree.

3.3 PLS-SEM statistical analysis

Partial least squares structural equation modelling (PLS-SEM) was used for data processing and hypothesis testing. PLS-SEM, is a multivariate analysis method its main purpose is the prediction of dependent variables through the estimation of *path models* and is mainly designed for exploratory studies (Cachón-Rodríguez *et al.*, 2021; Henseler, 2017). Data

Construct	Item	Description	Source
Anxiety	AN1	When I buy in this supermarket, I feel anxious	Ekman *et al.* (1980), Kemp *et al.* (2021)
	AN2	When I buy in this supermarket, I feel stressed out	
	AN3	When I buy in this supermarket, I feel nervous	
	AN4	When I buy in this supermarket, I feel worried	
	AN5	When I buy in this supermarket, I feel uneasy	
	AN6	When I buy in this supermarket, I feel scared	
	AN7	When I buy in this supermarket, I feel fearful	
	AN8	When I buy in this supermarket, I feel alarmed	
	AN9	When I buy in this supermarket, I feel panicked	
Compulsive buying	CB1	I just want to buy products regardless of what it is	Darrat *et al.* (2016), Islam *et al.* (2021), Sneath *et al.* (2009)
	CB2	I buy products to make myself feel better	
	CB3	I buy products I can't afford	
	CB4	I buy products to distract me	
	CB5	I buy products that I do not use	
Impulsive buying	IB1	I buy products that are not necessary	Darrat *et al.* (2016), Islam *et al.* (2021), Sneath *et al.* (2009)
	IB2	I buy products that I would not often buy	
	IB3	I buy products and then don't know why I bought them	
	IB4	I buy products that I had no planned	
Consumer emotional self-regulation	ER1	I buy more products than usual in order to please myself	Kemp *et al.* (2014, 2021)
	ER2	I buy products, even if they are not very healthy	
	ER3	I buy products to calm myself down (e.g. food, drink, entertainment, leisure)	

Source(s): Authors' own elaboration

Table 2. Constructs and items used

processing using PLS-SEM involves assessing the (outer) measurement model (Chin, 1998). Secondly, the structural (inner) model analysis must be performed in order to confirm the proposed relationships. Specifically, we use the software SmartPLS4 V.4.0.8.

4. Results

4.1 Assessment of measurement model (outer)

Assessing the measurement model of the estimated constructs type-A (reflective) is developed through different statistics: (1) examine the loadings and the *p*-value of the items; (2) estimate constructs reliability; (3) evaluate average variance extracted; (4) and check discriminant validity through the Fornell–Larcker criterion and heterotrait-monotrait ratio (Hair and Alamer, 2022).

4.1.1 Reliability and convergent validity. Examine the loadings of the individual items require values above 0.7 and significant *p*-value 0.5 o below (Hair and Alamer, 2022). To estimate the constructs reliability are used: Cronbach's Alpha (CA), Composite Reliability (CR) and rho_A statistic, values above 0.7 are considered adequate (Dijkstra and Henseler, 2015). For average variance extracted values above 0.5 represent indications of convergent validity (Chin, 2010). As shown in Table 3, both reliability and convergent validity are within the indicated cut-off values.

4.1.2 Discriminant validity. For the evaluation of the discriminant validity through the Fornell Larcker criterion, the square AVE roots of each latent variable should be greater than the correlations that it has with the rest of the latent variables of the model (Fornell and Larcker, 1981). As can be seen in Table 4, none of the constructs presents validity problems according to Fornell-Larcker criterion.

However, Henseler *et al.* (2016) developed simulation studies to demonstrate that discriminant lack of validity is best detected by means of the heterotrait-monotrait ratio

Construct	Item	Loadings	CA	CR	rho_A	AVE
Anxiety	AN1	0.862^{***}				
	AN2	0.829^{***}				
	AN3	0.874^{***}				
	AN4	0.794^{***}				
	AN5	0.896^{***}	0.953	0.960	0.957	0.730
	AN6	0.905^{***}				
	AN7	0.894^{***}				
	AN8	0.872^{***}				
	AN9	0.747^{***}				
Compulsive buying	CB1	0.850^{***}				
	CB2	0.819^{***}				
	CB3	0.825^{***}	0.870	0.906	0.879	0.659
	CB4	0.708^{***}				
	CB5	0.849^{***}				
Impulsive buying	IB1	0.867^{***}				
	IB2	0.847^{***}	0.889	0.923	0.890	0.751
	IB3	0.876^{***}				
	IB4	0.875^{***}				
Consumer emotional self-regulation	ER1	0.859^{***}				
	ER2	0.789^{***}	0.806	0.885	0.825	0.719
	ER3	0.893^{***}				

Note(s): $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$
Source(s): Authors' own elaboration

Table 3.
Reliability and validity

(HTMT). The HTMT ratio helped confirm more rigorously that all constructs achieved discriminant validity and that none of the confidence intervals contained a value of one, suggesting that all variables were empirically different. To check the discriminant validity HTMT ratio, previous studies have suggested a value less than 0.85 or 0.90 (Cachón-Rodríguez *et al.*, 2022; Kline, 2015). As evidenced by the data in Table 5, the constructs meet the discriminant validity criteria, so they are different from each other.

4.2 Assessment of the structural model (inner)

Once the reliability and validity of the measurement instrument has been evaluated, we evaluate the validity of the structural model. To do so, we examine: (1) the collinearity through the invariance inflation factor (structural VIF); (2) size and significance of the *path* coefficients; (3) R^2 coefficient of determination; (4) the effect size f^2; and (5) the test Q^2 (Hair and Alamer, 2022).

In relation to multicollinearity, the cut-off value of the structural VIF most conservative is 3.3 or less (Hair *et al.*, 2019). Table 6 shows that the correlations of the constructs are adequate to the range of scores indicated, so there are no collinearity problems. Previous studies (Kock, 2015) suggest that a VIF value greater than 3.3 also indicates that the model is contaminated by common method bias. Our inner model shows values less than 3.3, so the model can be considered free of common method bias.

Using bootstrapping to assess the significance of coefficients path through a re-sampling of 5,000 subsamples as recommended by Hair *et al.* (2018), Table 7 shows that anxiety

Construct	Anxiety	Compulsive buying	Emotional self-regulation	Impulsive buying
Anxiety	0.854	N/A	N/A	N/A
Compulsive buying	0.397	0.812	N/A	N/A
Emotional self-regulation	0.472	0.740	0.848	N/A
Impulsive buying	0.416	0.794	0.674	0.866

Note(s): N/A = Not applicable
Source(s): Authors' own elaboration

Table 4. Discriminant validity: Fornell-Larcker criterion

Construct	Anxiety	Compulsive buying	Impulsive buying
Anxiety	N/A	N/A	N/A
Compulsive buying	0.419	N/A	N/A
Impulsive buying	0.444	0.847	N/A
Emotional self-regulation	0.493	0.760	0.790

Note(s): N/A = Not applicable
Source(s): Authors' own elaboration

Table 5. Discriminant validity: Heterotrait-Monotrait ratio (HTMT)

Construct	Compulsive buying	Impulsive buying	Emotional self-regulation
Anxiety	1.000	1.000	N/A
Compulsive buying	N/A	N/A	2.088
Impulsive buying	N/A	N/A	2.088

Note(s): N/A = Not applicable
Source(s): Authors' own elaboration

Table 6. VIF results

Table 7.
Hypothesis testing and R^2, f^2, Q^2 statistics

Relationship	Standardised beta	*t*-value (Bootstrap)	Bias	Confidence intervals 5.0%	95%	f^2 (Effect)
H1: Anxiety → Compulsive buying	0.397***	10.918	0.003	0.239	0.450	0.187 (Medium)
H2: Anxiety → Impulsive buying	0.416***	11.203	0.002	0.348	0.471	0.209 (Medium)
H3: Compulsive buying → Emotional self-regulation	0.554***	7.798	0.004	0.426	0.662	0.263 (Medium)
H4: Impulsive buying → Emotional self-regulation	0.234**	3.122	−0.003	0.120	0.365	0.047 (Small)

Note(s): $R^{2:}$ 0.568 (self-regulation); 0.183(impulsive); 0.171 (compulsive)
Q^2: 0.196 (self-regulation); 0.167 (impulsive); 0.151 (compulsive)
$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$ (based on t (4,999), one-tailed test)
Source(s): Authors' own elaboration

positively and significantly influences compulsive buying (H1; $\beta = 0.397$; $p < 0.001$) and impulse buying (H2; $\beta = 0.416$; $p < 0.001$). The direct effect of compulsive buying on emotional self-regulation revealed a positive and significant influence (H3; $\beta = 0.554$; $p < 0.001$). Finally, the direct effect of impulsive buying positively influences emotional self-regulation (H4; $\beta = 0.234$; $p < 0.01$). Some researchers have proposed reporting confidence intervals along with t values. Confidence intervals have the advantage that they are a completely non-parametric approach and are not based on any type of distribution (Henseler *et al.*, 2009). Table 7 does not include the zero value for any confidence interval of the path coefficients; therefore, the proposed hypotheses are accepted.

Once it has been verified that there are no collinearity problems and that the path coefficients are significant, the determination coefficient R^2 is examined as a measure of predictive power. The R^2 coefficient indicates the amount of variance that is explained by the predictor variables of an endogenous construct. In the field of social sciences, values between 0 and 0.10 are considered weak, 0.11 to 0.30 modest, 0.30 to 0.50 moderate, and >0.50 substantial (Hair and Alamer, 2022). As shown in the footer of Table 7, compulsive and impulsive buying have modest values and self-regulation has strong explanatory power due to its predictors.

In addition, the coefficient f^2 evaluates the effect that an exogenous variable contributes to explaining an endogenous variable in terms of R^2. The guidelines for assessing f^2 values higher than 0.02, 0.15 and 0.35 depict small, medium, and large f^2 effect sizes (Cohen, 1988). Table 7 shows that the effect of anxiety on compulsive and impulse buying is medium. The effect of impulse buying on emotional self-regulation consumer is medium, and the effect of impulse buying on emotional self-regulation consumer is small.

In order to evaluate the model's predictive relevance, we also examine Stone–Geisser Q^2 value (Geisser, 1974; Stone, 1974). Q^2 values estimated by the blindfolding procedure larger than 0 suggest that the model has predictive relevance (Hair *et al.*, 2019). Table 7 displays Q^2 values of 0.151 (compulsive buying), 0.167 (impulsive buying) and 0.196 (emotional self-regulation consumer) so the model has relevance predictive.

5. Discussion and implications

5.1 Findings

The aim of this research is to assess the impact of anxiety on consumer behaviour, specifically on compulsive and impulsive buying. In addition, the effect of compulsive and impulsive buying on the consumer's emotional regulation, i.e. the pleasure of making such harmful purchases is assessed. The structural model results showed a relationship between anxiety and a greater probability of making compulsive (addictive and uncontrollable) and impulsive (unplanned) purchases. This result empirically showed that the higher probability of compulsive and impulsive purchases between June and November 2022 was related to anxiety. This may be because those surveyed after COVID-19 feel greater anxiety that prevents them from having control over their purchasing behaviours. However, the results also showed that these less desirable behaviours (compulsive and impulsive) can be performed by the consumer to dampen the effects of a state of anxiety. Consequently, compulsive and impulsive purchases were related to measures that allow greater control through the generation of emotional regulation of the consumer.

5.2 Theoretical contribution

This study makes several contributions to the psychological effects on shopping behaviour. In particular, this study assesses whether anxiety leads to a loss of consumer control, expressed by negative behaviour such as compulsive and impulsive buying. In addition, it shows that people consciously engage in certain purchasing behaviours in order to mitigate their emotional consequences and provoke a positive emotional state. This aspect responds to the call in the academic literature as to whether psychological states resulting from mental illnesses produce detrimental consumer behaviours (Blanco-González *et al.*, 2023; Japutra *et al.*, 2022; Kemp *et al.*, 2021). This will provide managers with essential information to develop different strategies to avoid damaging consumer behaviour and improve relationships with the company.

The results show, firstly, the level of consumer anxiety generates a higher compulsive buying (Hypothesis 1). These findings reinforce the importance of Expectancy Theory in emotional states (i.e. anxiety) as evocative of the compulsive buyeŕs behavioural responses. According to the Blanco-González *et al.* (2023), anxiety is the result of aversive stimulation that prevents people from behaving in a relaxed and natural way and from performing certain behaviours that allow them to reduce it. Thus, the expectation of danger, fear or trigger motivates people to make compulsive purchases to cushion the negative effects of anxiety. Therefore, it is important to consider the role of response expectancy in the prevention of anxiety (Kirsch, 1997). Previous research have suggested that compulsive buying may be generated by negative psychological states such as depression or stress (Darrat *et al.*, 2016; Sneath *et al.*, 2009), showing that the findings are robust with previous research in other contexts. Understanding that anxiety drives compulsive buying is important from the consumer's point of view. If anxiety impacts on consumers making purchases with little or no consideration of their long-term consequences (i.e. compulsively), anxiety management should be a priority for the compulsive shopper. This is particularly relevant in situations or contexts of uncertainty (Japutra *et al.*, 2022). For example, during COVID-19, the greater the fear or anxiety about product shortages, the more compulsive purchases were made of hygiene or health-related products.

Second, the results reveal that the level of consumer anxiety generates a higher impulse buying (Hypothesis 2), which is inconsistent with findings suggested by previous research on other types of affective states such as depression (Sneath *et al.*, 2009). This is because psychological states may increase consumer pleasure seeking in uncertain or difficult circumstances (e.g. COVID-19), and unplanned purchases may be seen as a reward or a treat (Kemp *et al.*, 2021; Ramanathan and Menon, 2006). Thus, shoppers showing anxiety symptoms may have resorted to impulse purchases as a rationalisation tool, i.e. to reduce uncertainty.

Third, the results reflect that compulsive buying generates higher levels of consumer emotional self-regulation (Hypothesis 3). This reinforces Coping Theory (Faber, 2010), which identifies compulsive buying as an escape from negative emotional states by producing a state of self-regulation for the consumer. In other words, compulsive buying is an instrument that buffers the consumer's anxiety effect in the search for greater emotional self-regulation. Therefore, anxiety management is a key element that relieves the tension or reduces the effect of compulsive buying on emotional regulation.

Fourth, the results show that impulse buying generates higher levels of consumer emotional self-regulation (Hypothesis 4). This has confirmed what has been suggested in other studies, which argue that in an attempt to cope with negative emotions (anxiety), individuals regulate negative emotional responses through the purchase behaviour of hedonic goods associated with impulse buying (Bui and Kemp, 2013; Zheng *et al.*, 2019). These findings are in line with coping theory (Lazarus, 1991), where impulsive buying is seen as a means to achieve emotional regulation. However, impulse buying is not so harmless, as excessive consumption to mitigate negative emotions can be detrimental to consumers' health and well-being (Kemp *et al.*, 2021). This highlights that anxiety management is a priority element in the search for alternatives, different from impulse buying, to mitigate negative emotions.

5.3 Managerial contribution

The results have important implications for both marketing and consumer health managers. On the one hand, the question is whether compulsive and impulsive buying are behaviours that marketing managers should encourage in the spirit of building a stronger relationship with consumers. Obviously, the answer is no, managers should help to reduce harmful behaviours. The results show that these buying behaviours may be influenced by anxiety. In this state of anxiety, shoppers lose control, leading to overspending and resulting in financial, family and social difficulties. In this line, marketing managers should help the consumer to manage anxiety and avoid this buying behaviour. To this end, managers can support non-profit organisations that help consumers reduce their shopping disorder and anxiety. They can also develop programs with local entities that promote co-management of stress, fear or anxiety with appropriate financial planning at home. In addition, since different studies (Japutra *et al.*, 2019; Top Doctors, 2020) have shown that young consumers are more sensitive to compulsive and impulsive purchases, managers could encourage the development of financial education programs in schools and universities that help people manage their emotional states and their financial planning in purchasing behaviours. In this way, managers can also train and encourage their workers to participate in such financial education programs. They could also develop communication campaigns where the negative effects of anxiety on compulsive and impulsive purchases are shown (such as those related to poor planning or shown the erosion in family relationships). Since anxious consumers are more difficult to satisfy and demanding than non-anxious consumers (Japutra *et al.*, 2022), marketing managers can give priority to anxious customers in terms of return policies or complaint resolutions. Furthermore, anxious consumers tend to be receptive to social rewards, compared to financial rewards (Japutra *et al.*, 2022; Mende and Bolton, 2011). Thus, managers could also, for example, prioritise anxious customers when you have to make personal apologies derived from an error in the purchase process, avoiding negative comments that could influence other customers and therefore your financial results. From the communication side, marketing managers can track social media comments and promote messages that avoid compulsive and impulsive behaviour or even eliminate them. For example, messages could highlight that supermarkets help people to stock up on products but avoid stockpiling unnecessary products.

The findings of this research also show that many of the compulsive and impulsive purchases were motivated by a search for emotional relief (emotional regulation). Engaging in such behaviours can lead to financial, social or family problems, but it can also affect consumers' loss of coping skills, especially in those suffering from anxiety (Kemp *et al.*, 2014). In situations of high uncertainty or crises, consumers can be assisted in emotional regulation processes by re-categorising their needs (Poynor and Haws, 2008). Social marketers can promote actions that allude to non-purchasing activities in order to alleviate emotional pressure. This could be done, for example, by informing through social media about the importance of doing sport, spending quality time with family, catching up on career goals, and relaxation or breathing exercises.

5.4 Limitations and future lines of research

Whilst this research provides further insight into the effect of psychological processes and shopping behaviours on emotional states, it is not without limitations. One limitation is determined by the level of sample heterogeneity, as it is composed of purchases made in supermarkets over a period of time. If other products or organisations had been assessed, the results might have been different. We have also focussed on anxiety as a psychological process related to decision-making and emotional regulation. Therefore, future studies could, include and evaluate other psychological variables related to mental illnesses such as fear or stress. These futures could also consider evaluating the impact of these psychological aspects with other more specific marketing output variables such as perceived value, purchase intention or consumer satisfaction, as well as exploring possible mediating or moderating effects. Furthermore, from a different perspective, in line with a recent paper (Kakaria *et al.*, 2023), the effect of anxiety could be evaluated through a neurophysiological perspective. Finally, a greater heterogeneity of unobserved stakeholder groups or organisations could be considered: employees, managers, size of the organisation or industry, etc. as well as descriptive factors of the sample: age, gender, income level, etc.

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Corresponding author
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"I love your brand! I engage with you, and I do online brand-related activities (COBRAs)": the role of brand value

Sandra Castro-González and Belén Bande
Universidade de Santiago de Compostela, Lugo, Spain, and
Pilar Fernández-Ferrín
Universidad del País Vasco UPV/EHU Vitoria-Gasteiz, Vitoria Gasteiz, Spain

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Abstract

Purpose – Few studies have explained how and when consumers are willing to engage in online brand-related activities (COBRAs). This study examines the role of brand love in a consumer's decision to engage in online brand-related activities, considering the mediating effect of attitudinal brand engagement and the moderating effect of brand value on this relationship.

Design/methodology/approach – The study analysed data from 404 Spanish consumers using structural equation modelling and the PROCESS package in SPSS to test hypotheses, including mediation and moderation effects.

Findings – The study expands on previous research by revealing the mediating role of brand attitudinal engagement in the relationship between brand love and COBRAs and the moderating role of brand value in the relationship between brand engagement and COBRAs. The results show that online consumers who feel brand love from an online store are likelier to be engaged with the brand. This predisposes them to comment on, share, and create content related to the company or brand. Furthermore, consumers who attribute a high value to the brand are likelier to engage in brand-related online activities.

Originality/value – This study offers valuable insights into mechanisms to encourage consumers to generate content, known as user-generated content, to the extent that the tools for developing this content are the same.

Keywords Brand love, Attitudinal brand engagement, Online brand-related activities, COBRAs, Brand value, Online consumer behaviour, Social media platforms, User-generated content, UGC, Food companies

Paper type Research paper

1. Introduction

Social media platforms allow consumers to participate actively in more interactive marketing practices (Wang, 2021). Thus, consumers' online brand-related activities (COBRAs: the consumption, contribution, and creation of brand-related content) have emerged as a new phenomenon. COBRAs are based on the users as consumers and producers of the content, known as user-generated content (UGC). The importance of UGC lies in the extent to which it builds brand awareness in the community. It transmits trust to consumers, ultimately influencing, in a very significant way, their decision-making (Cheung *et al.*, 2021a; Gómez *et al.*, 2019; Kim and Lee, 2017). According to Hubspot (2021), over 86% of companies use UGC as a marketing strategy. Among the reasons for following this strategy is that it can generate up to 29% more conversions on a website since, according to the same source, 93% of

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consumers view content and read comments and reviews made by other users and/or consumers before making their purchasing decisions.

For this reason, there has been a growing trend in the study of COBRAs in the academic literature in recent years (Buzeta *et al.*, 2020; Cheung *et al.*, 2022a; Schivinski *et al.*, 2022). However, the primary academic challenge remains to deepen our knowledge of why and when consumers carry out online brand-related activities, or, in other words, why and when they consume, contribute, and create content. Most of the studies focus on the impact of four motivational factors on the performance of COBRAs with minor alterations. Thus, it is exciting to study how other novel variables in the marketing context that are of recognised importance can contribute to this activity. Specifically, this paper discusses brand love, affective brand engagement, and value.

There is no doubt about the importance of interpersonal love, but the objects of love may also be objects, concepts, events, and brands. Emotional and passionate feelings for a brand (Ali *et al.*, 2021), or thinking that a brand is incredible, wonderful, or delightful, that is, feeling love for the brand, make consumers react positively to everything around the brand. This love for a brand implies that emotional, attitudinal, and behavioural bonds are constructed by the consumer (Batra *et al.*, 2012). Based on this solid consumer-brand relationship, brand engagement attitudes can emerge (Hollebeek *et al.*, 2016). Moreover, all this could lead to positive results for the company, such as sales of its products and services (Hollebeek *et al.*, 2016).

Furthermore, for consumers to be willing to make a more significant effort for a brand, the consideration they receive is essential; in this case, the consideration is the brand's value. However, despite the previous arguments, as well as the relevance of the aforementioned variables in marketing and consumer behaviour, there is a lack of studies that demonstrate how these variables interact, specifically how brand love drives online activities for the sake of the brand, how this relationship is mediated by attitudinal brand engagement, and when this relationship is intensified, for example with the intervention of brand value.

Based on the above discussion, this study, therefore, attempts to contribute to the interactive marketing literature, and particularly to the literature on COBRAs, by focusing on the following research questions:

RQ1. Why do consumers carry out online brand-related activities – consuming, contributing, and creating content (COBRAs)?

RQ2. When is a consumer most likely to engage with a brand and decide to consume, contribute, and create content?

The impact of brand love on the development of COBRA behaviours has not been effectively examined. While previous literature suggests that brand love motivates social network interactions (Vale and Fernandes, 2017), consumers' positive response towards everything related to the brand suggests a connection between brand love and COBRA behaviours. In this article, we posit that brand love has a positive effect on COBRAs by means of affective brand engagement. To our understanding, this is the first research to examine this link experimentally. Likewise, scrutinising brand engagement from an attitudinal viewpoint as a mediating factor connecting brand love and COBRAs gives an understanding of how brand love cultivates brand-related online activities.

Moreover, it responds, as suggested by Martins Rebouças Nery *et al.* (2021), to the need to consider brand engagement in the online social media environment. In this sense, this paper delves into the antecedents (i.e. brand love) and consequences (i.e. COBRAs) of this variable in the context of content consumption, contribution, and creation. Thirdly, no studies have explored their interaction thoroughly despite the significance of brand love, attitudinal brand engagement, brand value, and the possibility of interrelationships between these three variables. Additionally, the study examines the moderating effect of brand value. Previous research has concentrated on the mediating role of the variable rather than its moderating effect (Chuenban *et al.*, 2021; Leite, 2022; Schivinski *et al.*, 2020). Finally, this paper addresses recent research calls (e.g. Wang, 2021) by examining consumer behaviour and interaction in social networks within the food sector. Although a new study area, this topic is of great economic significance.

In the following sections, this study describes the theoretical background of the proposed model, explaining the constructs and supporting the hypotheses. Subsequently, it presents data collection and methodology, findings, discussion, and conclusion.

2. Literature review and research hypotheses

This study uses the Social Exchange Theory (SET) (Emerson, 1976) to describe the relational dynamics of brand love and engagement on COBRAs. SET has been used to explain the interactions between companies and consumers, focusing on individuals' participatory behaviours and motivations for resource exchanges (Gutierrez *et al.*, 2023; Wu *et al.*, 2023). The theory suggests that people make rational decisions to engage in social exchanges based on their costs and benefits assessments, which involve a reward and cost analysis related to a particular exchange. Ongoing relationships between individuals can involve benefits and costs in economic, social, emotional, or mixed terms derived from unique brand experience. Customers can contribute to the firm by making repeat purchases, being willing to pay premium prices, demonstrating loyalty, and engaging in positive word-of-mouth advocacy, among other supportive behaviours. These interdependent transactions have the potential to cultivate high-quality relationships over time (Emerson, 1976).

While multiple theories have been employed to explain consumer behaviour, including online consumer behaviour, this study finds using the SET particularly valuable in comprehending consumers' social interactions with brands. This choice is also supported by prior research on consumer engagement (Rasool *et al.*, 2021) or COBRAs (Majeed *et al.*, 2022), as consumers are more inclined to invest their time in engaging with a brand's social media activities when they perceive value in the brand (Martín-Consuegra *et al.*, 2019). Reciprocity plays a crucial role in social exchange, and in the context of this research, engagement serves as a mediator between brand love and COBRAs. When consumers perceive positive outcomes from exchanges with the brand, such as consuming, sharing, and creating content, they are more likely to engage in such activities.

2.1 COBRAs

Consumers' online brand-related activities, more commonly known as COBRAs (a concept introduced by Muntinga *et al.* (2015)), are defined as "a set of brand-related online activities on the part of the consumer that vary in the degree to which the consumer interacts with social media and engages in the consumption, contribution, and creation of media contents" (Schivinski *et al.*, 2016). In other words, there are three levels of COBRAs: consuming, contributing, and creating content (Buzeta *et al.*, 2020). The relationship of consumers with, and the degree of consumers' commitment to, content generated on social networks can be very different. This is directly related to the three levels of COBRAs, which go from a more passive stance on the part of the consumer when they only consume content, which represents a traditional consumer role, to an active stance when they take the initiative to create original content, representing a prosumer role.

Consumers consume content when they read a social media post, view a photo, or reproduce a video but do not interact with the content in any way (Schivinski *et al.*, 2016). They connect with the brand through exposure to brand-generated content (Ashley and

Tuten, 2015). When they take a more active role, they may choose to make some contribution. In this case, the consumer is required to interact in some way with the content by, for example, “liking” a post, sharing content generated by others, or participating in conversations through “comments” (Kabadayi and Price, 2014; Schivinski, 2021). Finally, the highest degree of participation is reached when the consumer launches into the creation of original content by, for example, publishing images of products related to the brand, writing a post about the brand or product, creating and sharing videos, or creating content in formats specific to these platforms.

There is no doubt about the importance of COBRAs in companies’ communication strategies and the relationship between the two parties (the consumer and the company). Likewise, their importance and impact are more significant when consumer involvement is achieved. In other words, in today’s communication strategies, consumers must become communicators who can express their opinions about a company’s products and services (Cao *et al.*, 2021).

COBRAs are based on or consist of UGC. The term UGC is frequently used in the information systems and marketing literature. It is sometimes considered an alternative term for electronic word-of-mouth (eWOM) (Babić Rosario *et al.*, 2020). However, recent studies (Thi *et al.*, 2020) show these two similar but different constructs. Specifically, UGC is a broader concept than eWOM and, unlike eWOM, implies a personal contribution by the consumer concerning the content he or she generates; this effort is independent of any commercial objective. In a recent work, Santos (2021) reviews the concept’s meaning and how it has been studied in the literature since its emergence twenty years ago. According to different authors (Cheung *et al.*, 2021a; Ho *et al.*, 2020; Veloso and Gomez-Suarez, 2023), UGC is incredibly influential (Shaker *et al.*, 2021), as it allows users to create and publish multimedia content and achieve considerable reach through dynamic social networks. UGC builds brand awareness in the community and conveys the necessary trust to consumers. This content can be generated on various platforms, but in recent years, there has been particular interest in social networks, which significantly accelerate users’ and consumers’ access to brand content (Zadeh and Sharda, 2022).

Consumers’ motives for participating in social networks provide information about their activities. Recently, several studies have emerged that focus on consumer motivation. The studies mainly find that these motives are rational (e.g. seeking information) and emotional (e.g. entertainment, social interaction, or reward). Several authors have reached these conclusions, and this is supported and extended by other research (Buzeta *et al.*, 2020) that has found two more emotional factors – personal identity and empowerment. Other authors have found motivational factors in brand-related issues – brand equity or brand image (Majeed *et al.*, 2022; Schivinski *et al.*, 2020). As will be proposed below, and in line with these latter studies, this paper analyses issues related to brand perception.

2.2 Brand love and brand engagement

Brand love is “the degree of passionate, emotional attachment a satisfied consumer has for a particular trade name” (Carroll *et al.*, 2006, p. 81). It can be understood as a strong emotional attachment to a brand characterised by feelings of security, affection and a desire to maintain proximity to the brand (Ghorbanzadeh and Rahehagh, 2020); brand love suggests a solid consumer-brand connection. This is a novel variable (Palusuk *et al.*, 2019; Trivedi and Sama, 2021), although existing studies have already demonstrated its positive influence in obtaining various organisational benefits related to consumer attitudes and behaviours (Palusuk *et al.*, 2019). Among these benefits is engagement (Sarkar and Sreejesh, 2014). Consumer engagement “is defined as a customer’s connection to a brand as manifested in cognitive, affective, and behavioural actions outside of the purchase situation” (So *et al.*, 2012, pp. 311–312) and mainly occurs “when customers are willing to invest time, energy, money, or other resources in the brand beyond those expanded during purchase or consumption” (Bergkvist and Bech-Larsen, 2010, p. 507). For consumer engagement to occur, according to van Doorn *et al.* (2010), there must be a motivational factor that is produced through the experiences of the individual – in this case, the consumer – to the object of commitment – in this case, the brand – which will involve the consumer’s predisposition to respond, get involved, and interact with the brand (Hollebeek *et al.*, 2014). Despite being a pretty recent concept in marketing research, there are distinct definitions and measures of consumer brand engagement (Dessart *et al.*, 2016). From a practical point of view, engagement in social media is understood in terms of likes, shares, posting comments, and subscribers (Ashley and Tuten, 2015; Cheung *et al.*, 2022a). However, from a broader and more academic perspective, the concept of brand engagement is closer to this concept in the field of business or human resources, so it is defined as an attitude or behavioural intention that helps to connect with the brand and triggers an activity with positive repercussions for the brand (Gensler *et al.*, 2013).

The previous literature shows several antecedents of brand engagement (Liu *et al.*, 2019), and among the key ones is brand love (Joshi and Garg, 2021). However, although several studies focus on understanding the relationship between brand love and brand engagement (Sarkar and Sreejesh, 2014), there is a lack of scholarly agreement on the direction of this relationship, with each of them being considered as a consequence and an antecedent of the other, depending on the study (Machado *et al.*, 2019). This study proposes that brand love generates brand engagement based on the premise that deep, affective emotions towards a brand serve as catalysts for deeper and more meaningful consumer connections (Palusuk *et al.*, 2019). More specifically, brand love is understood as a strong emotional attachment, a desire for continuous interaction and a constant presence of the brand in the consumer’s life, which naturally translates into brand engagement.

Based on the above discussion, we state the following hypothesis:

H1. Brand love positively influences brand engagement.

2.3 Brand engagement and COBRAs

In the online environment, consumers can contribute to the value-creation process by maintaining an active attitude towards the brand (Rasool *et al.*, 2020). However, engaging consumers in brand-facing online activities is necessary to achieve this. Brand engagement is the key to involving consumers. Previous research indicates that engagement can create an emotional connection that promotes the development or influences the generation of consumer trust (Islam and Rahman, 2016a), satisfaction (Rather *et al.*, 2018), attachment (Islam *et al.*, 2019), eWOM (Islam and Rahman, 2016a), or brand loyalty (Islam *et al.*, 2018; Kaur *et al.*, 2020; Perez Benegas and Zanfardini, 2023). Although previous research has shown that engagement significantly impacts various consumer attitudes and behaviours (Islam and Rahman, 2016b for a review), and its relationship with variables such as loyalty is well documented, there is a lack of empirical research on its relationship with COBRAs.

However, although there is no previous evidence on the relationship between brand engagement and COBRAs, there are indications that such a relationship may exist. Hollebeek *et al.* (2019) show in their work that brand engagement leads to developing brand-related operational resources. This means that when engagement has been created with the brand, consumers are willing to put their knowledge and skills at the company’s disposal through deeds, processes, and actions for the company’s benefit. More concretely, consumers who experience engagement with the brand are more willing, for example, to buy more from the brand, to speak well of it, or to exhibit its use to others (Obilo *et al.*, 2021). Specifically, Wang *et al.* (2023) demonstrate that brand engagement directly and positively influences consumers’ intention to co-create with the brand. COBRA behaviours are based on these actions, supported by social exchange theory. According to this theory, consumers are expected to engage with a brand by consuming its content, sharing their thoughts, and creating positive content due to their affective-emotional connection with the brand. This idea is supported by other authors, such as Hollebeek (2011) or Verleye *et al.* (2014). This is seen as a cost-benefit exchange, where the customer is willing to spend time on these activities if the brand offers favourable experiences. Consequently, this paper postulates a positive relationship between brand engagement and the purpose of engaging in online brand-related activities.

Based on the above discussion, the following hypothesis is stated:

H2. Brand engagement is positively related to COBRAs.

2.4 Brand love and COBRAs

Brand love was previously defined as an attachment characterised by feelings of security, affection, and a desire to maintain proximity to the brand (Ghorbanzadeh and Rahehagh, 2020). This attachment leads to a greater willingness to interact and participate in activities that reinforce the connection with the brand. Active participation in online activities can motivate individuals to seek ongoing and meaningful interactions with the brand (Zhu *et al.*, 2023). Nevertheless, to date, there are no studies that demonstrate the relationship of brand love with COBRAs, although it is related to other variables that have a particular connection, such as positive word-of-mouth (WOM) (Karjaluoto *et al.*, 2016; Torres *et al.*, 2022) or eWOM (Iqbal *et al.*, 2021; Trivedi and Sama, 2021). This could be explained by the feelings mentioned above of attachment naturally leading to a greater willingness to interact and participate in activities that reinforce the connection with the brand.

Therefore, the following hypothesis is proposed:

H3. Brand love positively influences COBRAs.

Furthermore, this study assumes an indirect path based on what has been discussed. Combining the arguments of hypothesis 1 and hypothesis 2, this study proposes that brand engagement mediates the relationship between brand love and consumers' online brand-related activities. Brand love motivates brand engagement, which leads to higher engagement levels. Consumers who love a brand are likelier to maintain their engagement over time. Brand engagement creates an emotional bond between the brand and the consumer, fostering a solid relationship. This bond encourages consumers to actively engage with the brand and make extra efforts in its favour.

H4. Brand engagement mediates the relationship between brand love and COBRAs.

2.5 The moderating role of brand value

To the best of our knowledge, the previous literature has explained COBRAs under the direct and indirect effects of other variables (e.g. Cheung *et al.*, 2021b; Mishra, 2021; Mohammad *et al.*, 2020). However, it is well known that the explanation of consumer attitudes and behaviours is more complex. In many cases, the moderating intervention of other variables increases or decreases these effects. Consumer attitudes and behaviours are affected and/or modified by rational (utilitarian) and emotional (hedonic) components. For this reason, the valuation of the usefulness of the brand will intervene in the consumer's decision to engage in online activities concerning it.

Brand value is defined as the "overall assessment of the utility of a product based on perceptions of what is received and what is given . . . a cognitive trade-off of sacrifices and benefits which are associated with consumption practices" (Zeithaml, 1988, p. 14). Brand value is composed of utilitarian and hedonic dimensions so that, to determine brand value, the utility of the brand and its economic values are valued, as well as the affective aspect of the brand experience. From a utilitarian point of view, the perception of value for money is critical. However, nowadays, the hedonic value of the brand is of significant importance, which is related to creating an emotional connection with the consumer (Pashchenko *et al.*, 2022). This emotional part can be built on the discourse of the generated content. Messages written by the company or consumers because of the feelings stimulated by the object of the messages guide the perceptions of other consumers; they contain emotional statements and representations and encourage a positive mood, feelings, and tastes towards the company, the brand, the product, and the services (Wang *et al.*, 2017). This triggers positive feelings, such as the enjoyment, pleasure, and relaxation experienced when interacting with a brand (Kim *et al.*, 2012), evokes positive attitudes and affects consumers' decision-making. The existing evidence shows that achieving a strong emotional bond with the consumer is much more important than, for example, communicating the brand's unique selling propositions.

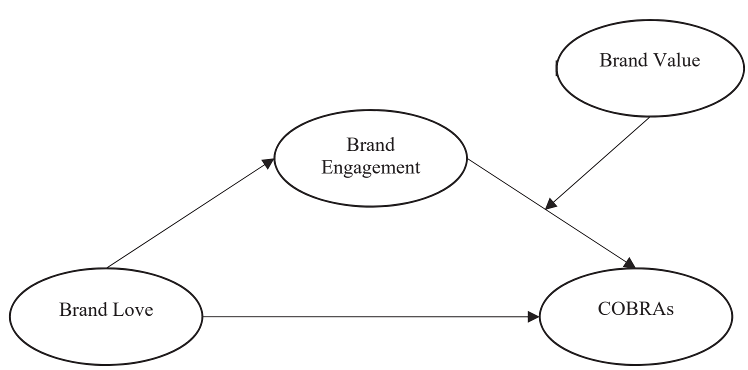
Consumer-perceived brand value has been recognised as a significant issue influencing consumers' relationships with brands offered by online retailers (Li *et al.*, 2012). At the same time, the previous literature demonstrates that perceived brand value is one of the most influential variables in predicting and influencing consumer behaviours (Luo *et al.*, 2020) such as consumer loyalty (Giovanis and Athanasopoulou, 2018a) or purchase and repurchase intention (Mayrhofer *et al.*, 2019).

Thus, based on the above arguments and even though the moderating effects of brand value have not previously been tested in studies related to COBRAs, positive emotions and values can be expected to shape consumer attitudes and behaviours. Namely, this study considers brand engagement and intention to perform COBRAs as behavioural responses evoked by an emotional reaction. In this way, it can be expected that consumers who positively value emotional content will vigorously experiment with brand engagement. If they perceive a considerable brand value, they will be more inclined to make an effort for the brand, in this case, by collaborating with COBRAs.

So, the following hypothesis is proposed:

H5. Brand engagement and brand value interact so that brand value moderates brand engagement to predict COBRAs.

Taken together, the whole research model is presented in Figure 1.



Source(s): Own elaboration

Figure 1. Proposed model

3. Research method

3.1 Sample and data collection

To ensure the data were collected effectively, a market research company was carefully selected for its extensive experience conducting similar studies in the relevant geographical area. With its assistance, the necessary data were collected from 404 Spanish consumers from the CINT panel. The CINT panel is a platform with one of the world's most prominent consumer networks for digital market research and is made up of millions of engaged respondents across more than 130 countries. The methodology used was a self-administered online interview (CAWI system). Within the panel, the participants' profiles were selected considering the variables of online food purchases and the availability of the social networks Facebook, Twitter, and Instagram. Subsequently, the selection of the panellists determined by these profiles was random. Finally, territorial quotas were used according to the Spanish Autonomous Community. A total of 1,428 panellists participated in the questionnaire. Of these, 404 completed the survey successfully; 841 said they did not buy from any of the websites/companies considered; and 183 dropped out before the end of the interview. The responses were collected in January 2022.

The sample size was established, taking two factors into account. On the one hand, the Digital Global Overview Report 2022 elaborated by Hootsite and We Are Social estimates that the Spanish population using social networks –the first condition for responding to the survey – is 41 million. On the other hand, if an error similar to reference studies in this field of between 5 and 8% is assumed, the sample should have between 150 and 385 respondents. Therefore, this study assumes an error of 4.78% for its sample of 404 consumers. Finally, this research uses a sample size similar to that of other published studies on the main topic of the study. For example, Cheung *et al.* (2022a) used a sample of 263 consumers, Wei *et al.* (2022) 390 users, and Schivinski *et al.* (2022) 414 consumers.

Respondent participation was voluntary, and the respondents were assured of the confidentiality of their information. Table 1 presents the characteristics of the survey sample. Of the respondents, 49.3% were male, and 50.7% were female. Regarding age, 31.2% of the respondents were between 16 and 29, 44.6% were between 30 and 44, 21.8% were between 45 and 64, and 2.5% were 65 or older. Regarding educational level, 55.7% of the participants had completed tertiary education, 28% had completed technical or vocational education beyond the secondary school level, 14.1% had completed secondary education, 1.2% had completed primary education, and 0.7% had no formal education.

Gender	(%)	Age	(%)	Educational level	(%)	Social network profile	(%)	Hours spent on social networks	(%)
Male	49.3	16–29 years	31.1	Primary education	1.2	Facebook	84.2	>0–2	34.2
Female	50.7	30–44 years	44.6	Secondary education	14.2	Twitter	71.8	>2–4	28.2
		45–64 years	21.8	Technical or vocational education	28.0	Instagram	86.9	>4–6	16.3
		>65 years	2.5	Tertiary education	55.7			>6	21.3
				No formal education	0.7				
				No answer	0.2				

Source(s): Own elaboration

Table 1. Characteristics of the survey sample

Concerning social networks, 84.2% of the respondents had a profile on Facebook, 71.8% on Twitter and 86.9% on Instagram, and they reported spending an average of 5.57 h per day on their social networks, with 34.2% spending up to 2 h on social networks, 28.2% between 2 and 4 h, 16.3% between 4 and 6 h, and 21.3% more than 6 h.

3.2 Measures

The measurement scales for the constructs were taken from scales validated in the previous literature. The surveyed consumers responded using a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree) to indicate the extent to which they agreed or disagreed with each statement describing their attitudes and behaviours. The measurement items for brand love were retrieved from Giovanis and Athanasopoulou (2018b), who adapted the scales from Heinrich *et al.* (2012) and Cho *et al.* (2015). The measurement scale for brand engagement was taken from Kim and Johnson (2016). The scale to operationalise COBRAs was adopted from Schivinski *et al.* (2016). Finally, brand value was measured with the scale retrieved from Manimont *et al.* (2022).

The survey was administered in Spanish. The measurement scales used in the model's constructs were initially composed in English and subsequently underwent a translation procedure employing the methodology suggested by Brislin (1986). Table A1 in the Appendix summarises the indices of the scales used and their factor loadings, weight and VIF. Cronbach's alpha, composite reliability (CR), and Rho_A confirmed an acceptable internal consistency of the measurement scales, and convergent validity was also established (Table 2). Tables A2 and A3 in the Appendix show the discriminant validity test. All previous results indicate that all the variables are statistically unique, and our measurement model fits the data nicely.

4. Results

A conditional process model is estimated to test the study's hypotheses, which include mediating and moderating effects. Specifically, the model 14 of Hayes, a moderated mediation model. This model proposes that brand love affects COBRA directly and indirectly through brand engagement. In addition, the indirect effect is expected to be conditional or dependent on the level of brand value, a variable that would act as a moderator.

The results of the estimation of this model, following the methodology proposed by Hayes (2022), are shown in Table 3.

	Mean	SD	Cronbach's alpha	CR	Rho_A	AVE
Brand love	5.542	1.048	0.925	0.938	0.925	0.655
Brand commitment	5.614	1.178	0.794	0.907	0.796	0.829
Brand intimacy	5.444	1.170	0.859	0.914	0.859	0.780
Brand passion	5.567	1.109	0.848	0.908	0.849	0.767
Brand engagement	5.524	1.103	0.895	0.919	0.898	0.656
COBRA	5.213	1.280	0.969	0.972	0.969	0.670
Contribution	5.246	1.322	0.931	0.946	0.933	0.744
Consumption	5.240	1.306	0.906	0.930	0.906	0.726
Creation	5.152	1.416	0.935	0.948	0.935	0.754
Brand value	5.524	1.037	0.867	0.904	0.872	0.654

Note(s): SD: Standard Deviation; CR: composite reliability; AVE: average variance extracted
Source(s): Own elaboration

Table 2. Descriptive measures, reliability estimates and convergent validity

The results of the model estimation show that brand love is a significant predictor of brand engagement ($a = 0.743$, $p < 0.01$) and this variable, in turn, is a significant predictor of COBRA ($b = 0.453$, $p < 0.01$). A positive and significant direct effect of brand love on COBRA is also observed (c' = 0.549, $p < 0.01$). In addition, a positive and significant coefficient associated with the interaction term is obtained ($b_3 = 0.063$, $p < 0.01$), which is the first evidence of moderation by the brand value variable. We can conclude that brand love positively affects COBRA, both directly and indirectly, through brand engagement. Moreover, the indirect effect is not fixed or unconditional but depends on the level of brand value.

The Johnson-Neyman approach is used to test the interaction. Table 4 estimates the brand engagement-COBRA effect for different brand value moderator variable values, significance levels, and confidence intervals. The region of significance for this effect is marked by the

Table 3. Model coefficients for the conditional process model

	Consequent					
		M (BE)			Y (COBRAs)	
Antecedent	Coeff.	SE	*p*	Coeff.	SE	*p*
Constant	−4.114	0.210	<0.01	2.115	0.331	<0.01
X (BL)	0.743	0.037	<0.01	0.549	0.594	<0.01
M (BE)	–	–	–	0.453	0.064	<0.01
W (BV)	–	–	–	0.049	0.069	0.475
MxW	–	–	–	0.063	0.024	0.010
	$R2 = 0.497$, F (1, 402) = 397.399; $p < 0.01$			$R2 = 0.590$, F (4, 399) = 143.739; $p < 0.01$		

Source(s): Own elaboration

Table 4. Conditional effect of brand engagement at values of the brand value

Brand value	Effect	SE	*t*	*p*	LLCI	ULCI
1.200	0.182	0.112	1.632	0.104	−0.037	0.402
1.490	0.200	0.106	1.892	0.059	−0.008	0.408
1.568	0.205	0.104	1.966	0.050	0.000	0.410
1.780	0.218	0.100	2.178	0.030	0.021	0.416
2.070	0.237	0.095	2.493	0.013	0.050	0.423
2.360	0.255	0.090	2.839	0.005	0.078	0.431
2.650	0.273	0.085	3.217	0.001	0.106	0.440
2.940	0.291	0.080	3.626	0.000	0.133	0.449
3.230	0.309	0.076	4.064	0.000	0.160	0.459
3.520	0.327	0.072	4.526	0.000	0.185	0.470
3.810	0.346	0.069	4.999	0.000	0.210	0.481
4.100	0.364	0.066	5.470	0.000	0.233	0.494
4.390	0.382	0.065	5.918	0.000	0.255	0.509
4.680	0.400	0.063	6.320	0.000	0.276	0.524
4.970	0.418	0.063	6.655	0.000	0.295	0.542
5.260	0.436	0.063	6.908	0.000	0.312	0.560
5.550	0.454	0.064	7.072	0.000	0.328	0.581
5.840	0.473	0.066	7.149	0.000	0.343	0.603
6.130	0.491	0.069	7.151	0.000	0.356	0.626
6.420	0.509	0.072	7.092	0.000	0.368	0.650
6.710	0.527	0.075	6.989	0.000	0.379	0.675
7.000	0.545	0.080	6.855	0.000	0.389	0.702

Source(s): Own elaboration

value 1.568 on the brand value scale. When the brand value is lower than this value, the effect of brand engagement is not significant; however, above this value, the effect is positive and increases, reaching 0.545 at the end of the scale (when the brand value is equal to 7).

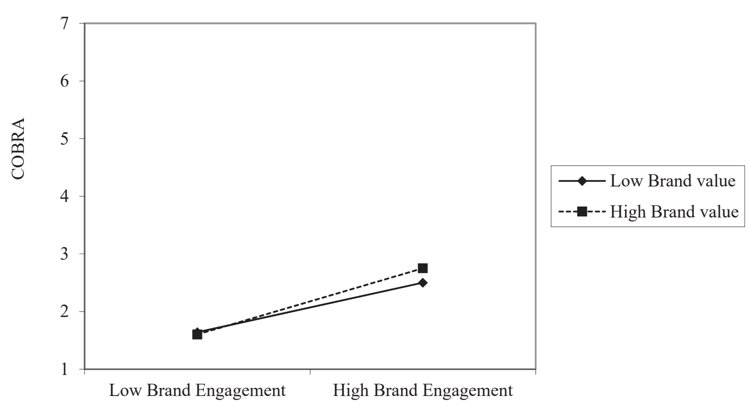
The graph in Figure 2, obtained following the process proposed by Dawson (2014), confirms this interpretation and shows a positive slope in the relationship between brand engagement and COBRA for the two groups of consumers with low and high brand value. However, the slope is sharper in the second case.

Additionally, to test the moderation of the mediation and following the recommendations of Hayes (2022, p. 515), a pick-a-point procedure is followed, which consists of "choosing values of the moderator, quantifying relative conditional indirect effects at those values, and then conducting an inference about those relative conditional indirect effects". Table 5 shows the conditional indirect effects of brand love for relatively low ($W = 4{,}600$, the 16th percentile), moderate ($W = 5{,}600$, the 50th percentile), and relatively high values of brand value ($W = 6{,}600$, the 84th percentile). The 95th bootstrap confidence intervals for these effects are entirely above zero, so not only can we say that this indirect effect is moderated by brand value and is more robust as the moderator reaches higher values, but also that this effect is significantly different from zero for these three values. Finally, Table 5 also shows another test of the moderator effect, with a confidence interval for the index of moderated mediation that does not include the value zero.

Overall, the data support hypotheses H1, H2, H3, H4 and H5, reflecting a moderated mediation model. The analyses performed indicate that: (1) as consumers show greater love for the brand, they show greater engagement; (2) engagement is positively related to COBRA; (3) the latter relationship is not unconditional but is dependent on the degree of brand value; and (4) brand love is an essential antecedent of COBRA, either directly or indirectly, and the level of perceived value modulates part of its effect.

5. Discussion

This research improves our understanding of the factors that motivate consumers to engage in online brand-related activities (COBRAs) by examining the relationship between brand love and COBRAs, emphasising brand engagement as a mediator. It investigates the nuanced role of brand value as a conditional factor, providing insights into the specific circumstances in which consumers are more likely to engage in COBRAs. In addition, this study contributes



Source(s): Own elaboration

Figure 2. Conditional effects of brand engagement on COBRA: two-way interaction effects for unstandardised variables

Direct effect of brand love on COBRA					
Effect	SE	t	p	LLCI	ULCI
0.549	0.059	9.246	<0.01	0.432	0.666

Conditional indirect effects of brand love →brand engagement→COBRA				
	Effect	BootSE	BootLLCI	BootULCI
4.600*	0.293	0.071	0.166	0.447
5.600	0.340	0.074	0.206	0.500
6.600	0.386	0.081	0.237	0.562

Index of moderated mediation (moderator: brand value)				
	Index	BootSE	BootLLCI	BootULCI
Brand value	0.046	0.019	0.005	0.081

Note(s): *Moderator values are the 16th, 50th, and 84th percentiles
Source(s): Own elaboration

Table 5. Direct and indirect effects of brand love on COBRA

significantly to the existing body of knowledge by expanding current theoretical frameworks and introducing new perspectives on consumer-brand interactions in the digital domain.

5.1 Theoretical contributions

The present study adds to the knowledge of online brand-related activities by providing new insights into the interrelationships among consumer brand love, brand engagement, COBRAs, and brand value.

This study is possibly the first to test the relationship between brand love and COBRAs using brand engagement as a mediator, but, most importantly, using a moderation analysis, in this case, for the effect of brand value. COBRAs have recently emerged as an essential concept among practitioners and academics, and theoretical progress is still underdeveloped. From a day-to-day point of view, it seems to be assumed that consumers are increasingly taken into account and play an active role in the communication by companies, products, and brands; however, from an academic point of view, little has been explained about how and when consumers perform COBRAs. The majority of the studies around this concept are focused on the impact of four motivational factors – entertainment, information seeking, social interaction and reward – on the performance of COBRAs (Cheung *et al.*, 2022a, b; Nastisin *et al.*, 2022), with, from time to time, some modifications being introduced. For example, Cheung *et al.* (2021b) include customisation and trendiness instead of information seeking and reward. Buzeta *et al.* (2020) add two more variables – personal identity and empowerment – to these four variables. However, these studies have barely considered variables related to brand perception or the more attitudinal variables of consumers. To our knowledge, only three studies have analysed this type of variable about COBRAs. Schivinski *et al.* (2022) find that consumer-based brand equity, composed of brand awareness, brand associations, perceived quality and brand loyalty, positively affects a consumer's intention to engage in COBRAs. Previously, in another study, some of these authors had demonstrated a positive relationship between brand image, brand equity and COBRAs (Schivinski *et al.*, 2020). From the perspective of consumer attitudes, Majeed *et al.* (2022) demonstrated that consumer satisfaction is an antecedent of COBRAs. Our study partially fills the research gap by examining the underlying mechanism that compels consumers to consume, share, and create online content about a brand, which is a crucial strategy in the era of interactive marketing in general and corporate communication strategy in particular.

Thus, this research significantly advances the literature on consumers' online brand-related activity in four essential ways. First, it considers two relatively new marketing variables: brand love and engagement. As previously mentioned, the studies that consider COBRAs as a dependent variable have not considered these two variables. Therefore, on the one hand, it broadens our knowledge about the motivations for consumers to perform online activities related to a brand, and, at the same time, it responds to calls for research on specific questions related to these two variables (Martins Rebouças Nery *et al.*, 2021).

Second, this is the first study to explore brand love as a predictor of COBRAs in a context such as the food industry; this variable can directly affect or act indirectly through the brand engagement variable. So far, to the best of our knowledge, only one study has explicitly considered brand love as a motivation for interacting with brands on social media (Vale and Fernandes, 2017). This study demonstrated that brand love is one of the main drivers of COBRAs in sports teams' social networks. However, despite the demonstrated importance of these variables, in the study by Vale and Fernandes (2017), they are diluted amid other motivational factors more related to personal motivation. Hence, the present study provides new empirical evidence of the critical relationship between these two variables. In the context of food companies, the results show that brand love drives increased brand engagement and intention to support the brand by engaging in online activities.

Third, this study adds to the literature by demonstrating that brand engagement is an essential driver of COBRAs. This study is one of the first, in this context, to assimilate the engagement variable to how this variable is considered in the organisational context (Gensler *et al.*, 2013; Ndhlovu and Maree, 2022). That is, it is not measured in terms of social interaction with the brand (Ashley and Tuten, 2015; Cheung *et al.*, 2022b; Schaefers *et al.*, 2021) but as a perception of connection with the brand by the consumer (Cheung *et al.*, 2021c; Wang *et al.*, 2023). As for the results, to the best of our knowledge, this study is the first to demonstrate a direct and positive relationship between brand engagement and COBRA. However, the results are in line with those of previous research. For example, Wang *et al.* (2023) demonstrated that brand engagement influences consumer continuance intentions, that is, the intention to participate in the brand community. Moreover, by considering it as a mediator, the study responds to calls by Martins Rebouças Nery *et al.* (2021) for analyses and comprehension of the antecedents and consequences of this variable.

Finally, this study supports the moderating role of brand value regarding brand engagement and COBRAs. This study thus shows that consumers are more likely to engage in online brand activities when the brand value is high for them. This is the only study to have found and analysed this result. Previous studies (e.g. Chuenban *et al.*, 2021) have analysed the mediating influence, but this has never been analysed concerning COBRAs. However, a previous work studies the relationship of brand equity with COBRAs (Schivinski *et al.*, 2020), and this variable shares certain similarities with brand value (Leite, 2022). This supports the argument that consumers' positive emotions and values experienced about a brand will shape their attitudes and behaviours.

5.2 Managerial implications

These research findings have valuable practical implications for marketers. First, by revealing the significant impact of brand love on consumer online brand-related activities, the study suggests that marketing managers should implement strategies to help induce consumers to experience a feeling of desire and a wish to belong to the brand. They can achieve this by working on the brand experience in such a way as to evoke positive feelings and associations, that is, to build an emotional connection. To this end, companies could use emotionally meaningful imagery and messaging. In general, they should take action to connect with consumers personally.

Secondly, the study shows that brand love, in turn, affects consumers' engagement with the brand and, therefore, their propensity to become brand advocates. Creating a positive customer experience can improve brand engagement and love. Companies should work on their customer journey map. This includes ensuring customers have a seamless experience across all touchpoints, from browsing products to post-purchase support. Furthermore, companies must personalise the customer experience by leveraging customer data to provide customised recommendations and offers (Badenes-Rocha *et al.*, 2022; Farías *et al.*, 2022). Likewise, companies can improve their engagement by leveraging influencer marketing (Barbosa and Añaña, 2023; Pérez-Cabañero *et al.*, 2023) and gamification (Bitrián *et al.*, 2023).

Since brand value has been demonstrated to have a moderating influence, marketers must work on what they deliver to the consumer. Thus, they must consider, among other things, product quality and value for money and the emotional aspects linked to the brand. Brand value depends on product quality. To this end, companies should work on objective quality related to standards and subjective quality. Furthermore, they must work adequately on their value proposition by developing a clear brand purpose, values, and personality and creating a unique brand voice and visual identity, ultimately standing out from competitors. In this sense, to improve the perception of brand value, the company can also get involved in practices related to sustainability or corporate social responsibility (Andersson *et al.*, 2022; Martínez and Castro-González, 2023).

6. Conclusions

This study develops a theoretical and empirical framework to explore the linkage between brand love and COBRAs through brand engagement practices and under the condition of brand value. It demonstrates how and when consumers respond to online brand-related activities by feeling brand love. This study expands on previous research by revealing the mediating role of brand engagement between brand love and COBRAs and the moderating role of brand value on the relationship between brand engagement and COBRAs. All the proposed hypotheses are confirmed based on data collected from 404 Spanish consumers. Thus, the study's findings contribute to the existing research on explanations of the phenomenon under investigation. Lastly, this study suggests some practical implications and directions for future research.

6.1 Limitations and future lines of research

Although the research offers significant insights into the COBRAs literature, some limitations still exist that need to be addressed by future researchers. First, the data are cross-sectional, so the results should be interpreted cautiously. Future studies could adopt longitudinal research to better explain the mechanism behind the evolution of online brand-related activities. Second, the model was tested with Spanish consumers, so future research could include a cross-cultural or comparative study. Finally, the survey refers to a specific category of product, food. It may be that the effects of the studied variables in other product categories and industries differ.

Nevertheless, in addition to work to overcome these limitations, the study's results open up new avenues of research. Complementing the study with a qualitative analysis would be interesting to understand consumers' opinions and reactions to a brand. Also, future work should consider new COBRA antecedents of COBRAs and analyse in depth what role emotions play in content generation and whether they impact the type of content generated.

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Appendix

Items	Factor loadings	Factor weights	VIF
Brand love (Giovanis and Athanasopoulou (2018a, b), *who adapted the scales from* Heinrich *et al.* (2012) *and* Cho *et al.* (2015))			
Brand commitment			
I have solid support for this brand	0.915	0.563	1.766
I am committed to this brand	0.906	0.535	1.766
Brand passion			
I am passionate about this brand	0.891	0.386	2.251
This brand is a captivating brand	0.852	0.367	1.863
I am enthusiastic about this brand	0.884	0.388	2.158
Brand intimacy			
Most of the time I feel very close to this brand	0.876	0.373	2.093
There is a close connection between me and this brand	0.885	0.374	2.207
There is a certain intimacy between me and this brand	0.888	0.385	2.204
Brand engagement (Kim and Johnson, 2016)			
I would like to talk about this brand with others	0.791	0.192	2.061
I am interested in learning more about this brand	0.789	0.189	2.151
I would be interested in other products offered by this brand	0.796	0.190	2.265
I would be proud to have others know that I use this brand	0.847	0.220	2.484
I like to visit the website for this brand	0.803	0.215	2.382
I would closely follow news about this brand	0.829	0.228	2.609
COBRA (Schivinski *et al.*, 2016)			
Consumption			
I read posts related to this brand on social media	0.853	0.230	2.510
I read fan page(s) related to this brand on social networking sites	0.870	0.238	2.718
I watch pictures/graphics related to this brand	0.852	0.234	2.405
I follow blogs related to this brand	0.847	0.237	2.335
I follow this brand on social networking sites	0.837	0.235	2.224
Contribution			
I comment on videos related to this brand	0.870	0.200	3.105
I comment on posts related to this brand	0.873	0.197	3.260
I comment on pictures/graphics related to this brand	0.886	0.201	3.538
I share this brand related posts	0.883	0.200	3.256
I "Like" pictures/graphics related to this brand	0.818	0.178	2.823
I "Like" posts related to this brand	0.843	0.182	3.084
Creation			
I initiate posts related to this brand on blogs	0.845	0.186	2.739
I initiate posts related to this brand on social networking sites	0.892	0.201	3.710
I post pictures/graphics related to this brand	0.878	0.193	3.536
I post videos that show this brand	0.858	0.185	3.130
I write posts related to this brand on forums	0.856	0.191	2.851
I write reviews related to this brand	0.878	0.195	3.185

(*continued*)

Table A1.
Items, factor loadings, and VIF

Table A1.

Items	Factor loadings	Factor weights	VIF
Brand value (Manimont *et al.*, 2022)			
This food brand has reasonable prices	0.760	0.242	1.652
Considering what I would pay to experience this food brand, I will get much more than my money's worth	0.845	0.279	2.173
The cost of buying this food brand are a bargain relative to the benefits I receive	0.808	0.216	2.049
Buying this food brand is economical	0.811	0.258	1.962
Buying this food brand is a good deal	0.816	0.240	2.031

Table A2. Discriminant validity: Fornell-Larcker criterion

	Brand love	Brand love Brand commitment	Brand love Brand intimacy	Brand love Brand passion	Brand engagement	Brand value	COBRA	COBRA contribution	COBRA consumption	COBRA creation
Brand love	*0.809*									
Brand commitment	0.876	*0.911*								
Brand intimacy	0.920	0.707	*0.883*							
Brand passion	0.930	0.754	0.764	*0.876*						
Brand engagement	0.707	0.619	0.675	0.776	*0.810*					
Brand value	0.712	0.643	0.634	0.669	0.776	*0.809*				
COBRA	0.730	0.582	0.737	0.650	0.699	0.622	*0.818*			
COBRA contribution	0.741	0.610	0.729	0.666	0.714	0.636	0.968	*0.863*		
COBRA consumption	0.665	0.552	0.667	0.582	0.640	0.567	0.938	0.886	*0.852*	
COBRA creation	0.666	0.493	0.697	0.595	0.630	0.563	0.943	0.863	0.809	*0.868*

Note(s): Fornell-Larcker Criterion: Diagonal elements (italic) are the square root of the variance shared between the constructs and their measures (AVE: average variance extracted). Off-diagonal are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements
Source(s): Own elaboration

Table A3.
Discriminant validity: Heterotrait-Monotrait ratio (HTMT.90 and HTMTInference)

	Brand love	Brand love Brand commitment	Brand love Brand intimacy	Brand love Brand passion	Brand engagement	Brand value	COBRA contribution	COBRA consumption
Brand love Brand intimacy		0.854 CI[0.762; 0.928]						
Brand love Brand passion		*0.919* CI[0.860; 0.969]	0.895 CI[0.822; 0.946]					
Brand engagement	0.776 CI[0.677; 0.845]	0.733 CI[0.619; 0.826]	0.769 CI[0.677; 0.837]	0.725 CI[0.614; 0.808]				
Brand value	0.794 CI[0.696; 0.867]	0.774 CI[0.667; 0.864]	0.732 CI[0.619; 0.822]	0.780 CI[0.679; 0.855]	0.881 CI[0.825; 0.825]			
COBRA	0.770 CI[0.697; 0.827]	0.662 CI[0.563; 0.743]	0.808 CI[0.741; 0.862]	0.716 CI[0.628; 0.789]	0.744 CI[0.666; 0.805]	0.675 CI[0.567; 0.756]		
COBRA contribution	0.800 CI[0.729; 0.855]	0.713 CI[0.616; 0.789]	0.816 CI[0.747; 0.873]	0.752 CI[0.667; 0.819]	0.780 CI[0.703; 0.838]	0.708 CI[0.605; 0.788]		
COBRA consumption	0.726 CI[0.645; 0.797]	0.650 CI[0.543; 0.742]	0.756 CI[0.675; 0.823]	0.664 CI[0.677; 0.845]	0.703 CI[0.564; 0.749]	0.636 CI[0.524; 0.728]	*0.963* CI[0.935; 0.84	
COBRA creation	0.715 CI[0.636; 0.781]	0.570 CI[0.465; 0.662]	0.777 CI[0.703; 0.839]	0.667 CI[0.574; 0.747]	0.682 CI[0.596; 0.751]	0.621 CI[0.512; 0.707]	*0.923* CI[0.880; 0.955]	0.878 CI[0.815; 0.922]

Note(s): Fornell-Larcker Criterion: Diagonal elements (italic) are the square root of the variance shared between the constructs and their measures (AVE: average variance extracted). Off-diagonal are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements. HTMT ratio: the three results marked in italic indicate discriminant problems according to the $HTMT_{.90}$ criterion. $HTMT_{inference}$ does not indicate discriminant validity problems
Source(s): Own elaboration

About the authors

Sandra Castro-González, PhD Economics, and Business is an Associate Professor of the Business Organization and Commercialization Department at the University of Santiago de Compostela, Spain. Her research, which focuses on the response of consumers and sales forces to CSR, has been published in reputable journals such as Corporate Social Responsibility and Environmental Management, Sustainable Production and Consumption, Journal of Cleaner Production, Social Responsibility Journal, and Current Psychology. Notably, she has actively participated in numerous national and international conferences, demonstrating her commitment to sharing and advancing knowledge in her field. Sandra Castro-González is the corresponding author and can be contacted at: sandra.castro@usc.es

Belén Bande, an Associate Professor of Marketing at the University of Santiago de Compostela, Spain, is a highly regarded researcher in her field. Her current interests span sales management, corporate social responsibility, and business ethics. Her impactful research, recognized by its publication in prestigious international journals including Industrial Marketing Management, Journal of Business Research, Journal of Organizational Behavior, Journal of Personal Selling and Sales Management, Psychology and Marketing, European Management Journal, and European Journal of Marketing, is a testament to her expertise.

Pilar Fernández-Ferrín is an Associate Professor at the Faculty of Economics and Business, University of the Basque Country, UPV/EHU, Spain. Her interests span consumer purchasing behaviour of sustainable products (fair trade, local, traditional products, etc.), sales management, and human resource management. Her research articles have been published in a wide range of journals including Technovation, Industrial Marketing Management, Journal of Cleaner Production, Corporate Social Responsibility and Environmental Management, Journal of Business and Industrial Marketing, Food Quality and Preference, Journal of Product Innovation Management, European Management Review, and Management Letters/Cuadernos de Gestión, among others, reflect the depth and breadth of her expertise.

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Surprise me with the visual representation of the brand in social commerce! An eye-tracking study based on user characteristics

Francisco Muñoz-Leiva
Department of Marketing and Market Research, Faculty of Business and Economics, University of Granada, Granada, Spain; Sport and Health University Research Institute (iMUDS), Granada, Spain and Andalusian Institute for Research and Innovation in Tourism (IATUR), Universities of Granada, Granada, Spain

Doaa Herzallah
Open University of Catalonia, Barcelona, Spain

Ismael Ramón Sánchez-Borrego
Department of Statistics and Operational Research, University of Granada, Granada, Spain, and

Francisco Liébana-Cabanillas
Department of Marketing and Market Research, Faculty of Business and Economics, University of Granada, Granada, Spain and Andalusian Institute for Research and Innovation in Tourism (IATUR), Universities of Granada, Granada, Spain

Abstract

Purpose – This study examines the role of logotypes in advertising effectiveness on s-commerce platforms by analyzing the visual attention paid by the consumer to fashion branding – wordmarks or combination marks – and their subsequent recall.

Design/methodology/approach – The study examines the main areas of visual representation of the brand (VRB) on the Instagram network and the user's corresponding areas of interest on a mobile-device screen. Attention and recall of the VRB are assessed in light of different classification variables (users' gender, age and level of experience in s-commerce tools) to better understand how VRB may be leveraged by fashion retailers to encourage purchasing behavior. To achieve this objective, a mixed experiment design based on the eye-tracking methodology and a self-administered questionnaire is carried out.

Findings – The results indicate that visual attention, gender, age and s-commerce experience all contribute to determining users' recall of the brand logo to which they are exposed on-screen. By considering the different s-commerce user profiles that exhibit different visualization behaviors, fashion retailers will be better placed to improve their online advertising campaigns and, ultimately, increase brand sales. The findings also point to promising future research directions on the effectiveness of branding strategies.

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Originality/value – This highly innovative study provides in-depth insights into advertising effectiveness in terms of attention and recall, according to the main types of VRB for two specific s-commerce tools used by a high-street fashion brand, namely, its profile on Instagram Shop and its profile on Instagram Stories.

Keywords Eye-tracking, Gender, Age, Social commerce user experience, Banner position, Attention and recall, Visual representation of the brand

Paper type Research paper

1. Introduction

A growing number of businesses are now using social networks to promote their brands, sell their products, and extend their reach (Molina-Prados *et al.*, 2021). In 2023 alone, brands spent approximately US$270 billion on social media advertising (Nepal, 2024). Global sales generated via social networks were forecast to reach US$992 billion by 2022, marking a growth trend in this form of digital retail. Projections indicate that social commerce (s-commerce) sales are poised to soar to nearly US$2.9 trillion by 2026. S-commerce integrates e-commerce and social media, with its main idea centered on executing various commercial activities through online social networks (Shamim *et al.*, 2024; Herzallah *et al.*, 2024).

According to McLachlan (2020), 60% of individuals discover new products thanks to Instagram. Instagram Shopping has the highest average order value (US$65) of the four largest s-commerce platforms (rivaling Facebook, Pinterest, and Twitter) (Barnhart, 2021). Social networks facilitate the personalization of ads based on user profiles and are also able to increase engagement with the advertised brand. This helps build brand loyalty and enables marketers to reach their audiences more effectively (Lin *et al.*, 2019).

All forms of online advertising, whether static or dynamic, include various types of logos, such as combination marks, wordmarks, imagotypes, and so on, as part of the visual representation of the brand (VRB) in question. The VRB needs to effectively attract the consumer's attention, such that they remember it, whatever the medium, and this is an increasingly important objective for firms. Understanding how consumers' attention can best be attracted and how this affects their behavior—particularly in the context of social media—thus constitutes a topical research gap (Badenes-Rocha *et al.*, 2022).

Consequently, it is vital to measure the effectiveness of social network advertising, and especially the VRB, amid the intense competition for user attention and the online saturation that such advertising creates. Previous studies (e.g. Barreto, 2013; Muñoz-Leiva *et al.*, 2019; Hernández-Méndez and Muñoz-Leiva, 2015; Badenes-Rocha *et al.*, 2022) have attempted to determine whether social network users actually pay attention to the paid online ads to which they are exposed, or whether such advertising is ineffective due to so-called "banner blindness".

Yet, despite the rise of s-commerce, very few academic studies, to date, have evaluated advertising effectiveness in s-commerce—specifically in terms of the efficacy of different types of logos—in the shopping process conducted via mobile devices; and, it has yet to attract significant research interest in the fashion industry context. The goal of this study is therefore to identify the effects of certain socio-demographic variables and extent of user experience in s-commerce platforms on the advertising effectiveness of the VRB on social networks in this industry.

The present article aims to address this research gap through the following contributions: (a) providing a deeper and more comprehensive insight into the advertising effectiveness of the VRB (specifically, wordmarks and combination marks) for two specific s-commerce tools; (b) hypothesizing and empirically examining the influence of attention metrics, certain socio-demographic variables (such as gender and age), and extent of experience in using these s-commerce platforms on VRB recall; and, to achieve the three foregoing aims, (c) conducting an experiment using an infrared corneal reflection eye-tracking methodology combined with a self-administered questionnaire.

2. Theoretical background: justification of the research hypotheses

2.1 Logos: visual representation used in branding

The brand mark or logo plays a pivotal role in product and brand identification. Brand marks, featured in various channels and formats, serve as visual cues that aid in-store recognition, streamlining product selection and retrieval (Morrow, 1992). Additionally, branded giveaways such as pens or T-shirts often feature nothing but the company logo, highlighting the brand identity (Klink, 2003).

While the term "logo" is used generically, in fact, there are multiple logo formats, each with its own unique characteristics. Logos can be categorized into different types, including (Dolah *et al.*, 2021):

(1) Lettermark/monogram logos: acronyms or letters that indirectly allude to the full name of the business (e.g. HBO).

(2) Wordmarks: represent the full business name, product/service, or institution, without acronyms (e.g. Home Box Office).

(3) Combination marks/isologos: integrate symbols, words, images, or letters into a single inseparable image (e.g. Burger King).

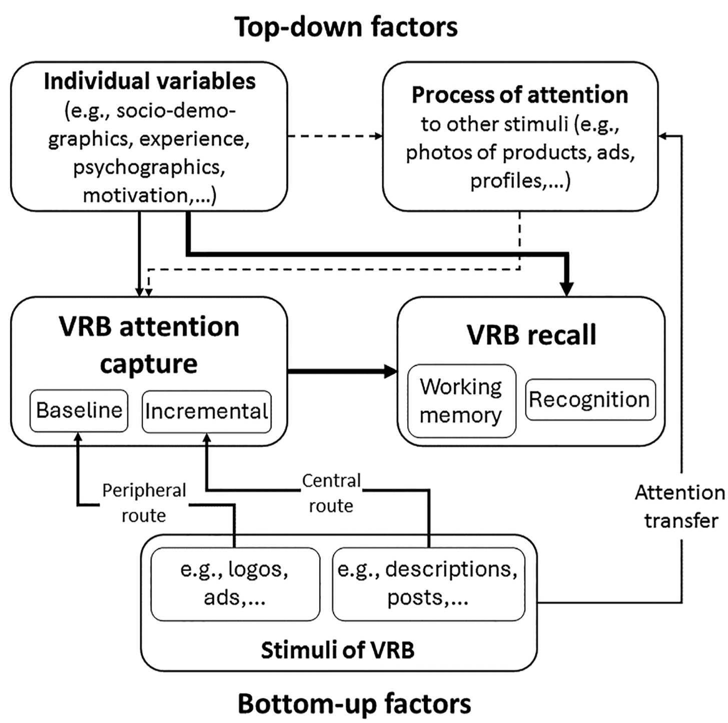
(4) Imagotypes: combine pictorial and textual components that can be used—and identified by consumers—separately (e.g. Nike).

This study seeks to identify the main determinants of recall—including visual attention—toward different types of logos pertaining to a well-known fashion brand. To fulfill this aim, it is first necessary to understand the process by which attention is captured and then transferred to the VRB.

2.2 The process of attention capture and transfer in s-commerce

Visual attention, memory, and recall are the mental processes that have attracted the most interest among studies that apply neuromarketing tools in the context of communication, along with emotions (Casado-Aranda *et al.*, 2023).

The proposed conceptual model in which the present study is contextualized is shown in Figure 1; it draws on preexisting information-processing and persuasion models, such as the



Source(s): Figure adapted from Pieters and Wedel (2004) and Petty and Cacioppo (1986). The main objectives of the present empirical study are represented with a thicker line

Figure 1. Determinants of VRB attention capture and recall in s-commerce

Elaboration Likelihood Model (ELM) proposed by Petty and Cacioppo (1986), and Pieters and Wedel's (2004) Attention Capture and Transfer by Elements of Advertisements (AC-TEA) model. This model helps us understand how individuals allocate their visual attention vis-à-vis different elements of the VRB in s-commerce tools, and how this attention translates into recall (see the mid-section of Figure 1).

Visual attention is a limited resource that the consumer must distribute among different stimuli present in the same medium. "Attention", in psychology, is defined as "the concentration of awareness on some phenomenon to the exclusion of other stimuli" (McCallum, 2024). According to Pieters and Wedel (2004), "[a]ttention capture enables higher-order cognitive functions to operate on more parsimonious and salient input" (p. 38, referencing LaBerge, 1995). Indeed, the previous literature has demonstrated that the effect of the consumer's goals on their behavior, their past experiences, their level of involvement with the object, their attitudes, and their emotions all usually derive from the higher cortical centers (Snyder *et al.*, 1991; Rayner and Castelhano, 2007).

One of the core hypotheses in eye-tracking research is the so-called eye–mind assumption. This hypothesis holds that there is a direct and immediate correlation between what humans are looking at, at a given point in time, and what they are cognitively processing (Just and Carpenter, 1980). That is, according to this assumption, whatever our eyes our looking at indicates what our mind is processing in real time (Pieters and Wedel, 2004). Cognitive psychology studies applied to reading-based tasks have shown that eye movements and fixations adjust dynamically in response to the degree of difficulty of the text. This supports the eye-mind assumption, as it suggests that the eyes move in response to the cognitive demands of textual content.

Turning to the ELM model, this explains how people process persuasive messages and suggests that the processing route (peripheral vs. central) adopted by the recipient depends on their motivation and ability to process the information contained therein. Generally speaking, the stimuli that make up a VRB tend to demand a low cognitive effort, and it can thus be assumed that they will be processed via the peripheral route, acting in their own right as cues that influence the receiver's attitude, attention, and subsequent recall of the brand. Other elements—such as descriptions, comments, or posts from other users—will be processed through the central route because these are more relevant and motivating stimuli. This route will entail thorough consideration of the message by the individual, thus rendering behavioral changes more likely. What is more, if the stimuli initiate a further process of attention paid to other elements within the scene, a process of attention-transfer will arise—as previously demonstrated by Pieters and Wedel (2004). Attention will thus be directed toward multiple other stimuli, such as the brand's products, models, competitor ads, other users' or brands' profiles, and so on.

In the proposed conceptual model (Figure 1), we can observe the two means by which visual attention is paid to an ad, as described by Pieters and Wedel (2004): (1) "bottom-up" factors, such as marketing stimuli, which determine its perceptual salience (such as the shape and size of a logo), and (2) "top-down" factors, such as the individual's search objectives, their particular traits or internal states (motivation, involvement with the brand or product, purchasing experience, and so on), and his or her attentional process. Anderson *et al.* (2015) contend that the person's socio-demographic characteristics (such as age, gender, or educational level) can also influence their attention patterns based on previous experiences and acquired knowledge, thus acting as top-down factors. Top-down elements encourage subjects to voluntarily pay more or less attention to stimuli that make up the VRB, such as logotypes, as well as to their pictographic and/or textual elements.

The voluntary process of controlling one's attention top-down—through the selective selection or suppression of the elements of a given scene or object, which, therefore exerts an effect on recall—requires greater effort and, generally, is much slower than in the case of involuntary control factors or influences (bottom-up) (Wedel and Pieters, 2008). Message storage involves connecting the information most recently encoded with that which was previously stored. Hence, it is only relevant, motivating, or otherwise new or striking content that will prompt the individual to invest mental resources in encoding and storage—and that will therefore be recognized and recalled subsequently.

2.3 Research hypotheses

2.3.1 The influence of visual attention on self-reported recall. This study investigates whether users' task-related selective attention during the shopping process is modified when the VRB appears on-screen (top-down mechanism), generating attention toward it and subsequent recall of it. Effectively capturing a viewer's interest is, of course, a primary goal of advertising. Active information-processing is a crucial first step toward drawing the consumer's attention toward an advertising message (Fishbein and Ajzen, 1975). Hence, attention plays a pivotal role in recognizing stimuli such as ads.

The relationship between visual attention toward an object, interest in that object, and behavior has been widely studied in the field of cognitive psychology and the behavioral sciences. Visual attention—understood as a person's cognitive and perceptual focus directed toward a specific object in a visual setting—has been described as a proxy for interest and preference, particularly when measured using eye-tracking (Badenes-Rocha *et al.*, 2022). Previous research suggests that objects that capture our visual attention also tend to generate greater interest, are more likely to be remembered and, consequently, are also more likely to influence our behavior and subsequent purchasing decisions (Posner and Petersen, 1990; Rayner and Castelhano, 2007). In particular, sustained attention paid to an object is associated with a higher likelihood of intentional behavior, such as purchase intention, reflecting the importance of attracting and maintaining consumer attention (Pieters and Wedel, 2004).

Various theoretical and empirical justifications support a correlation (e.g. Wedel and Pieters, 2000; Hernandez *et al.*, 2017), and even, an impact of attention on memory/recall (e.g. Bakalash and Riemer, 2013). Sanbonmatsu and Kardes (1988) posit that, when an individual happens to experience a high level of stimulation, they tend to focus more on peripheral (more superficial, less important) stimuli than central ones, as the former are easier for the brain to process. The degree of relevance of the task in question also influences the level of attention allocated to it by the individual and, consequently, its memorability.

After capturing the user's attention, the advertising message and brand will influence recall, as their cognitive processing will lead to the creation of storage mechanisms for the information displayed (Lee and Ahn, 2012). The extant research supports a positive relationship between the degree of visual attention the user pays to various kinds of ads and self-reported recall in different research contexts, as evidenced by studies conducted by Simola *et al.* (2013), Scott *et al.* (2016), Muñoz-Leiva *et al.* (2021), or Gómez-Carmona *et al.* (2021). Therefore, the following research hypothesis is proposed:

H1. Visual attention has a positive effect on self-reported recall of the VRB displayed in social commerce profiles.

2.3.2 The influence of gender. The relationship between the individual's gender and the visual attention they pay to an object or element, as well as their recall of it, has been the subject of previous studies from cognitive psychology and the behavioral sciences. In particular, research has shown that there are significant differences in how men and women process information visually and recall objects. These gender differences have major implications for the design of marketing and visual communication strategies.

The meta-analysis conducted by Voyer *et al.* (2007) shows that there are significant gender differences when it comes to object-identity memory and that these are consistently tipped in favor of women. For instance, in the aforementioned meta-analysis, it was found that women recalled specific details about the observed object, including common or geometrical objects. When it came to recall of masculine objects, the balance tipped in favor of males. Other research indicates that women are more sensitive to esthetic and design aspects than men, which affects their visual attention and, subsequently, their product recall (Meyers-Levy and Loken, 2015).

In specific contexts such as online shopping and advertising, Barreto's research (2013) indicated that women tend to notice more banners than men, yet there were no statistically significant differences between the genders in terms of the banner ads that were read and/or clicked. This aligns with the findings of Goodrich (2014), who found that women process information more holistically—paying attention to multiple elements simultaneously—which enables them to take in more contextual and emotional details. Delen and Ilter (2021) found that, in the case of products related to personal care or fashion, women presented greater attention and visual retention than men when images of female models were used. Other studies, such as that of Sørum (2018), have also shown that women are capable of recalling ads better than men.

Studies dealing with visual perception have shown that, compared to men, women present a stronger response to ads that convey emotions or contain visual elements related to stories or social contexts (Pieters and Wedel, 2004)—that is, ads that evoke a narrative connection (Goodrich, 2014). Men, in contrast, are more receptive to ads containing clear, direct messages, with less emphasis on the emotional context (Goodrich, 2014).

The study conducted by Meyers-Levy and Loken (2015) also finds that women have a greater tendency to process information more comprehensively, which implies greater attention to both the visual *and* narrative aspects of ads. It may therefore be that women's detailed and multisensory processing capacity contributes to better retention of logos on social networks. Furthermore, as social networks constitute spaces in which images are combined with narratives and emotions, women are likely to become more *involved* with those ads that bring images and textual elements together (Orth and Holancova, 2004), which, in turn, may lead to better retention not only of logotypes but also banners.

Building on these findings and H1, the following research hypothesis is proposed:

H2. Gender has an effect on recall of the VRB displayed in s-commerce profiles. Specifically, women are more likely to recall the VRB than men.

2.3.3 The influence of age. Typically, when websites are dominated or overshadowed by ads and text, visitors tend to spend less time on them; however, this trend is less prevalent among older users, who tend to stay for longer on sites that are ad-heavy. Thus, Website advertising may appeal more to older users. Similarly, Drèze and Hussherr (2003) find that, while adults and young people view the same number of zones on a page, the former focus more on those zones and fixate for longer.

One study, conducted by Djamasbi *et al.* (2010), revealed that young adults have a greater affinity for eye-catching visual elements and complex graphical interfaces on social media, while older users prefer simpler and clearer interfaces. Adult users have also been found to spend more time on websites containing ad content than their younger counterparts, according to Danaher *et al.* (2006), Drèze and Hussherr (2003), Hernández-Méndez and Muñoz-Leiva (2015), Yu *et al.* (2021), and Joseph *et al.* (2021). In contrast, younger users tend to make shorter visits to websites to perform their desired tasks, and their visual fixations on different areas of the screen are much briefer, including when they notice banner ads. Older users are therefore expected to present better logo recall than younger ones. In this context, the following research hypothesis is proposed:

H3. Age has a positive effect on recall of the VRB displayed in s-commerce profiles. Specifically, the older the person, the more likely they are to recall the VRB.

2.3.4 The influence of s-commerce experience. More experienced Internet users process website information faster than novices because they perform fewer fixations, scanning fewer regions and spending less time on each area. Yet, this does not imply that they are exposed any less to advertising stimuli than novice users (Drèze and Hussherr, 2003). Thorbjørnsen *et al.* (2002) found that novices are less likely to engage with online advertising because they prioritize content or tasks that are in harmony with the website's environment over marketing content. Consequently, experienced Internet users are expected to interact with advertising banners more frequently than novices. This pattern has been corroborated by other studies, such as Arenas *et al.* (2021), analyzing the Microsoft Word user interface with eye-tracking, Guo *et al.* (2021), investigating mobile news apps with eye-tracking, or Joseph *et al.* (2021), examining smartphone applications. Generally, users with greater technological proficiency find it easier to navigate technology services and products than those lacking such experience.

The present study is thus grounded on the premise that users with previous experience of purchasing on social networks (Herzallah *et al.*, 2022) will have a different recall than those who have no such experience (Kim and Noh, 2012). Therefore, the following research hypothesis is proposed:

H4. Previous experience of shopping via s-commerce has an effect on recall of the VRB displayed in s-commerce profiles. Specifically, users experienced in s-commerce are more likely to recall the VRB than novice users.

3. Methodology

3.1 Data collection and validity of the experiment

An eye-tracking experiment was conducted during the period April 26–May 25, 2022, in a university laboratory. The research participants were selected through quota sampling via phone or email from a predetermined list and were each compensated with €10 for their time. The final sample comprised 100 individuals aged 16 and above (mean = 35.01 years). Participants (all of whom were based in Granada in southern Spain) were then randomly assigned to one of four groups or quotas based on different permutations of male/female and age range (less than 44 and 45 or over), ensuring a representative sample that mirrored the demographics of the Instagram user population, which is characterized by a predominance of young women (We Are Social, 2021). The percentage distribution of sample participants by gender and age range was:

(1) Aged 16–34: 18% were male and 23% were female, totaling 41%.

(2) Aged 35–44: 13% were male and 18% were female, totaling 31%.

(3) Aged 45–55: 8% were male and 7% were female, totaling 15%.

(4) Aged 56 and above: 6% were male and 7% were female, totaling 13%.

Overall, 45% of participants were male, and 55% were female.

In the data-collection phase, once the participants had completed a shopping experience in the Instagram Shop or Instagram Stories, they completed an online survey via Google Forms to assess their opinions on s-commerce, as well as their attitudes and intention toward s-commerce and their logo recall.

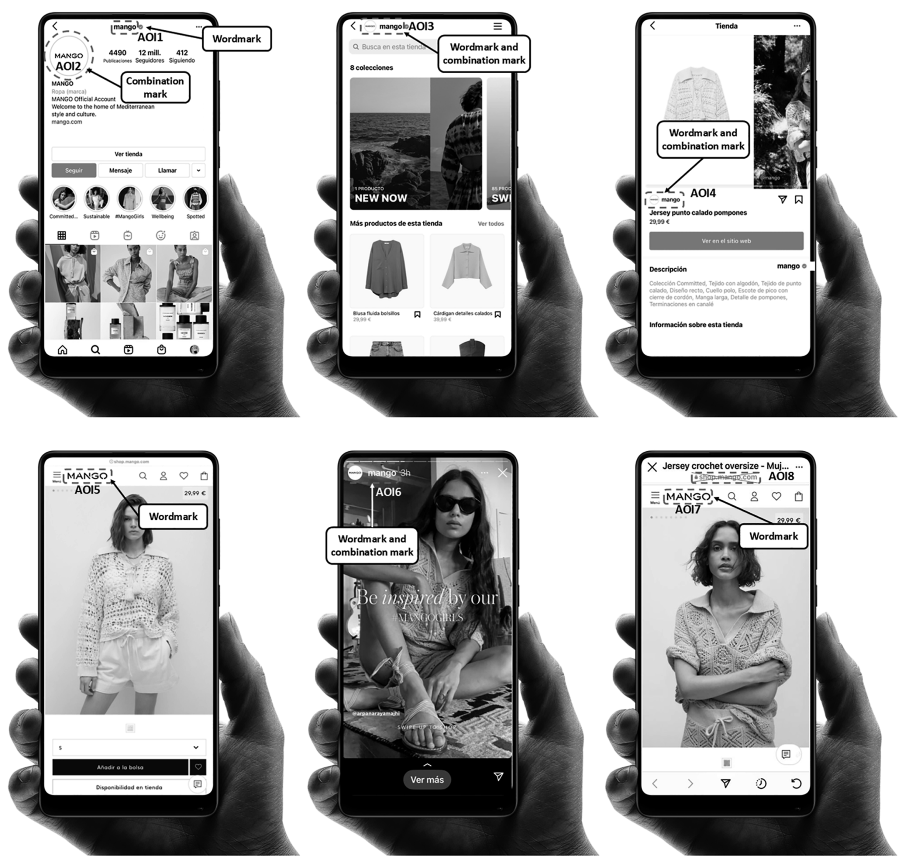
The laboratory was equipped with a laptop computer with Tobii Pro Lab v.1.130 software and linked to a Tobii Pro Nano eye-tracker. This system has an accuracy of 0.3° and a precision of 0.10° RMS (utilizing a built-in filter) under optimal conditions, with a sampling rate of 60 Hz.

To enhance the validity and generalizability of the experiment, two distinct s-commerce profiles were examined (the brand's "Instagram Shop" and "Instagram Stories"), and a sufficiently large sample size was chosen, ensuring that industry-relevant conclusions can be drawn.

3.2 Experiment design, metrics, and data analysis technique used

The true-experiment design was based on a mixed approach, blending different between-group comparisons (experimental groups, GE_i) with within-subjects analysis of repeated stimuli from different stages of the purchasing process, using gaze metrics (O_j). This design was chosen to conduct a random selection (*R*) of participants, controlling two independent variables (gender and age) that were of special interest for the dependent variable (recall), to ensure sample representativeness. Another independent variable, experience level, was also measured. No control group was used. In this way, this true-experiment design enabled between-groups comparisons to be made—two genders, four age ranges, and two experience levels—and cause–effect relationships between the variables to be identified.

The scenarios (scenario 1: Mango Shop; scenario 2: Mango Stories) were shown randomly (reading Figure 2 left-to-right and top-to-bottom, the first four images relate to scenario 1, and the final two images relate to scenario 2). That is, sometimes the experiment began with scenario 1, and sometimes with scenario 2, in no particular order. This precaution was taken to mitigate any possible effect of the sequence of presentation on the attention paid and recall of the scenarios. The overall experiment design and between-groups comparisons were thus as follows:



Source(s): Figure by authors

Figure 2. Visual areas of interest on the landing page and in the purchasing process in Instagram Shop and Instagram Stories for the Mango brand

$$GE1 : R\,O1\,O2\ \ldots\ /\ Oj+1\,Oj+2\ \ldots\ \left(n_{male}=45\,/\,n_{16\text{–}34}=41\,/\,n_{expert}=\ 47\right)$$

$$GE2 : R\,O1\,O2\ \ldots\ /\ Oj+1\,Oj+2\ \ldots\ \left(n_{female}=55\,/\,n_{35\text{–}44}=31\,/\,n_{novice}=\ 53\right)$$

$$GE3 : R\,O1\,O2\ \ldots\ /\ Oj+1\,Oj+2\ \ldots\ (n_{45\text{–}55}=15)$$

$$GE4 : R\,O1\,O2\ \ldots\ /\ Oj+1\,Oj+2\ \ldots\ (n_{56+}=13)$$

{Scenario 1 or 2}/{Scenario 2 or 1}

$$GE1-GE2\,(-GE3-GE4)\ = \textit{effect of classification variables} + \textit{effect of certain confounding variables}$$

The experimental procedure involved simulating the shopping process for the participant, from the fashion retailer Mango, via real-size images of a smartphone (6.5-inch screen). This online task simulated a browsing experience of Mango's Instagram profiles (see Figure 2), up to the point of reaching the simulated payment gateway.

Eye-tracking records and analyzes users' fixations to measure the attention they focus on specific areas of interest (AOI; see Figure 2): the wordmarks and combination marks of the Mango brand, located at the top of the screen. These visual elements were repeatedly displayed during the clothing-selection process and at the payment gateway, differing mainly in size and precise position. In total, seven AOIs were defined for this analysis: one wordmark (AOI1) and one combination mark (AOI2), displayed on the Instagram Shop landing page, two further AOIs comprising a wordmark next to a combination mark (AOI3 and AOI4), displayed during the purchasing process, and one wordmark appearing at the top of the "add to basket" window (AOI5); and, on the Instagram Stories landing page, one wordmark next to a combination mark (AOI6), and a wordmark displayed during the purchasing process (AOI7). One further area of the screen was initially identified as an AOI (AOI18), which related to a link to the company's e-commerce website (shop-mango.com) that appeared in small print at the top of the screen at certain points in the purchasing process. However, as this was not a logotype, it was eliminated from the analysis.

After defining the AOIs, various oculomotor parameters were established for each of them. The most widely-applied fixation metrics in the scholarly marketing literature were selected, namely: fixation count (FC), total fixation duration (TFD), fixation duration (FD), and time to first fixation (TFF), as employed by Hernández-Méndez and Muñoz-Leiva (2015), Muñoz-Leiva *et al.* (2019), Espigares-Jurado *et al.* (2020), and Badenes-Rocha *et al.* (2022), among others. Next, we present a brief description of each metric.

Many researchers contend that the overall significance or noticeability of an object leads to an increased number of fixations (FC) on it (Jacob and Karn, 2003). This study focused on FC within a specific AOI. However, due to the highly generic nature of this assessment, it needed to be supplemented with more specific metrics linked to information-processing (Holmqvist *et al.*, 2011; Jacob and Karn, 2003). Therefore, we also included TFF on the AOI (measured in seconds), FD (measured in milliseconds), and TFD (also measured in milliseconds).

TFD represents the total amount of time that an individual spends fixating on a given AOI. According to Unema *et al.* (2005), there is a pattern composed of an initial orientation phase followed by a more detailed examination of critical information, possibly indicating a distinction between ambient and focal processing modes.

Factors such as AOI size, task clarity, and foreground/background contrast of visual targets, among other parameters, can impact the TFF (Holmqvist *et al.*, 2011). For instance, it takes longer to notice or fixate on the specific visual elements under analysis (in this case, the Mango wordmark and combination mark) when there is more visual complexity on-screen. This particular example demonstrates the ability of some stimuli to capture users' attention and suggests a level of automatic processing with minimal awareness (Colorado *et al.*, 2015).

But, to be effective, advertising must not only captivate viewers' attention but also remain in their short- and long-term memory (Barreto, 2013). In the present study, banner recall was evaluated using an approach adapted from previous studies (Danaher and Mullarkey, 2003; Hernández-Méndez and Muñoz-Leiva, 2015; Muñoz-Leiva *et al.*, 2019). This was based on a single open-ended question for unaided recall, drawing on short-term working memory ("Please list the names of the brands you remember from your recent visit to Instagram"), followed by aided recall ("Which of these brands do you remember from the entire visit?"). In the latter case, participants were asked to choose from among different brands: Mango, plus other brands that were not used in the study. Finally, to arrive at the final score for recall, responses were rated as follows: three points were assigned when the individual recalled the Mango brand in response to both the open and closed questions; two points when they remembered it in response to one of those questions; and one point when they had no recollection of having seen it.

To test the research hypotheses, several multinomial regression model with backwise selection was used in *R* 4.1.1 computational software. Gender, age, and experience in the use of s-commerce tools were treated as independent variables or classification covariates in the extracted models. The frequency-of-use categories were: "never", "yes, sometimes, but in the past", and "yes, I regularly purchase via social networks, at least twice a year".

4. Results

4.1 Heatmaps by classification variable

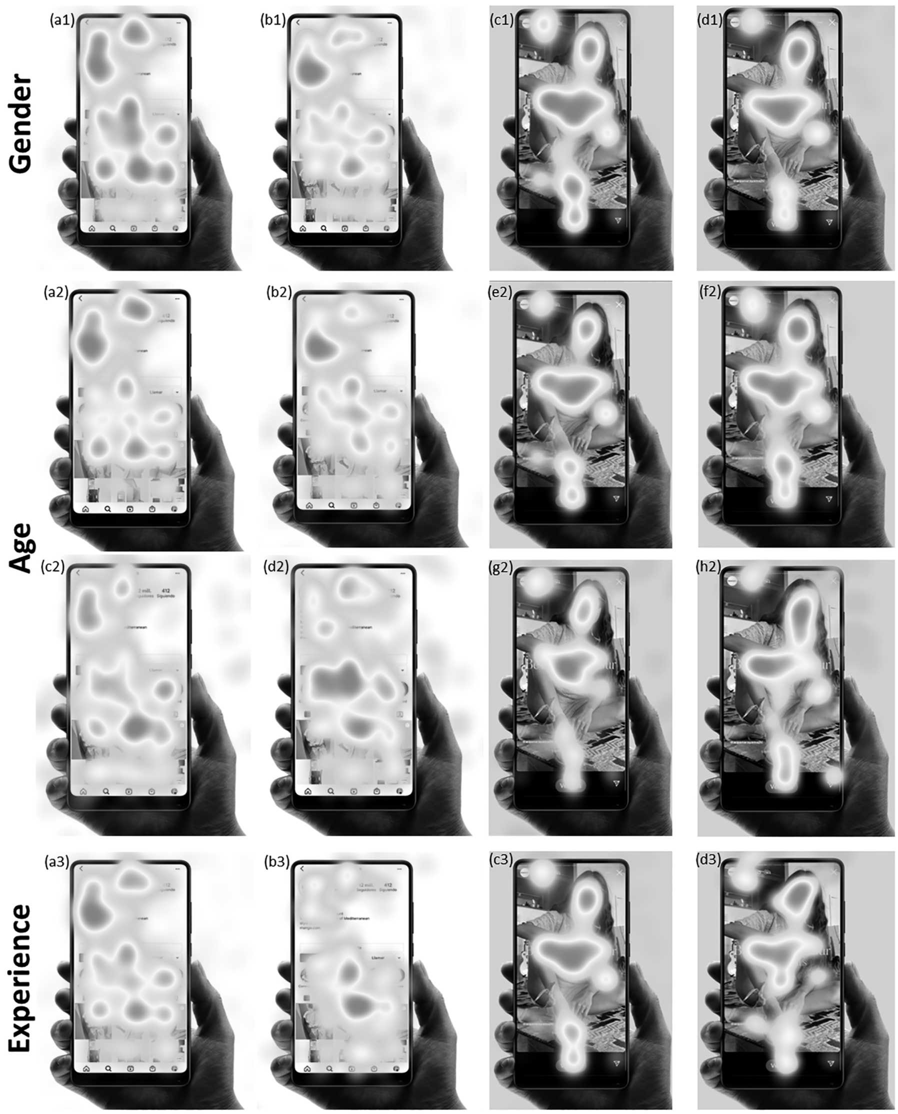
In the case of gender (Figure 3a1 and 3b1), analysis of Mango's Instagram Shop profile shows that men tend to focus on both types of brand marks (combination mark and wordmark), whereas women tend to focus more on the combination mark. In the case of age, analysis of Instagram Shop reveals that individuals aged 16–34 (Figure 3a2) exhibit a considerable focus on both types of brand marks, while those aged 35–44 (Figure 3b2) show a specific interest in the combination mark. However, individuals aged 56 or over (Figure 3d2) display a deep focus on the products themselves. Turning to the factor of s-commerce experience, the analysis shows that, experienced users (Figure 3a3) exhibit a significant focus on both types of brand marks, while novice users (Figure 3b3) tend to focus more on the products and less on the logos.

In the case of Instagram Stories (Figure 3c1 and 3d1), men demonstrate slightly greater interest in the brand logo than women; while both genders focus on the products, largely because, in the Stories format, the images used are fewer in number but larger in size. All age groups (Figure 3e2, 3f2, 3g2, and 3h2) behave similarly in focusing on the brand mark, and they also focus more on the garments themselves. And finally, both experienced and novice users again tend to concentrate on the products rather than the brand.

As expected, increasing the size of an ad element (such as a photograph of the garment) increased both its perceptual salience and its attentional demand, therefore detracting attention from other elements (such as logotypes).

4.2 Testing the research hypotheses

Turning to the multinomial regression for hypothesis testing, three models were extracted, for which the variable to be explained was recall of the Mango brand's logo in s-commerce. Model 2 involves the visual-attention independent variables TDF, FC, and TFF (hypothesis H1), while Model 3 includes classification covariates: gender (H2), age range (H3), and experience level (H4). Model 1 encompasses all the aforementioned independent variables.



Source(s): Figure by authors, using Tobii Pro Lab

Figure 3. Examples of heatmaps depicting fixation zones on Mango's Instagram Shop brand profile, and Instagram Stories, categorized by gender: male (a1 and c1) and female (b1 and d1); by age: 16–34 (a2 and e2), 35–44 (b2 and f2), 45–55 (c2 and g2), and 56 and above (d2 and h2); and by experience level: expert (a3 and c3) and novice (b3 and d3)

Table 1, and Table A1 and A2 (in the Appendix), present the regression results for models 1, 2, and 3, respectively. To evaluate the model fit, likelihood ratio tests were conducted, and unexplained variance and some Pseudo R-squared scores (R^2) were computed (Table A1 in the Appendix). Model 1 (Table 1) is deemed the most suitable as it considers more significant independent variables than the other models and explains a larger portion of the original variability.

Table 1. Logit coefficients, odds ratios and results of tests of hypothesis for Model 1

Category Variables	Partial brand recall (2) Logit coeff	Odds ratios	p	Full brand recall (3) Logit coeff	Odds ratios	p
Intercept	8.435	4607.4	<0.001	9.425	12397.6	<0.001
TFD	−0.001	0.999	<0.001	−0.001	0.999	<0.001
FC	0.499	1.647	<0.001	0.527	1.693	<0.001
TFF	−0.000	1.000	0.4600	−0.000	1.000	0.0366
Gender (Female[a])	2.059	7.838	<0.001	1.571	4.811	<0.001
Age group (35–44[b])	1.666	5.289	<0.001	0.720	2.055	<0.001
Age group (45–55[b])	19.705	361×10^6	<0.001	19.365	257×10^6	<0.001
Age group (over 55[b])	−16.451	0.000	<0.001	0.617	1.853	<0.001
Experience (Novice[c])	−9.977	0.000	<0.001	−8.016	0.000	<0.001

Note(s): [a]Category under reference: male[b]Category under reference: 15–34[c]Category under reference: experienced
Source(s): Table by authors, using *R* software

H1 proposes that visual attention positively influences self-reported recall of the brand mark/logo displayed. Keeping all variables constant, each time a participant looks at the brand logo (FC variable), they are 1.647 or 1.693 times more likely to partially or fully recall the brand, respectively, than not to recall it at all, according to the first model (Table 1). Similar outcomes are obtained for the second model (odds ratio = 1.628, $p < 0.001$; odds ratio = 1.687, $p < 0.001$; see Table A2). However, the effect of the TFF covariate on partial recall of the Mango brand (for a one-unit increase in TFF) is limited ($p = 0.46$); but it is significant in the case of full recall ($p = 0.0366$). As the effect of TFD was not significant in the extracted models, this variable was discarded. Therefore, H1 is partially validated.

H2 proposes that gender affects brand logo recall. Keeping the rest of the covariates constant, Table 1 indicates that women recall the logo better than men: they are more likely to partially recall it (odds ratio = 7.838 and $p < 0.001$) and more likely to fully recall it (odds ratio = 4.811 and $p < 0.001$) than women. Therefore, H2 is supported. These results are consistent with those obtained with Model 3 (reported in Table A2), albeit the coefficients are not significant.

H3 proposes that users' age affects brand logo recall. Table 1 shows an important effect of certain age groups (35–44 and 45–55) compared to the reference age group (15–34) on recall, given that the other variables remain constant. Individuals aged 35 to 44 have a higher likelihood of presenting partial recall than no recall (odds ratio = 5.289 and $p < 0.001$). Similarly, they are more likely to fully recall it than not at all (odds ratio = 2.055 and $p < 0.001$). Moreover, individuals in the 45–55 age group are more likely to recall the logo compared to the reference age group (15–34). However, there is an inverse effect among those aged 56 or above on brand logo recall, compared to those aged 15–34. Overall, then, H3 is validated.

H4 proposes that, if the user has past experience of shopping via social networks, this will affect their brand logo recall. Table 1 shows that individuals who do have experience of buying online present a higher level of recall than those with no experience, when all other variables remain constant. They are more likely to recall the logo both partially (odds ratio = 0.000, $p < 0.001$) and fully (odds ratio = 0.000, $p < 0.001$). Table A2 shows similar regression estimates for experience. Therefore, H4 is supported.

5. Conclusions

5.1 Theoretical implications

Today, s-commerce facilitates connections between sellers and customers through social platforms and websites (Liao *et al.*, 2021). The review of the academic literature showed that s-commerce has seen rapid growth in recent years. But, this shift toward managing the customer experience in s-commerce presents new challenges for businesses (Pour *et al.*, 2021) and has become an important topic in this field of research on online consumer behavior. Particularly, the question of how to build a trustworthy, accessible, and usable customer experience in s-commerce has garnered attention from numerous experts and academics in recent years (e.g. Tseng, 2023; Mikalef *et al.*, 2023).

Previous studies conducted in the online and mobile environment emphasized that the quality and relevance of advertising content, rather than its display format, determine ad effectiveness. Therefore, the literature recommends that ads should offer clear, direct, logical, and useful information (San José *et al.*, 2004), such that they stand a better chance of being processed via the central route (and, thus, capture more attention), compared to the peripheral route (which is more typical in the case of a VRB). Such recommendations take into account the principles of the ELM (Petty and Cacioppo, 1986) and the AC-TEA model (Pieters and Wedel, 2004). However, variations in the manner in which people process messages (through one route or another) are explained through selective exposure theory, which rests on variables such as personal values or preferences (see Badenes-Rocha *et al.*, 2022, applied to the cause-marketing context, from a multi-method approach combining self-reports and eye-tracking) or the individual's motivation and capacity, as the receiver, to process the information in question (Pieters and Wedel, 2004).

According to the aforementioned AC-TEA model, attention is the first key step toward triggering cognitive and emotional processing. This study corroborates the importance of capturing attention effectively. Our application contributes to the AC-TEA model by incorporating new findings regarding the impact of user classification variables from a specific context: s-commerce via mobile devices. In particular, the present study enables us to better understand how users of these tools allocate their visual attention across the different elements of the VRB, and how this attention translates into recall; and it identifies how this recall varies depending on the top-down factors of gender, age, and level of experience with s-commerce. These factors, inherent to the individual, encourage greater or lesser memorization via a voluntary attentional process vis-à-vis the logotypes.

The present study thus compared the effectiveness of two different visual representations (wordmarks vs. combination marks) of the brand (Mango) across two different social network tools (Instagram Shop vs. Instagram Stories), using eye-tracking technology combined with questionnaires to measure the participants' attention and recall. This psycho-physiological tool is considered highly suitable for measuring comprehensive cognitive and affective reactions in communication studies (Hernández-Méndez and Muñoz-Leiva, 2015).

From a more quantitative perspective, just as previous studies have identified (e.g. Hughes *et al.*, 2003; Pieters and Wedel, 2004), we found that attention exerted less of an effect on logo recall, in particular, in terms of FD and TFF metrics. However, the TFD and FC values strongly correlate with the recall of the different logotypes.

In terms of gender, our results stand in contrast to the findings of previous studies. For example, the work of Pieters and Wedel (2004) established that men show a higher level of visual retention when exposed to ads featuring prominent and minimalist graphic elements, while women tend to pay more attention to the contextual and verbal details of the content (Pieters and Wedel, 2004). These differences could be due to: (1) the different cognitive strategies of the two genders, whereby women process more efficiently and tend to recall more visual information than men, and (2) the present research context—commerce via social networks. This context ultimately fosters the retention of more visually "direct", simple, or striking banners or advertising logos (Rosbergen *et al.*, 1997)—such as those used in this study—among certain groups, such as women or more experienced online shoppers.

Age, on the other hand, seems to have an inverted U-shaped effect on recall, with the 35–55 age group presenting the highest probability of partial or full recall of the logo.

5.2 Managerial implications

Before deciding where to place a logotype on an s-commerce platform, the firm should conduct a comprehensive analysis of its social network profile to identify precisely how users tend to visualize it. In particular, this analysis should examine which elements of content draw users' attention and how these are processed (via the peripheral or the central route). Armed with this insight, the firm will be better placed to create relevant content for its e-commerce profile and to adopt the best strategy when it comes to placing the different elements—including logotypes—on-screen, which will significantly improve the effectiveness of the VRB (He *et al.*, 2021). In general terms, pictographic elements have been found to achieve greater effectiveness, in terms of attracting visual attention, when they are located toward the top of the screen (Espigares-Jurado *et al.*, 2020; Gholami *et al.*, 2021), this being linked to improved brand recall (Gholami *et al.*, 2021).

For marketers, it is crucial to consider the importance of logo position and type when designing advertising campaigns on s-commerce platforms because these elements can prompt attention toward other elements on the social network, through an endogenous transfer process. That is, attention can be directed to other ad elements (other products, profiles, and so on), quite independently of the factors that stimulated attention to the pictorial elements in the first place (Pieters and Wedel, 2004). These latter authors (Pieters and Wedel, 2004) found that it was the branding, typically represented visually by a logotype, that delivered a markedly superior performance—compared to other ad elements—in terms of successfully transferring the consumer's attention to pictorial elements (such as a branded product catalog) and textual elements (product description). Furthermore, identifying the visualization patterns of different groups according to demographic variables and degree of experience of s-commerce may help to significantly improve the effectiveness of ad campaigns and, ultimately, contribute to better brand recognition and recall (Gholami *et al.*, 2021).

By understanding how different types of VRB affect consumer attention and recall, depending on demographic variables, advertisers will be better placed to optimize their s-commerce strategies.

Regarding the "gender" variable, women exhibited more attention to the logo and better recall than men. These results are consistent with those of previous studies applied to other research contexts, such as Goodrich (2014), in the context of attitudes toward online ads, who found that women process information more holistically, paying attention to multiple elements simultaneously, which enables them to pick up more contextual and emotional details. In short, women's tendency to process visual stimuli more deeply and emotionally could explain why they present better recall of logos and banner ads on social networks than men (Orth and Holancova, 2004). This would suggest that women may have a better recall of ads that are more "comprehensive" in the sense of including stories or detailed visual elements (such as in the case of s-commerce stories), while men may find ads that prioritize visual simplicity more memorable. Consequently, businesses could simply tailor two distinct ad strategies for men and women. For example, just as when promoting high-risk items (Wollin, 2003), businesses could use a blend of objective and subjective (more subliminal) advertising for women, while centering mainly on objective advertising for men. This insight can also be applied to the case of logo design.

Regarding age, older people (in the 35–55 age range) were found to recall logos better than younger people. This finding is in line with previous studies, which have established that older users spend more time on websites with advertising content, for instance (e.g. Danaher *et al.*, 2006; Drèze and Hussherr, 2003; Hernández-Méndez and Muñoz-Leiva, 2015; Yu *et al.*, 2021; Joseph *et al.*, 2021). We suggest that firms seeking to achieve broader brand recall via logotypes should therefore target greater effort toward advertising that captures younger audiences.

The present study also found that those participants with experience of purchasing online presented better recall (both partial and full) of the brand logo than those without such experience. This was also found in the previous literature in different contexts—such as Arenas *et al.* (2021) (Microsoft Word user interface), Guo *et al.* (2021) (new mobile apps), or Joseph *et al.* (2021) (mobile apps), among other studies. Hence, firms should channel more resources into attracting attention to their brands among less experienced online shoppers.

Therefore, the results point to an interesting avenue for future research on the effectiveness of VRB in terms of paying visual attention and as a result, determining the optimal on-screen location for the logo—may assist in enhancing business processes, considering the characteristics of the customers who use these s-commerce tools.

6. Limitations and future lines of research

The present research focused on investigating the attention or fixation behavior of participants to measure the effectiveness of the VRB, using cross-sectional data. In contrast, a longitudinal study could offer useful interpretations regarding the behavior of the causal relationships identified over time. In particular, it would be valuable to investigate how brand attention and recall are sustained over time—for instance, by measuring recall at least one week after initial exposure—to provide a more comprehensive understanding of brand retention. This would facilitate comparison between immediate and long-term recall, to provide a more robust analysis of the effectiveness of visual representation in s-commerce environments, as well as to better understand the temporal dynamics of brand recall.

Second, for several reasons, participants' exploration of Mango's product profile on Instagram was conducted on a desktop PC—that is, on a computer screen rather than a mobile screen. The experiment could be recreated using a more natural setting, on mobile devices such as tablets and/or smartphones.

Third, with regard to the oculomotor parameters adopted in the experiment, future studies could devote more attention to applying different measures drawn from eye-tracking studies relating to attention (such as pupil dilation, saccade angle, glances, or reaction time), in combination with the kind of self-report measures employed in the present study.

Finally, it would be interesting to combine the eye-tracking methodology and survey study with other neurophysiological measures (such as electroencephalography or galvanic skin response). Such an approach could contribute to a better understanding of individuals' attentional and affective reactions to the use of logotypes by fashion retailers on s-commerce platforms.

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Appendix

Table A1. Model effectiveness comparison

	Model 1	Model 2	Model 3
R^2 (McFadden)	0.1929	0.0694	0.0751
R^2 (Cox and Snell)	0.1889	0.0726	0.0826
R^2 (Nagelkerke)	0.2852	0.1096	0.1210
Residual Dev	86.7323	99.9996	107.2374
AIC	122.7323	115.9995	131.2374

Source(s): Table by authors, using *R* software

Table A2. Logit coefficients, odds ratios and results of tests of hypothesis for Models 2 and 3

Model	Category Variables	Partial brand recall (2) Logit coeff	Odds ratios	*p*	Full brand recall (3) Logit coeff	Odds ratios	*p*
Model 2	Intercept	1.623	5.071	<0.001	2.998	20.038	<0.001
	TFD	−0.001	0.999	<0.001	−0.001	0.999	<0.001
	FC	0.487	1.628	<0.001	0.523	1.687	<0.001
	TFF	−0.000	1.000	0.027	−0.000	1.000	0.009
	Intercept	6.979	1074.2	0.430	8.104	3306.6	0.419
	Gender (Female[a])	1.614	5.021	0.102	1.773	5.891	0.061
	Age group (35–44[b])	1.362	3.904	0.155	0.739	2.094	0.269
	Age group (45–55[b])	9.566	14275.3	0.458	9.369	11720.7	0.459
Model 3	Age group (over 55[b])	−0.705	0.494	0.338	−0.162	0.851	0.448
	Experience (Novice[c])	−7.357	0.001	0.426	−6.403	0.002	0.436

Note(s): [a]Category under reference: male [b]Category under reference: 15–34 [c]Category under reference: experienced
Source(s): Table by authors, using *R* software

About the authors

Francisco Muñoz-Leiva is full professor in Marketing and Market Research and holds a PhD in Business Sciences from the University of Granada (Spain). His main research interests are the Internet consumer behavior, retail marketing, and, recently, neuromarketing. His recent research has been published in more than 80 papers in journals indexed in WoS, such as Tourism Management, Physiology and Behavior, Journal of Business Research, International Journal of Advertising, Soft Computing, Expert Systems with Applications, Online Information Review, Information and Management, or Computers in Human Behavior. He was included in Stanford University's "Ranking of the World Scientists: World's Top 2% Scientists" in 2021, 2022 and 2023. Francisco Muñoz-Leiva is the corresponding author and can be contacted at: franml@ugr.es

Doaa Herzallah is a researcher in Digital Marketing and Consumer Behavior. She holds a doctoral degree in Digital Marketing and International Business from the University of Granada. Her research interests lie in the area of digital marketing where she carries out studies on consumer behavior in social media and social commerce. She has published in high-impact journals including International Journal of Human-Computer Interaction, Journal of Research in Interactive Marketing, and Spanish Journal of Marketing-ESIC, among others. She participated in international conferences such as AEMARK, Marketing AEMARK, AJICEDE, International Marketing Trends, Jornadas Hispano-Lusas, ACEDE, among others.

Ismael Ramón Sánchez-Borrego is a researcher specialized in the field of nonparametric regression and survey sampling. He started his research career in 2001 at the University of Granada. He has extensive experience as a researcher, particularly in his postdoctoral period, and has done productive research stays at Colorado State University and at the University of Michigan, having recently supervised a PhD thesis on Web Surveys. He has published 20 papers in the Journal Citation Reports, area of Mathematics and Statistics and Probability and has led a well-funded research project on web surveys, smartphones and non-probability surveys.

Francisco Liébana-Cabanillas is full professor of Marketing and Market Research at the University of Granada (Spain). His main area of research and interest in the field is the effectiveness of mobile and online banking, Internet consumer Behavior, social media and tourism. He has published articles on these topics in various academic journals, such as International Journal of Information Management, Computers in Human Behavior, Expert Systems with Applications, Tourism Management, Technological Forecasting and Social Change, Financial Innovation and Industrial Management and Data Systems, among others. He was also included in Stanford University's "Ranking of the World Scientists: World's Top 2% Scientists" from 2020.