WHAT KIND OF VIDEO GAMER ARE YOU?

Abstract

Purpose.- This paper attempts to understand the extent to which motivations effect on shopping intention varies for diverse segments of video gamers (according to their personality).

Design/Methodology.- Information was collected from 511 Spanish consumers of video games. Afterwards, structural equation modeling, clustering, and multigroup analysis were conducted to compare results between segments of gamers.

Findings.-Results show, on the one hand, that hedonic, social and mainly addition motivations lead to a purchase intention of game-related products. On the other hand, a typology of gamers has been identified and produces differences in the motivations-pruchase intention links: (1) Analysts include individuals that essentially are conscientious, prefer inventive or cognitive and simulation games and their behavior is more influenced by hedonic and social motivations to play; (2) Socializers comprise individuals that are principally extrovert and emotionally stable gamers who prefer sports and strategy games. Their motivations to play that affect their shopping intentions are mainly social; and (3) Sentinels include individuals that are unconscious and introvert, prefer inventive, cognitive, sports and simulation games and social motivations lead their shopping intentions.

Originality.-There are 1500 million of video gamers around the world, but it is supposed that this vast market is not homogeneous and has implications in consumers' motivations and shopping intention. However, classifications available addressing this challenge are rather limited. In this sense, this paper provides valuable insights into the understanding of how personality represent a useful variable to segment consumers of video game industry and moderates the effect of motivations on shopping behaviour.

Keywords

Video games; typology; personality; motivations; shopping; gamer.

1. Introduction

Video games are products that generate an enormous volume of business worldwide. Indeed, there are 2200 million gamers in the world, and the value of the global gaming market is more than 119 billion euros (Newzoo, 2018; DEV, 2017).

Trying to understand gamer behavior has not attracted many researchers and academicians up until now. Without any doubt, this line of research can gain an overwhelming momentum thanks to the continuously emerging interest in game playing (Jeromin et al., 2016; Mukherjee and Lau-Gesk, 2016). Gaming[1] has been analyzed in the literature from various perspectives, but it has generally focused on the positive or negative aspects of the use of video games (Kuo et al., 2016; Jeromin et al., 2016) and existing typologies of gamers are based on age (Griffiths et al., 2004), time playing (Ip et al., 2008; Fu et al., 2017), playing performance (Drachen et al., 2009, Fu et al., 2017; Huo, 2012), frequency of playing (Manero et al., 2016; Fu et al., 2017), games' genre preferences (Ip et al., 2008; Manero et al., 2016), personality traits and gaming disorders (Braun et al., 2016) or motivations (Tseng, 2011). It has been demonstrated that video games have a wide variety of benefits for gamers (Velez and Hanus, 2016), but we have not found any study that contemplates the phenomenon from a marketing point of view to discern the effect of gamer motivations when shopping game-related products considering his/her personality. To the extent of our knowledge, there is only one recent study that characterizes gamers according to their personality, but it just focuses on a particular video game (World of Warcraft) (Bean et al., 2016) and, it does not include a multigroup analysis per segment. Nevertheless, Mogre et al. (2017) remark the importance of delving into marketing knowledge in novel and trendy industries, such as the video games industry represents.

This paper aims to fill this research gap by offering a causal model of relations between motivations and purchase intentions of video game related products, a typology of video gamers and a multigroup analysis to compare segments. Therefore, the main research question is formulated as follows: Does motivations effect on shopping intention varies for diverse segments of video gamers (according to their personality)?

The contributions are: (1) The study of a fast-growing industry as it is the video game industry, specifically dealing with knowing the main groups of gamers to help firms to segment their market attending gamers' personality. (2) This study offers empirical evidence on how the role that motivations play on shopping behavior vary according to the gamer's personality, while most prior research on types of video gamers is merely descriptive.

2. Literature review

2.1 The effect of motivations on the purchase of game-related products

Different people are attracted to games for a variety of reasons, including enjoying, socializing, collaborating, competing, being recognized, breaking or escaping routine and any other reason (Williams, 2016; Liu, 2017). Gamers' behaviors result from some motivational drivers (Huang and Hsieh, 2011). The Uses and Gratifications Theory and the Flow Theory are two of the approaches most employed to examine the adoption of innovative and mainly entertaining products (such as video games) (Huang et al., 2017; Boyle et al., 2012; Williams et al., 2008; Liu, 2017; Mukherjee and Lau-Gesk, 2016; Csikszentmihalyi, 1975; Huang et al., 2017). On the one hand, the Uses and Gratifications Theory posits that individuals use games to meet specific needs, such as enjoying video games content for getting fun (acquiring pleasurable experiences, i.e., process and/or entertainment gratifications) or individuals use games to potential their social relationships in gaming environment (acquiring social stimulation, i.e., social gratifications) (Huang and Hsieh, 2011). Following Williams et al. (2008) and Chen and Leung (2016) insights, the Uses and Gratifications Theory represents a framework for discussing and measuring motivations for playing and provides tools to explore better whether different subgroups of gamers are motivated differently, and motivations determine what they do.

In fact, Li et al. (2015) and Wei and Lu (2014) point out that research on Uses and Gratifications Theory identifies three types of gratifications related to use games (content gratifications, process gratifications, and social gratifications), which later Huang et al. (2017) refer to hedonic, utilitarian and social gratifications of gaming. However, some

scholars suggest that hedonic and social motives are the crucial aspects to consider when analyzing consumer behavior regarding entertaining products – i.e. video games - (Chen and Wang, 2016; Wei and Lu, 2014). On the other hand, the Flow Theory suggests that for hedonic activities, such as gaming, it must exist a balance between their inherent challenge and gamer ability to address the activity to have a higher probability of experiencing flow and have the intention to continue gaming (Liu, 2017). In this line, *hedonic motivation* refers to the extent to which the activity of playing video games is perceived to be used by reaching entertaining motives (Li et al., 2015). The hedonic motivation involves a more process-based perspective for video games using and representing them as a means to spend time getting pleasure or stimulating their minds with joyful tasks (Love and Irani, 2007; Huang and Hsieh, 2011; Huang et al., 2017). At the same time, those playing video games pursue a challenge and achieve a goal in-game (Ryan and Deci, 2000; Yee, 2006; Huang et al., 2017).

Prior studies have found that consumer continues playing a video game with a stronger motivation if they perceive intense enjoyment (Colwell, 2007; Ha et al., 2007). Furthermore, hedonic motivation has been found to significantly influence consumers' intention to play video games (Davis et al., 2013; Wei and Lu, 2014; Huang et a., 2017). It is reasonable to predict that if gamers can achieve enjoyment and fun with video games, these players may be willing to buy more video game-related products in order to gratify themselves and keep playing (Huang et a., 2017; Li et al., 2015). As video games are mainly hedonic products for entertainment (Chen and Wang, 2016; Huang et al., 2017), thus the current work considers that achieving pleasure, flow and perceived enjoyment (hedonic motivation) is a positive trigger of shopping game-related products. Hence,

H1. Hedonic motivation positively influences purchase intention regarding video game-related products.

Attending the Social Comparison Theory (Festinger, 1954), gamers could be motivated to seek feedback about their abilities in order to confirm a stable and accurate self-view. Therefore, video games products entail competition and social motives to interact with other gamers, to self-improve or to gain recognition (Søraker, 2016). Likewise, the Uses and Gratifications Theory also postulates that social gratification discloses the extent to

which a player's psychological sense of physically interacting and establishing a personal connection with others is motivated by playing video games (Li et al., 2015; Williams et al., 2008). Gamers found an excellent media at video games to rank progress to their friends or other gamers that may satisfy their social needs and desires (Huang et al., 2017; Zimmerman, 2009; Søraker, 2016). Previous research has also identified that social motivation is a key factor that makes users more engaged with playing video games (Wei and Lu, 2014; Cole and Griffiths, 2007). Essentially, it is well-accepted in literature that gamers spend more time and money on games for social motives (Hou, 2012; Huang and Hsieh, 2011; Li et al., 2015). Consequently, even when speaking about free video games, Søraker (2016, p. 114) highlights that "gamers will usually come to a point where it turns out that all the time invested still does not allow them to compete against those who spend money or that some game features are simply made unavailable to non-paying gamers." At this point, gamers might start shopping game-related products with the purpose of hold playing, socializing and competing with or against others (Søraker, 2016). Therefore,

H2. Social motivation positively influences purchase intention regarding video game-related products.

Last but not least important, *addiction* might represent a subjacent driver of purchasing behavior related to video games, which has been less researched on consumer literature than the two aforementioned motivations (McBride and Derevensky, 2009; Mukherjee and Lau-Gesk, 2016; Kuo et al., 2016). Neuroscientific research about rewards and dopamine neurotransmission suggests that brain circuits for gratification motivate many human behaviors (Berridge, 2007). Søraker (2016) suggests that seek for rewards in the context of video games might result in an urge to keep playing (i.e., addictive motives) instead of just enjoying an experience of pleasure. In this way, addiction motivation could lead the behavior of gamers (Søraker, 2016). Gaming addiction is understood as a disorder that involves the continued use of video games, too much time spent gaming and difficulties in stopping gaming (van Rooij et al., 2012; McBride and Derevensky, 2009). In fact, numerous gamers seem to be susceptible to addiction (Chen and Leung, 2016; Liu and Chang, 2016). Lu and Wang (2008) state that addiction is a motivation to explain why gamers are loyal and stick to video games. These gamers explain that when consumers have addictive motives for gaming, they try to get the maximum value for

their preferences, which in fact can prompt gamers' shopping regarding video game-related products. In consequence,

H3. Addiction motivation positively influences purchase intention regarding video game-related products.

Figure 1 shows the proposed hypotheses.

[*Insert Figure 1 here*]

2.2. Gamers segmentation according to personality

It is a well-accepted and standard practice for firms to divide potential consumers into segments to enable them to target those most likely to buy their products. In fact, this is a widespread practice in the gaming industry (Drachen et al., 2012). Literature recognizes that in the gaming industry, it is crucial to segment gamers for designing customized strategies and increasing player retention (Fu et al., 2017), promoting loyalty (Sheu et al., 2009) and understanding playing behavior patterns (Drachen et al., 2009). Fu et al. (2017) point out segmentation is especially important in the gaming sector since gamers have a much higher withdrawal rate than customers from other industries. Besides, Dracher et al. (2012) advise that clustering analysis in the case of video gamers is of interest in the academic research, especially for areas focusing on player experience, behavioral modeling and developing of games. A crucial step in consumers' categorization is the selection of segmentation variables (Chen et al., 2016). Some previous research in the gaming literature have identified some segments of gamers in base of their demographic characteristics (Griffiths et al., 2004), time spent playing, purchases related to games and preferred games (Ip et al., 2008; Hou, 2012; Manero et al., 2016; Fu et al., 2017), habilities (Drachen et al., 2009; Fu et al., 2017), motivations (Tseng, 2011), personality traits and internet gaming disorders (Braun et al., 2016). Table 1 shows a literature review on segmentation and categorization of video gamers, as well as recent pre-existing typologies.

[*Insert Table 1 here*]

Two broad approaches to market segmentation can be delineated in previous literature (Sandy et al., 2013). The most common approach relies on segmenting by demographic variables (e.g., age, gender). In fact, market segmentation based on gender is a commonly used technique in consumer marketing behavior (Polyzou et al., 2016; Faqih, 2016). The second approach (known as "psychographics") identifies market divisions regarding psychological variables such as values, attitudes, and personality traits. In fact, former psychographic segmentation was heavily rooted in personality profiling. For some behaviors (i.e., electronic purchases) demographics had superior predictive potential than psychographics, but for others, psychographics was more useful (i.e., television shows) (Sandy et al., 2013; Culig and Rukavina, 2012; Krolo et al., 2016). In addition, Mount et al. (2005), Faqih (2016), Polyzou et al. (2016) propose that among psychographic variables, personality traits are especially useful to predict global consumer behaviors. Also attending Huang and Hsieh, (2011, p. 582), the prevalence of the use of technological variables (i.e., playtime, leveling speed, deaths, awards or game genre) in gamers behavior research, highlights the need to shift the focus toward non-technological aspects and encourages theoretical parsimony in gaming research.

A considerably small number of studies explore personality aspects as a way to better understand gamers. In literature some authors manifest their concern about the relevance of personality aspects to understand gamers' behavior in comparison to non-gamers (Estallo, 1995; Teng, 2008; Abarbanel, 2013) but others corroborate that gamers' personality is projected into specific in-game behaviors, playing style and game genre preference (Zammitto, 2010; Hartmann and Klimmt, 2006; Braun et al., 2016; deGraft-Johnson et al., 2013; Worth and Book, 2014; Culig and Rukavina, 2012; Krolo et al., 2016). Attending Bateman and Boon (2005), game design should reflect the desires and preferences of the audience, and consumer models, such as the Big Five Model, should be used as a tool to identify gamers' needs. In fact, a recent study (Braun et al., 2016), offers evidence that personality traits are useful to distinguish non-gamers (rest of population) from regular gamers and even from gaming addicts. Therefore, we propose to addressed the following research questions: *RQ_1. are there different types of gamers regarding their personality?*

As for the theoretical framework to study personality, the Trait Theory is the most influential school of thought in psychology (Chen and Chang, 1989). Mehrabian and Russell (1974) note that personality traits could influence how a person would react in a given environment. The Big Five Model is one of the most well-known and used models of personality in psychology to measure those five personality traits (Costa and McCrae, 1985; Landers and Lounsbury, 2006; Lin, 2010; Ryan and Xenos, 2011; Saleem et al., 2011). Behaviors are indeed better understood using a robust framework such as the Big Five (Costa and McCrae, 1985; Lin, 2010; Loveland et al., 2015). Sandy et al. (2013) group variables into blocks to examine the effect of personality variables -as a whole-, and not to examine the predictive effect of particular personality traits. Similarly to other authors (Roberts et al., 2007), Sandy et al. (2013) affirmed that adding Big Five contributes to increasing the explained variance when predicting behavior outcomes.

Following Costa and McCrae (1985), Lin (2010), Saleem et al. (2011) and deGraft-Johnson et al. (2013), the Big Five personality traits are the degree that consumers think of themselves regarding five dimensions. *Conscientiousness* assesses one's degree of organization, persistence, and motivation in goal-directed behavior. *Neuroticism* refers to an individual prone to psychological distress, excessive cravings or urges, and maladaptive coping responses. *Extraversion* comprises an individual's quantity and intensity of interpersonal interaction and activity level. A*greeableness* assesses an individual's quality of interpersonal orientation along a continuum from compassion to antagonism in thoughts, feelings, and actions. *Openness* relates with an individual's proactive seeking and appreciation of experience for its sake, toleration for, and exploration of the unfamiliar.

Some of these traits have been scarcely addressed in scientific studies in the context of video gamers (Manero et al., 2016; Bean et al., 2016). However, none of them has addressed their moderating role on what motives lead gamers to shop, which can be essential for marketers in this industry. Judge et al. (2007) find that neuroticism negatively affects self-efficacy. deGraft-Johnson et al. (2013) study the emotional stability of video gamers. In gaming users' behavior, Chen et al. (2016) argue that social influence, which explains how other people's attitudes or opinions may affect an individual's decision-making is a determining factor in social games. Lin (2010) finds a significant relationship

between agreeableness and brand loyalty in the case of video games. Raja and Malik (2014) recommend to study the moderating role of personality characteristics because they seem to play a vital role in consumers' decision making. In the same line, Markey and Markey (2010) suggest that personality must be considered an important moderator variable when video gamer behavior is analyzed. They also affirm that scholars must consider the importance of studying personality as the combination of Big-five traits, since analyzing certain trait/s without considering the others might lead them to incorrect conclusions. Henceforth, we propose a second research question: *RQ_2. Does personality moderate the relationship between gamer motivations and shopping intention behavior?*

3. Methodology

3.1. Field of study, sampling and measurement scales

Worldwide video games market would reach 119 billion euros last year (Newzoo, 2018). In Europe, the Spanish market is placed in the fourth position regarding game industry revenues, after Germany, United Kingdom, and France. Spain has more than 450 video game companies (DEV 2018). In this context, video games are the entertainment industry of the future, with revenues higher than the music and movie industries (DEV, 2018). From entertainment to business, Spanish gaming industry involves new challenges for marketing managers and scholars to segment and understand that vast market of more than 24 million of gamers just in Spain (DEV, 2018).

Following our purpose to explore if gamers' motivations could help managers and scholars to explain shopping behaviour and if personality produces different segments of gamers, information was gathered through a questionnaire. To collect data, we used a semi-probabilistic sampling method and we contacted a group of gamers. Each of them was asked to answer a questionnaire and to collect two additional questionnaires from other gamers he or she knew. Following this non-probabilistic sampling process, a total sample of 511 valid questionnaires was collected. Participants age is between 18 and 65 years old (M=23.4, SD=7.4) and dedicate 5.7 hours to play games per week on average. The sample shows some similarities to the average Spanish video game gamer. Taking

into account the last free published data of ISFE (2017), most of them are younger than 24 years old (69%) and play an average of 5.4 hours per week.

This section briefly describes the development of the survey instrument. Most items are coded on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). Scales were adapted from previous literature to ensure the content validity of the measures (Salzberger et al., 2016). Precisely, hedonic and social motivations were measured by building ad hoc scales following Wei and Lu (2014) and Huang and Hsieh (2011), regarding the video game most played by each video gamer. Addiction to games was measured by using the scale proposed by van Rooij et al. (2012) and gamers' purchase intention of video game-related products was measured by employing the scale proposed by Badrinarayanan et al. (2015). Regarding personality traits (i.e., conscientiousness, neuroticism, extraversion, openness, and agreeableness), we adapted the Big Five scale (McCrae et al., 1986 and deGraft-Johnson et al., 2013). Attending previous literature, we included additional questions about gamers' characteristics, type of game and device and mode of gaming (Culig and Rukavina, 2012; Manero et al., 2016; DEV, 2018).

3.2. Scale validity and testing of proposed hypotheses

Data analysis was conducted using IBM SPSS 19 and LISREL 8.7. First, a preliminary univariant and bivariant analysis of observable variables was performed, which did not reveal significant abnormalities in the data. Second, variables were then studied to test their unidimensionality. To evaluate the structure, an exploratory factor analysis (EFA) with varimax rotation revealed that the nine employed constructs had eigenvalues >1.00 and explained 57.1% of the total variance. The overall Kaiser-Meyer-Oklin (KMO) measure was .828 (Kaiser, 1974) and Bartlett's Test of Sphericity was statistically significant ($p < .000$), indicating that the data was likely factorizable (Manero et al., 2016). Third, a confirmatory factor analysis (CFA) determined the convergent and discriminant validity of the measurement instrument[i]. In the CFA, some items were suppressed since they did not show the required standards to be considered as reliable and valid following the recommendation of Bagozzi and Yi (2012). The reliability of the final scales was adequate according to the values recommended by Bagozzi and Yi (2012)[2]

(see Table 2). The measurement model also showed an acceptable fit: $\chi 2 = 1206.37$ ($p = .00$); GFI = .90; IFI = .90; CFI = .90; NFI = .90; RMSEA = .053[3]. Regarding the discriminant validity of the latent variables, the results showed that the root of the variance extracted in all cases is larger than the correlations between constructs.

Fourth, to analyze the hypothesized relationships, we then used SEM based on the maximum likelihood estimator. Table 2 shows an adequate ~~overall~~ model fit was adequate, and all hypotheses were accepted. After confirming all proposed relationships, we developed a cluster analysis in order to segment gamers in function of their personality and to test the moderating effect of personality later.

[*Insert Table* 2 *here*]

3.3. Clustering and moderation analysis

As other authors have performed (Tseng, 2011; Hou, 2012; Manero et al., 2016; Fu et al., 2017) in the case of video gamers, we run a K-means clustering algorithm to classify gamers into different groups depending on their personality. We used the five factorial punctuations formerly validated as input variables. As a linkage criterion, we used the within-groups method and, to determine the distance between cases, we selected squared Euclidean distance. The K-means clustering algorithm requires, as an input, the number of output clusters to produce. To find the optimal number of clusters K, we followed the standard practice of generating all possible classifications, ranging from K=N (a cluster for each of the N samples) to 1 (a single cluster for all samples). We then applied the turning point location criteria recommended by Krzanowski and Lai (1988) and Manero et al. (2016). Using this accepted criterion, the number of clusters is in the range from K=3 to 6. For each K from 3 to 6, we examine each clustering based on its consistency and explanatory power. The number of clusters that offer better results was K=3, attending to the size of the groups, the degree of significance of each factor and the position of the final center's values (FCV). The analysis of variance (ANOVA) corroborates that the Big Five dimensions are significant at a level of 95% to characterize the groups. The values of the F statistic indicate that consciousness and neuroticism produce the largest and smallest variations between groups respectively. Table 3 shows ANOVA analysis results and the three conglomerates information.

[*Insert Table* 3 *here*]

Gamers included in the first cluster show higher positive scores in conscientiousness (FCV=.78195) and neuroticism (FCV=.29591) and a lower negative punctuation in extraversion (FCV=-.40637) than the other groups. This description could fit with an analytical type of gamers. These individuals' personality reveals that gamers in this cluster tend to be organized, reliable, stressed, introverted and hardworking. This description could fit with an *analyst*[4] type of gamers and represents 32.7% of the total sample. The second cluster includes people who show higher positive punctuations in extraversion (FCV=.56953) and openness (FCV=.61631) and the lowest negative punctuation in neuroticism (FCV=-.23944) and agreeableness (FCV=.48858). This description corresponds to a type of gamer that can be named as a *socializer*. Socializers tend to be fun-loving, optimistic, extroverted, open, curious, creative and imaginative. They also show a tendency to be secure and calm. This group represents the 39.5% of the total sample. Finally, the third cluster shows lower negative punctuations in consciousness (FCV=-.89892), openness (FCV=-.53127) and agreeableness (FCV=-.62253). This description could fit with the name of *sentinels*. These gamers' traits disclose that sentinels tend to be conventional, unadventurous and ruthless. Sentinels also tend to be careless or disorganized. This group represents the smallest group (27.8% of the total sample).

The information of the final center values for each of the three clusters concerning the factors of the Big Five Model (Table 3) facilitates describing differences between clusters and likewise characterizing them taking into account gamers' personality[ii].

After a descriptive analysis of the clusters, the next step is to test the moderating effect of personality in the proposed model (see Figure 1). The sample was divided into three segments of gamers [Analysts ($Group_1$); Socializers ($Group_2$); Sentinels ($Group_3$)]. Formerly, we tested metric invariance by imposing equality constraints on factor loadings across groups. The chi-square difference tests between the constrained model and the unconstrained model (base) for each group were not statistically significant [diff. $\chi 2_{(constrained\ Group1)}$: 1.63, $p > .05$; diff. $\chi 2_{(constrained\ Group2)}$: .15, $p > 0.05$; diff. $\chi 2_{(constrained\ Group3)}$:

1.8, p > .05]. Hence, metric invariance is retained, and the base model fit is adequate ($\chi 2$ = 486.83, p = .00); RMSEA = .06, NFI = .88, CFI = .93, IFI = .93, RFI = .86, GFI = .87). Later, a multi-group analysis was performed (Table 4). In this case, a model that imposed equality constraints parameters across the subgroups was compared with a non-restricted model. Regarding the moderating effect of personality, the restricted model showed a significant chi-square difference ($\chi 2$) value of 33.3 ($\neq$df = 14, p < .05).

[*Insert Table* 4 *here*]

4. Discussion

The objective of this study was twofold: to know the role of different types of gamer motivations to play on the shopping of game-related products and to analyse the moderating role of gamer personality on the motivations-shopping links. Consequently, three hypotheses relating motivations and shopping intention and two research questions regarding the role of personality were proposed. The findings are particularly meaningful as previous research usually characterizes gamers according to gender (Faqih, 2016; Polyzou et al., 2016) or video game genre (Culig and Rukavina, 2012; Krolo et al., 2016), and we have found only one related to personality (Braun et al., 2016) or motivations (Tseng, 2011), but do not relate it to shopping behavior. To the best of our knowledge, no one has analyzed the moderator effect of personality on the relationship between motivations to play and shopping video game-related products.

4.1. Academic implications

Following the Trait Theory, this study confirms that the Big-Five factors of a gamer influence the way and the game they play. Besides, according to the Uses and Gratification Theory and the Flow Theory, gamers search for hedonic and social motivations when playing a game and these drivers affect their shopping behaviour of game-related products.

This study is innovative in the sense that it characterizes a vast number of video gamers according to their personality and relates those gamer groups to the impact of motivations on shopping. That characterization has been done with information collected from a wide sample of gamers. The major contribution of this study is as follows. Contrary to the scarce past studies that link general personality traits and video games types (Manero et al., 2016; Bean et al., 2016), which offer gamers descriptive typologies, this study goes deeply into understanding the influence of specific motivations to play (hedonic, social and addiction drivers) on shopping intention behavior, first with the whole sample and second considering gamer personality. In agreement with Zimmerman (2009), in order to successfully understand, modify, and design games it is indispensable to find out how consumers play and think.

As a pioneer work, this study demonstrates that hedonic, social and mainly addiction factors motivate the intention to buy game-related products. These results confirm for the case of shopping behaviour the previous research suggestions of Colwell (2007) and Ha et al. (2007) for entertaining products and playing intention, of Wei and Lu (2014) and Cole and Griffiths (2007) for social motives that affect gamer engagement and of Søraker (2016) for addiction-playing intention.

Moreover, after obtaining three main groups of gamers (analysts, socializers and sentinels), this work indicates that hedonic motivation is relevant only to analysts, while social motivation is a key for the three groups. Surprisingly, when considering gamers' segmentation according to their personality, addiction is not significant in any of the groups obtained. This exploratory analysis of the role of personality is new in literature, to the extent of our knowledge, and would benefit of further research.

4.2. Managerial implications

As Manero et al. (2016) state, when the target population of a certain game is adequately researched before starting the game design, the outcome can be a game that does not meet gamers' expectations and preferences. In agreement with Hou (2012), behavioral patterns

help us to understand more deeply the gamers' characteristics and develop their design according to their preferences. There are several managerial implications of this research. In our opinion, it is advisable that scholars and marketers recognize the characteristics of personality and the specific motivations to play that are behind video gamer preferences and behaviors. Marketers and advertisers could better promote their products (video games in our case) if they understand the psychological motivations for why individuals buy certain products (Sandy et al., 2013; Mukherjee and Lau-Gesk, 2016). Firms should encourage gamer joy, help to test their skills during the game playing and promote the interaction with other people as all theses strategies help to sell game-related products. Besides, if firms foment that gamers play more time favoring access to games with different devices, anywhere and anytime, it is probable that gamers become engaged and addicted to playing and will finally be more prone to buy game-related products.

Apart from the general impact of motivations on shopping intention, differences can be found if personality is included in the management strategies. By studying the gamer personality role, our work can help managers and content game designers before creating the game (by providing information about the behavior and characteristics of potential gamers) and after the game has been created and has to be launched to the market (by offering three potential personality-based gamer targets deeply characterized). In agreement with Konzack (2009) game design must be based on player behavior. The link between motivations and game shopping behavior can add valuable information to the obtained classification based on gamers' personality. First, analysts need hedonic stimuli to feel delighted and test their skills when playing. This segment is a challenge for marketers since they like games which prompt their logical personality. It might be possible that a strategy for bringing this target closer should be the development of new and entertaining gaming apps for smartphone or tablet more accurate for a predominant feminine segment. Second, socializers might show their particular extrovert and open personality by recommending and recruiting friends and relatives for gaming with them, as they are fond of searching for social motivations. In this case, firms may perhaps take advantage of their preference for competitive, strategy, adventure and sport games. This dominant masculine group represents the potential and priority target for competitive and fighting video games. Moreover, socializers play more with consoles than the other groups and this fact could mean that socializers might represent the most receptive

audience for promoting community or multigroup gaming competitions, not only because their social motivation, but also due to their personality traits that align better with the socializing process. Finally, the smallest of the three obtained groups, sentinels, is a difficult target to attend a priori as they are not open nor emotionally stable. This segment may be a priority segment for firms' promotional and marketing communication activities through computers and popular games and guided mainly by a social motivation. Firms should address reference groups of gamers to encourage sentinels to buy.

4.3. Limitations and further research

Results are restrained to Spain. Moreover, this study is limited to the video game industry. Besides, we have used a short version of the Big Five inventory, and in future studies, it would be desirable to use another measurement instrument such as the 60-item NEO five-factor inventory (Costa and McRae, 1992). Moreover, it would be prudent to compare real-world activities and virtual worlds to know if the adoption of certain activities such as game app playing is a substitute for their real-world counterpart, as Eastin (2002) suggests to study. Finally, we must recognize there are other important motives for play video games (beyond the analyzed here), such as acquiring knowledge (learning), or sharpen gamers' capacities. Thus, future research should go deeply and include other determinants of purchase intention of related video game products. In this sense, the development of information and Internet technologies has enabled a drastic transformation of business processes, also the video game industry and in the future, it is expected that more app games will be used instead of consoles or computers that could satisfy gamer motivations differently. Finally, further research is necessary on addiction motivation, especially an alternative operationalization of its measurement could disclose deeper evidence about the effect of this variable on gamer behavior. This is only a first study and future lines of research are necessary.

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[1] Gaming will refer throughout the paper to playing with video games.

[i] The results of the adjusted model and correlations are at readers' disposal.

[2] The values of the alpha Cronbach coefficient were >.7 (except five of them that were slightly lower), the coefficient of composite reliability >.6 and the average variance extracted >.5. Although the Cronbach alpha is the most widely used estimator of the reliability of scales, it has been considered to underestimate reliability. A better option to test reliability is composite reliability (Peterson and Kim, 2013) and it could be affected by the small number of items (George and Mallery, 2003; Cronbach and Shavelson, 2004).

[3] $\chi 2$: chi-square statistic, *RMSEA*: Root-Mean-Square-Error of Approximation, *NFI*: Normed Fit Index, *RMR*: Root Mean-Squared Residual and *GFI*: Goodness-of-Fit Index, *CFI*: Comparative Fit Index.

[4] The chosen names of the groups try to reflect an analogy with gamers' roles and/or avatars with the purpose to make easier for firms working at the videogame industry identifying types of consumers.

[ii] More details on cluster characterization analyses can be asked to authors.