

Marketing

# Consumer behavior of electronic games' players: a study on the intentions to play and to pay

*Comportamento do consumidor de jogos eletrônicos: um estudo sobre as intenções de jogar e pagar*

*Comportamiento del consumidor de videojuegos: un estudio sobre las intenciones de jugar y pagar*

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## Abstract

The electronic games market is one of the most profitable in the leisure segment, having surpassed the film industry. In terms of profitability, it is ranked as eleventh in the world and first in Latin America. Despite its relevance, there is little information about the reasons that lead consumers to play. This paper examined which attributes of the games influence consumers to play and pay for them. The methodology was a field research survey conducted with 600 electronic games' players, and structural equation modeling was used to test the model. The results indicate that the constructs challenge, diversion, fun, fantasy and social interaction influence the intention to play and pay for games, while the construct competition has a negative effect on the intention to play. No significant causalities were found, regarding the constructs time flexibility and arousal, on the intention to play. Furthermore, we also observed that motivations that had the highest impact were fun, challenge and fantasy, attributes that should be considered by game developers and industry.

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*Keywords:* Electronic games market; Intention to play; Intention to pay; Structural equations modeling

## Resumo

O mercado de *games* é um dos mais rentáveis no quesito lazer, ultrapassando o mercado cinematográfico, e figura como o 11° do mundo e o 1° da América Latina em rentabilidade para as empresas. A despeito desta importância, poucas informações são conhecidas sobre quais as razões que motivam as pessoas a jogar. Este artigo teve como objetivo analisar quais características dos jogos influenciam os consumidores de *games* a jogar e a pagar. Como metodologia, uma pesquisa de campo foi conduzida com cerca de 600 usuários, e a modelagem de equações estruturais foi utilizada para testar o modelo. Entre os resultados, mostra-se que os construtos desafio, desvio, diversão, fantasia e interação social têm influência na intenção de jogar e pagar, enquanto o construto competição influencia negativamente a intenção de jogar. Não foram obtidas causalidades

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significantes dos construtos flexibilidade de tempo e excitação, no construto intenção de jogar. Ademais, foi observado que as motivações que obtiveram maior impacto são a diversão, o desafio e a fantasia, características que devem ser observadas por desenvolvedores e indústrias do setor. © 2017 Departamento de Administração, Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo – FEA/USP. Publicado por Elsevier Editora Ltda. Este é um artigo Open Access sob uma licença CC BY (<http://creativecommons.org/licenses/by/4.0/>).

*Palavras-chave:* Mercado de games; Intenção de jogar; Intenção de pagar; Modelagem de equações estruturais

## Resumen

El mercado de videojuegos es uno de los más rentables en el ámbito del ocio, superando el mercado del cine, y figura como el 11° del mundo y el 1° de América Latina en lo que se refiere a la rentabilidad de las empresas. A pesar de esta importancia, hay escasa información sobre las razones que motivan a las personas a jugar. El objetivo en este trabajo es analizar cuáles características de los juegos influyen en el consumidor y lo llevan a jugar y pagar. Se ha llevado a cabo un estudio de campo con aproximadamente 600 usuarios y se ha utilizado como metodología los modelos de ecuaciones estructurales. Los resultados muestran que los constructos desafío, desvío, diversión, fantasía e interacción social influyen en la intención de jugar y pagar, mientras que el constructo competición tiene influencia negativa en la intención de jugar. No se han obtenido causalidades significativas de los constructos flexibilidad del tiempo y excitación en el constructo intención de jugar. Además, se ha observado que las motivaciones que tienen mayor impacto son la diversión, el desafío y la fantasía, características que deben ser observadas por los desarrolladores de juegos y la industria del sector.

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*Palabras clave:* Mercado de videojuegos; Intención de jugar; Intención de pagar; Modelos de ecuaciones estructurales

## Introduction

Studies on the creative industry have been increasingly receiving attention. The importance of this sector's growth for the economy is noteworthy, as well as the need for more research to understand this field, which operates essentially through informal work (Bendassolli, Wood, Kirschbaum, & Pina, 2009; Castro & Figueiredo, 2016; Oliveira, Ribeiro, Cabral, & Santos, 2015). A specific field of the creative industry that has shown better results is that of electronic games, which experienced a remarkable growth in the last few years, and is considered a valuable sector for the economies of many countries (Plum & Hassink, 2014). The games market and the electronic games industry are booming, having surpassed even the film industry in revenue, and have become one of the largest sources of leisure in the world (Baumgarten, 2013; Mascena, Pimentel, Fischmann, & Polo, 2012).

However, studies focused on the electronic games market are still scarce, despite the growing interest of researchers in this field (Jin, 2014). In Brazil, according to the Group of Studies and Development of the Games Industry (Gedigames, 2014), data are scant, making it even harder to develop organizational strategies. Data show that until 2013 the Brazilian consumer market for games was the 11th in the world and the first in Latin America, in terms of revenue, which amounted to more than US\$ 1.3 trillion (New Zoo, 2013). It should be noted that this data only express the results of the regulated games market. The Brazilian Association of Electronic Games Developers (Abragames) acknowledges that this market is strongly affected by piracy and illegal imports (ABRAGAMES, 2008).

The Brazilian market has 49 million consumers, of which 61% spend on games (New Zoo, 2013). However, most of

this audience is not served by local companies. According to Gedigames (2014), Brazilian companies are small, and more than 70% have yearly revenue up to R\$ 240,000. They are also relatively young, being in the market for less than five years. As a result, they cannot afford to develop products of high production costs. Therefore, it is important for Brazilian companies to know this market, a modern and dynamic sector, which not only promotes entertainment, but also creates jobs, revenue and promotes innovation.

In addition, the arrival of smartphones has significantly changed the market by increasing games' consumption (Wei & Lu, 2014). These changes brought a new dynamics to the market, which now attracts different types of consumers. Considering the importance of the games market for the current context, it is relevant to carry out studies to better understand the context and the consumers. Therefore, this paper tries to answer the following research question: which attributes influence the behavior of electronic games' consumers in the Brazilian market, regarding their intention to play and to pay for them? To answer this question, the objective of the study was to analyze games' features that influence consumers' behavior, with respect to playing and paying for the games. In order to do so, we sought in the literature which variables are considered important for game consumers, and analyzed if there is a causal relationship between these variables and the intention to play and pay.

The study is structured in six sections, including this introduction. The following section brings a review of studies related to games market and the motivations that influence its consumers. The third section describes the main methodological aspects. The fourth section presents the research results, and the fifth discusses them. Finally, the last section presents the conclusions, including limitations and recommendations for future studies.

## Consumers' motivations and theoretical framework

As reported by Gedigames (2014), the games market is composed of four categories: online and mobile games, console and PC, internet-delivered games, and *serious games*. Console and PC players prefer more complex and difficult games, while casual players prefer simpler and easier games. Hence, there are different types of games, with different objectives; that's why it is important to understand the reasons that drive consumers to choose one game instead of another.

One aspect related to the use of smartphones has been observed recently: the possibility to play anywhere. According to Wei and Lu (2014), consumers mostly play in their idle time or when they have time flexibility, so games are a sort of solution to spend time (Pe-Than, Goh, & Lee, 2014). The concept of time flexibility relates to the amount of time a user can spend playing, and his ability to determine and control that period of time (Hsiao & Chen, 2016). However, the actual time a user spends playing depends on the motivation that game brings (Ghozland, 2010). Studies on these motivations are still scarce, since they have only emerged with the use of smartphones and tablets as game platforms (Hsiao & Chen, 2016). Therefore, time flexibility is considered a construct that affects the intention to play among games' consumers (Pe-Than et al., 2014): since users can play at any time, chances of playing increase. With this in mind, our first hypothesis is:

**H1.** Time flexibility positively affects the intention to play.

It has also been identified in the literature that users look for electronic games to stimulate emotions, since they cause excitement through the proposed activities. Players are generally alert and attentive when they play; their minds are only focused on that task, which occasionally makes them unaware of other stimuli. This state of attention can increase their adrenaline, blood pressure and heart beats, and all these effects are related to the arousal players feel at that moment (Grizzard et al., 2015; Reich & Vorderer, 2015).

The concept of arousal can be explained in many ways to define the player's experience. Games that lead players to exercise their attention, activity and alertness stimulate them to play more and more, which makes arousal an important element of the intention to play. Arousal is acknowledged as a motivating feature for the intention to play (Engl & Nacke, 2013; Grizzard et al., 2015; Reich & Vorderer, 2015; Sherry, Lucas, Greenberg, & Lachlan, 2006). In this study we considered it a construct that has a positive influence on the intention to play.

**H2.** Arousal positively affects the intention to play.

Another condition found in the literature to explain the intention to play is the motivation for completing the challenge proposed by the game, thus achieving the specified goals (Engl & Nacke, 2013; Jin, 2014; Pe-Than et al., 2014; Shelton, 2010; Sherry et al., 2006). Caroux, Isbister, Le Bigot, and Vibert (2015) argue that challenge is an important content of a game, and one of the elements that cause the interaction between player and game. On the other hand, the challenge must be balanced, since very difficult games may discourage people to play, while very

easy games lead to boredom. Thus, in some games the challenge is composed of many stages and missions, while in others it is important to "stay alive" for as long as possible (Sherry et al., 2006).

In the first games created, challenge was one of the main elements. The game should be considered "impossible", so that the player who finished it would feel rewarded to be one of a few to accomplish it. For Murray (2003), much of the effort made in the last few years to add value to electronic games went into developing virtual environments that provide different challenges to players. Moreover, this variable is capable to enhance the learning levels of the players: the more effort to complete a challenge, the greater the learning (Hamari et al., 2016; Hung, Sun, & Yu, 2015). Therefore, games that challenge players' abilities increase their intention to play (Sherry et al., 2006), which is our third hypothesis.

**H3.** Challenge positively affects the intention to play.

Competition is another variable mentioned in the literature as a motivator, among electronic games' players. Competition is an oriented goal to attend a specific event in which there is a dispute, individual or in a group, in order to establish who is the most skilled in executing a certain task (Cagiltay, Ozcelik, & Ozcelik, 2015). It is a way to attract users to play more and to improve their performance, which makes it an important condition that must be considered when explaining the intention to play. However, competition is not an attribute valued by everyone. Avoiding competition, as explained by Ferreira, Gouveia, and Duarte (2011), corresponds to a maladjusted attitude when faced with a competitive situation. It is related to feelings of shame and inferiority. In addition, Cagiltay et al. (2015) state that, in competitions, losers usually show higher anxiety levels. On the other hand, some experts acknowledge that competition may be a positive motivation for electronic games' players. Sherry et al. (2006) argue that they like to challenge themselves and show their skills. So, besides the challenges posed by the game, some players try to carry out missions with higher performance than others, or to defeat them in the competitions proposed by the game. To win these matches, many players spend hours learning, so that they can finally be the best and win all competitions. Within this context, competition is the basis for our fourth hypothesis.

**H4.** Competition positively affects the intention to play.

Electronic games can also be used as a means to divert attention from something, and is considered a form of relaxation, as well as an escape mechanism from everyday problems and responsibilities (Giammarco, Schneider, Carswell, & Knipe, 2015; Jin, 2014; Shelton, 2010; Sherry et al., 2006). Scholars call it diversion (Sherry et al., 2006), and it is found in persons who seek to escape from everyday tasks, have fun and reduce stress (Sherry et al., 2006). Due to their ability to draw players' attention, freeing them from daily duties, some people regard games as addictive. This construct has a greater impact on older players, as opposed to young ones, which makes it an important construct to distinguish between player profiles (Osmanovic & Pecchioni, 2016). This condition is the basis for our fifth hypothesis.

##### H5. Diversion positively affects the intention to play.

Games are also used for fun, entertainment, gratification and pleasure. Playing and controlling a character, or feeling oneself part of the game, make players enjoy the situation (Cohen, 2014; Jin, 2014; Pe-Than et al., 2014; Shelton, 2010; Wei & Lu, 2014), which in turn indicates that fun is a construct that may affect the intention to play. After all, the main reason why games are created is to entertain people. Therefore, it can be expected to be one of the main conditions of influence in the games market. It seems rather clear to suppose that games that do not entertain will not appeal to players. However, it should be noted that fun is a motivation that varies greatly from person to person, since it depends on the interaction between the player and the game (Caroux et al., 2015; Bowman et al., 2016). The hypothesis regarding fun is expressed as follows.

##### H6. Fun positively affects the intention to play.

The possibility of creating imaginary roles is also recognized by literature as a potential motivation for the intention to play. The possibility of making a dream come true, such as being a super-hero, driving a Formula 1 car or simply having a different life through role playing, makes games very appealing because players can fulfill their fantasies (Jin, 2014; Shelton, 2010; Sherry et al., 2006). Through fantasy, games become a way of escaping the real world (Kahn et al., 2015).

Another feature also related to fantasy is the creation of imaginary environments or stories that look as if they were invented by Hollywood directors. Therefore, games serve as an incentive to imagination and creativity (Giammarco et al., 2015). Rodrigues, Lopes, and Mustaro (2010) call them “digital make-believe” that allows players to interact with the virtual world. Huizinga (1993) argues that games have a liberating element, since they represent an escape from reality into a temporary sphere of activities. All this fantasy helps players to increasingly immerse themselves in games, which is believed to increase the intention to play. This is our seventh hypothesis.

##### H7. Fantasy positively affects the intention to play.

Social interaction is also recognized as an important motivation for players, who value sharing experiences with other people, making a connection, having a relationship, socializing, as well as feeling themselves part of a community. In other words, interacting with others motivates players (Pe-Than et al., 2014; Shelton, 2010; Sherry et al., 2006), which indicates that social interaction is an interesting construct for our research. On that subject, Dalisay, Kushin, Yamamoto, Liu, and Skalski (2015) observed that social interaction in games has an element that goes beyond the game itself, involving information exchange and meeting other players.

The social interaction construct can be seen in games where there is competition, although it goes further since it is not necessary for players to compete against each other; they can also help one another, which makes it a condition that involves both traits of competition and cooperation (McGloin, Hull, & Christensen, 2016). In short, it is possible to infer that social interaction is a relevant factor, which can lead games to achieve commercial

Table 1  
Constructs and their authors.

Construct	Authors
Time flexibility	Wei and Lu (2014), Pe-Than et al. (2014) and Hsiao and Chen (2016)
Arousal	Sherry et al. (2006), Engl and Nacke (2013), Grizzard et al. (2015) and Reich and Vorderer (2015)
Challenge	Sherry et al. (2006), Shelton (2010), Engl and Nacke (2013), Jin (2014), Pe-Than et al. (2014), Caroux et al. (2015), Hamari et al. (2016) and Hung et al. (2015)
Competition	Sherry et al. (2006) and Cagiltay et al. (2015)
Diversion	Sherry et al. (2006), Shelton (2010), Jin (2014) and Osmanovic and Pecchioni (2016)
Fun	Cohen (2014), Shelton (2010), Jin (2014), Wei and Lu (2014), Pe-Than et al. (2014), Caroux et al. (2015) and Bowman et al. (2016)
Fantasy	Sherry et al. (2006), Shelton (2010), Jin (2014), Kahn et al. (2015) and Giammarco et al. (2015)
Social interaction	Sherry et al. (2006), Shelton (2010), Pe-Than et al. (2014), Dalisay et al. (2015) and McGloin et al. (2016)

success (Shelton, 2010). The success of online games' communities illustrates the importance of interaction and communication between players (Gallo, 2002; Kollock, 1997). Hence our eighth hypothesis is:

##### H8. Social interaction positively affects the intention to play.

Table 1 identifies the constructs used in the research, based on literature review.

The identified constructs regard consumers' motivation to play or spend more time playing games. The intention to play is considered the driving construct (Wei & Lu, 2014). It indicates the user's willingness, or lack of, to play a certain game or to keep playing it. By focusing on the intention to play, we seek to recognize, in essence, which game features make players active and motivated to keep playing.

Finally, it is important to acknowledge that the games market is constantly changing. One of these changes regards its system of purchase. In the beginning, games were made to be played only on consoles or PCs, and it was necessary to buy the games in order to play them. This period is known as *pay-to-play* (Gedigames, 2014). Companies observed, however, that many consumers would not buy a game because they feared they might regret it. As a result, companies launched the *play-to-pay* method, where the consumer tests the game before buying it (Gedigames, 2014). In recent years, a new strategy emerged, called *freemium* (a mix of the words *free* and *premium*). It is possible to play for free, but if the user decides to pay, he gets privileges not available on the free version. Therefore, the intention to play may affect the intention to pay (Chou & Kimsuwan, 2013; Gedigames, 2014; Park & Lee, 2011). Our last hypothesis rests on this condition.

##### H9. The intention to play positively affects the intention to pay.

Fig. 1 shows the conceptual framework proposed in the paper. As seen in the literature, a set of constructs influence the intention to play, and this intention, in turn, has a direct influence on the intention to pay. Based on this conceptual framework, it is

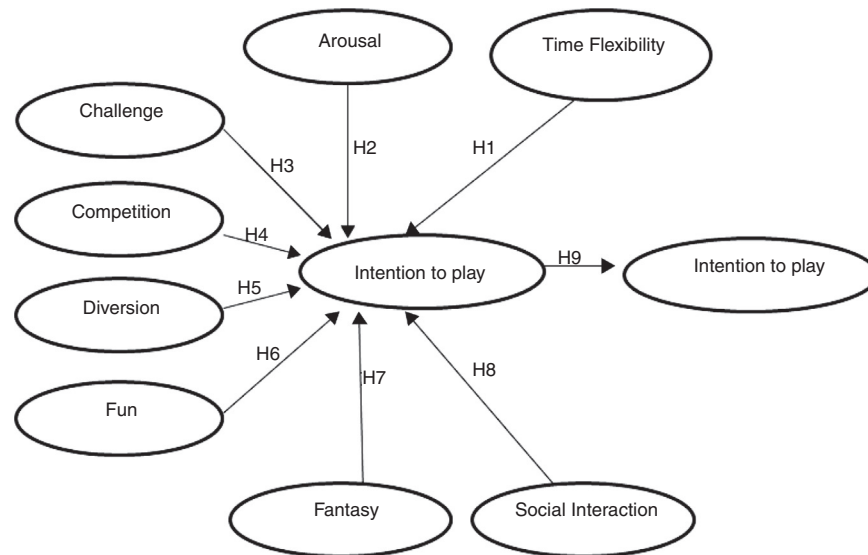


Fig. 1. Hypotheses framework.

possible to understand which constructs have a real impact on the intention to play, and their relationship with the intention to pay, in the Brazilian electronic games market.

Third section presents the methodology used in the research.

## Methodology

The study used a descriptive research (Vergara, 1998) in order to understand the electronic games market in Brazil. The universe refers to games' players, not only those who spend money on games, but also those who play for free. We built a non-probabilistic sample, chosen by convenience (Vergara, 1998), since no statistical procedure was done to choose the subjects. An important condition was that sample participants were already players.

The survey was conducted both face-to-face and online. The first approach was employed in two game conventions: Gamer Meeting and CINDIE (Ceará Indie). Both took place at a public university campus, in a Northeastern capital. For the online research we used Google Docs forms for Facebook groups of players, such as Playstation Brasil, Brazilian Federation of Games, Game Zone, and Mega Potion.

The cross-section survey had a filter question in order to select only active electronic games' players. Data were collected in December 2014, with a total of 606 filled questionnaires: 393 obtained with face-to-face approach, and 213 online. To build the instrument, we adapted scales from previous studies. After the customization, the scale went through validation procedures based on Churchill (1979) and Costa (2011): (i) translation validity (content and face validity), achieved through a pre-test and a pilot test; (ii) criterion validity (predictive and simultaneous), since all constructs had already been used in previous studies, and they had effectively measured what they were supposed to measure; and (iii) construct validity (convergent and discriminant validity). Time flexibility and social interaction constructs had, respectively, three and two items in the original

scales. For this study, and based on literature review, two other items were added to the time flexibility scale and one for the social interaction, in order to enhance measurement's validity and reliability.

The study adopted a two-stage, seven-point Likert scale, where the respondents should first consider if they agreed or disagreed with a certain statement. In the second stage, they were asked to give an opinion on their level of agreement or disagreement, which could be slightly, strongly or completely (Toni & Mazzon, 2014).

To check the comprehension of the questionnaire, 15 players took part on a pre-test, which showed that it was understandable and adequate for this study. After the pre-test, 56 players participated in a pilot test aimed to better predict how the variables would group together, and if they were consistent with the literature. To assess the pilot test, we did an exploratory factor analysis. As a result, a question about time flexibility was removed ("I have control over the time I spend playing electronic games"), since it could not be grouped with any of the other constructs, and presented negative factor loading values. The other variables grouped together as expected, with values above 0.5 for anti-image and commonalities, and factor loadings above 0.5, considered by Hair, Black, Babin, Anderson, and Tatham (2005) as satisfactory. It should be noted that pre-test and pilot test participants were not part of the final sample of 606 respondents of the survey. Table 2 shows the adapted scale.

Proceeding with data treatment, we decided to replace the few missing values with the variable's average (Hair et al., 2005). Five questionnaires were removed for presenting values four times greater than the standard deviation (univariate outliers) (Hair et al., 2005). No questionnaires were removed for the analysis of multivariate outliers, since we understood, after an individual analysis, that it was a respondent's feature. Among the 601 valid questionnaires, 471 (78.4%) were answered by male players, and 130 (21.6%) by women. Among the respondents, more than 80% were under 26 years old and 70% had finished

Table 2  
Variables of the adapted scale.

Construct	Variables	Authors
Time flexibility	I can play electronic games anytime	Wei and Lu (2014)
	I can begin and stop playing electronic games at anytime	
	I play electronic games to spend time	Own authorship
	I play electronic games when I do not have nothing to do	
Arousal	I find that playing electronic games raises my level of adrenaline	Sherry et al. (2006)
	Electronic games keep me on the edge of my seat	
	I play electronic games because they stimulate my emotions	
	I play electronic games because they excite me	
Challenge	I feel proud when I master an aspect of an electronic game.	Sherry et al. (2006)
	I find it very rewarding to get to the next level.	
	I find it very rewarding to reach the next level of an electronic game	Jin (2014)
	I enjoy finding new and creative ways to work through an electronic game	
Competition	I feel proud when I master an aspect of an electronic game	Sherry et al. (2006)
	When I lose to someone, I immediately want to play again in an attempt to beat him/her	
	It is important to me to be the fastest and most skilled person playing the electronic game.	
	I get upset when I lose to my friends.	
Diversion	I play electronic games when I have other things to do.	Sherry et al. (2006)
	I play electronic games instead of other things I should be doing.	
Fun	I play electronic games because it's fun	Jin (2014)
	I play electronic games because it's cool	
Fantasy	I play electronic games because they let me do things I can't do in real life.	Sherry et al. (2006)
	Electronic games allow me to pretend I am someone/somewhere else.	
	I like to do something that I could not normally do in real life through an electronic game.	
	I enjoy the excitement of assuming an alter ego in an electronic game.	
Social interaction	My friends and I use electronic games as a reason to get together.	Sherry et al. (2006)
	Often, a group of friends and I will spend time playing electronic games.	
	I play electronic games to relate to other people	Own authorship
Intention to play	I am willing to play electronic games	Wei and Lu (2014)
	I will give playing mobile electronic games a try	
	I can began and stop playing electronic game at any time	
Purchase intention	I will recommend to my family and parents items of electronic games	Toni and Mazzon (2014)
	There are a big probability that I waste money in items of electronic games	
	I intend to buy electronic game items in the future	Park and Lee (2011) and Chou and Kimsuwan (2013)
	I predict that I will buy electronic game items in the future	
	I hope to buy electronic game items soon	

high school. They were also asked about the main device they used to play electronic games. Results show that 188 (31.3%) use consoles; 132 (22%), computers; 11 (3.2%), social networks; 160 (26.6%), smartphones; 107 (17.8%), online games; and 3 (0.5%), other devices. Table 3 shows data collected from the respondents.

Comparing with data collected by Game Brasil (2016) and Gedigames (2014), the sample is consistent with data on the Brazilian market, according to which most users are young (under 25 years old), and use mainly consoles, smartphones and computers to play games. Also convergent with data on the Brazilian market, most players in the sample are men.

Furthermore, we conducted correlation matrix tests, where variables 33 and 34 were removed for showing, with other variables, values above 0.85 (Kline, 1998). The analysis of univariate normality identified that data were not normal (Hau & Marsh, 2004), the same as with the multivariate normality test (Byrne, 2013). However, there is reasonable consensus in the

literature regarding the difficulty of obtaining normal results in Social Sciences' empirical studies (Byrne, 2013; Hair et al., 2005). Hence, when data express an adequate non-normality, there are some corrective measures for treating the sample. One of them consists on estimating the parameters through the maximum likelihood (ML) approach, by applying the bootstrapping procedure, which we used in this research.

After data treatment, we proceeded through the use of structural equation modeling. We created a measuring model for the proposed framework, and then an estimation model (Anderson & Gerbing, 1988; Mota, 2013). Finally, measurement tests were carried out (Baron & Kenny, 1986). Model's reliability was tested by Cronbach's alpha (values should be greater than 0.7) (Hair et al., 2005). For the analysis we used the SPSS v.20 statistical software (Statistical Package for Social Sciences).

To analyze the measuring model and the estimation model we used the AMOS v.20 software, since it enables the use of the ML estimation technique along with the bootstrapping method (5000

Table 3  
Data from the respondents.

Questions	Answers	Total	%
Frequency of use of electronic games	Once or twice a month	89	14.81
	Once or twice a week	87	14.48
	Three times or four times a week	114	18.97
	Once a day	100	16.64
	More than once a day	211	35.11
	Total	601	100.00
Device used to play electronic games	Consoles	188	31.28
	Computers	132	21.96
	Social networks	11	1.83
	Smartphones	160	26.62
	Online games	107	17.80
	Others	3	0.50
	Total	601	100.00
Gender	Male	471	78.37
	Female	130	21.63
	Total	601	100.00
Did you spend money with electronic games in 2014?	Yes	354	59.70
	No	239	40.30
	Total	593	100.00
How much money did you spend with electronic games in 2014?	R\$ 2.00 to R\$ 90.00	72	20.51
	R\$ 100.00 to R\$ 250.00	88	25.07
	R\$ 252.00 to R\$ 500.00	87	24.79
	More than R\$ 500.00	104	29.63
	Total	351	100.00
Time range spent on playing	10–50 min	28	4.84
	1 h to 1 h and 50 min	116	20.03
	2 h to 2 h and 50 min	166	28.67
	3 h to 5 h and 50 min	184	31.78
	6 h or more	85	14.68
	Total	579	100.00
Age	Up to 20 years	258	43.07
	21–25 years	226	37.73
	26–30 years	75	12.52
	More than 30 years	40	6.68
	Total	599	100.00
State where you live	Ceará	516	92.47
	São Paulo	31	5.56
	Minas Gerais	11	1.97
	Total	558	100.00

resamples), which reduces the non-normality effect. AMOS employs the covariance analysis for confirmatory factor analysis (CFA). In addition, our model uses a mediating variable and, in this case, the use of covariance analysis techniques is recommended (Hair, Gabriel, & Patel, 2014).

Convergent validity and discriminant validity of each construct were used to test the estimation model, through the procedures proposed by Fornell and Larcker (1981) and Garver and Mentzer (1999). It should be noted that satisfactory results of one validity type do not necessarily imply the same results for the other. Thus, these four authors argue that the composite reliability (CR) is satisfactory when greater than 0.7, and the average variance extracted (AVE) greater than 0.5, and both indices compose the convergent validity. Discriminant validity is achieved when AVE is greater than the maximum shared squared variance (MSV) and the average shared squared variance (ASV).

Table 4  
Convergent and discriminant validity.

Construct	CR	AVE	MSV	ASV
Fun	0.909	0.833	0.353	0.124
Arousal	0.833	0.564	0.424	0.223
Challenge	0.775	0.466	0.424	0.206
Intention to play	0.906	0.763	0.462	0.253
Competition	0.811	0.522	0.215	0.108
Fantasy	0.906	0.707	0.298	0.167
Social interaction	0.820	0.603	0.294	0.182
Diversion	0.892	0.807	0.154	0.092
Time flexibility	0.737	0.589	0.051	0.017
Intention to pay	0.885	0.720	0.462	0.198

## Results

This section deals with structural equations modeling and is divided in four parts: (i) scales dimension measures, (ii) measurement model, (iii) structural model and hypothesis tests, and (iv) mediation.

### Scales dimension measures

Convergent and discriminant validity tests were conducted by the unidimensional composition of factor loadings, Cronbach's alpha ( $\alpha$ ), CR, AVE and squared correlations (Fornell & Larcker, 1981; Garver & Mentzer, 1999). According to Hair et al. (2005), factor loading values should be greater than 0.5, and Cronbach's alpha greater than 0.7. Data analysis showed that factor loading values were below 0.5 for questions 1 and 2, while the remaining variables showed results greater than 0.5. Cronbach's alpha results were greater than 0.7 for all constructs.

The results of convergent and discriminant validity tests can be seen in Table 4. Among all indicators, only AVE for the challenge construct did not achieve a satisfactory result (0.466). We chose, however, to keep this construct in the estimation model, based on theoretical support (Jin, 2014; Pe-Than et al., 2014; Shelton, 2010; Sherry et al., 2006).

### Measurement model

All constructs are linked by covariance in the measurement model, and there is neither hypotheses test nor causality between them. Results show that the model is adequate to SEM's reference values: CMIN = 2.196; GFI = 0.914; IFI = 0.956; TLI = 0.947; CFI = 0.955; RMSEA = 0.045. Therefore, we can say that the theoretical model proposed to assess the intention to play and the background factors is adequate, because of the values achieved. Based on these results, we proceeded to the next step: the structural model.

### Structural model and hypothesis test

Fig. 2 shows the proposed conceptual framework designed on AMOS v.20. It should be noted that time flexibility, arousal, challenge, competition, diversion, fun, fantasy and social interaction constructs are exogenous and cause the intention to play, which

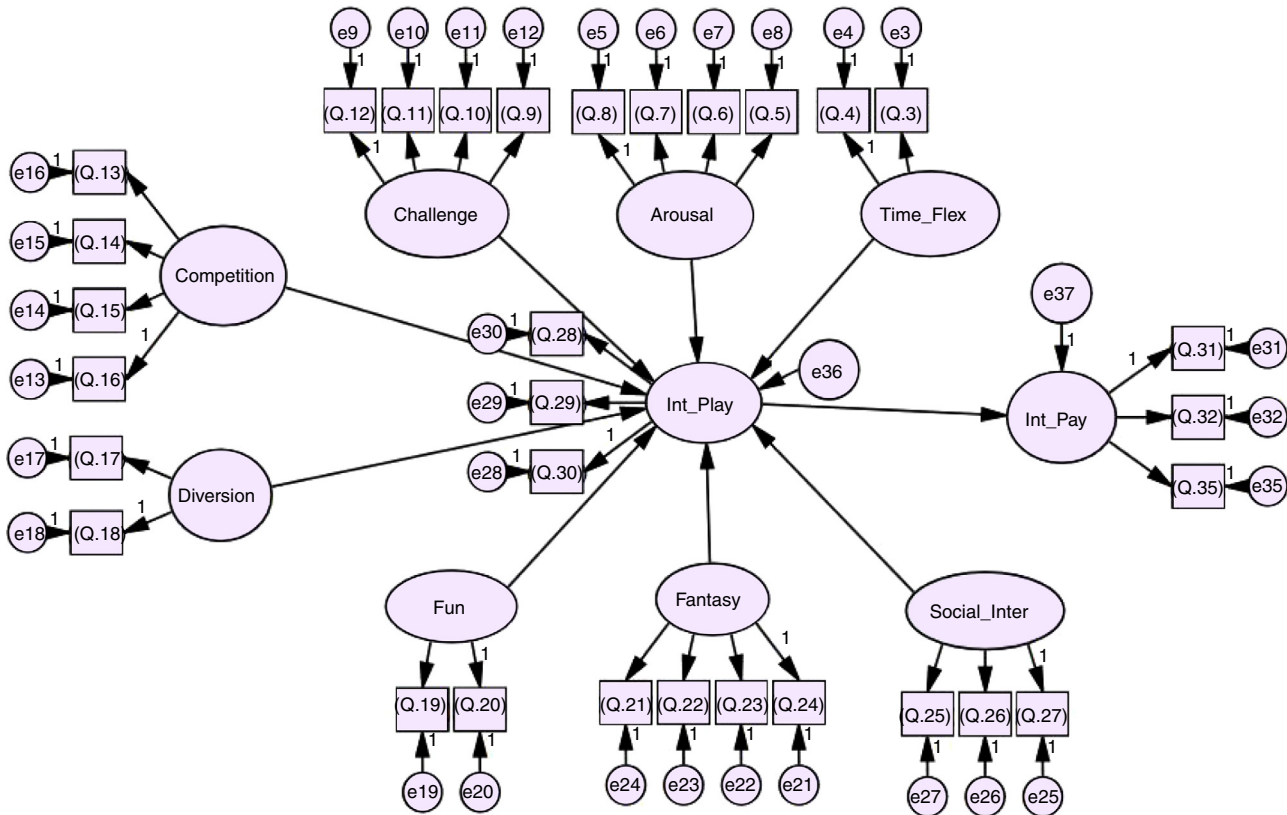


Fig. 2. Structural model.

Table 5  
Structural model.

Indices	Values
Qui-square ( $\chi^2$ )	777.168
$\chi^2$ /degrees of freedom (CMI/DF)	1.968
<i>p</i>	0.000
GFI	0.923
IFI	0.964
TLI	0.957
CFI	0.963
RMSEA	0.040

in turn influences the intention to pay. Thus, the intention to play construct is a mediator between the exogenous constructs and the intention to pay. According to Byrne (2013), the model should be presented without the correlations and errors associated to construct variables.

Table 5 shows the values of the fit indices of the structural model, where it can be seen that all restrictions established by literature (Hair et al., 2005) were met. Therefore, the model is adequately fitted. Next stage involved analyzing the structural paths in order to check if the hypotheses were statistically significant.

Among the nine hypotheses, three were rejected (H1, H2 and H4), and the other six were accepted (Table 6). It should be noted that hypothesis (H9), about intention to play positively affecting the intention to pay, was accepted. Next step was to verify how mediation between the constructs occurred.

### Mediation

Mediation test was employed to identify if the antecedent intention-to-play variables are also motivators for the intention to pay; and if, combined with the intention to play, the effect is enhanced. It is important to understand if this mediation occurs, considering the current strategies that allow players to test before paying (e.g. demo games, play-to-pay and freemium). Hence, it is important to recognize which variables also have an impact on the intention to pay for games that present their qualities incompletely, since it is necessary to purchase them to enjoy their full versions.

The module MEDIATE (SPSS), by Hayes and Preacher (2014), was used to carry out the mediation, using the bootstrapping of 5000 resamples and a confidence interval of 95%. In order to check the confidence interval for this mediating effect, we used the bias-corrected method (BC method). Table 7 shows the test results for the direct effects without mediation, direct effects with mediation, indirect effects, and the type of mediation, where the mediating variable is the intention to play and the dependent variable is the intention to pay.

According to Baron and Kenny (1986), mediation analysis can only be done when there is causality between the dependent variables and the mediating variable. Therefore, we did not conduct the mediation test for the constructs time flexibility and arousal. Moreover, although its hypothesis was rejected, the competition construct was kept in the analysis, since it has a negative influence on the intention to play.



Table 6  
Hypothesis test.

Dependent variable	Independent variable	Non-standardized factorial loading (b)	Standardized error ( $\epsilon$ )	Standardized factorial loading ( $\beta$ )	T-test	Hypothesis
Intention to play	Time flexibility	-0.038	0.03	-1.265	0.206	H1 – Denied
Intention to play	Arousal	0.05	0.056	0.887	0.375	H2 – Denied
Intention to play	Challenge	0.446	0.095	4.693	***	H3 – Confirmed
Intention to play	Competition	-0.138	0.062	-2.219	0.026	H4 – Denied
Intention to play	Diversion	0.097	0.033	2.927	0.003	H5 – Confirmed
Intention to play	Fun	0.404	0.061	6.603	***	H6 – Confirmed
Intention to play	Fantasy	0.129	0.031	4.132	***	H7 – Confirmed
Intention to play	Social interaction	0.173	0.047	3.686	***	H8 – Confirmed
Intention to pay	Intention to play	0.76	0.05	15.137	***	H9 – Confirmed

\*\*\*  $p < 0.01$ .Table 7  
Mediation test.

Hypothesis	Relation	Direct effect without mediation	Direct effect with mediation	Indirect effect	Type of mediation
H3	Challenge => Intention to Pay	0.0755	0.3189***	0.1979***	Partial
H4	Competition => Intention to Pay	-0.0055	-0.0399	-0.248	No mediation
H5	Diversion => Intention to Pay	0.0122	0.0924***	0.0574***	Partial
H6	Fun => Intention to Pay	-0.0183	0.4554***	0.2827**	Partial
H7	Fantasy => Intention to Pay	0.1052**	0.1563***	0.0970***	Partial
H8	Social interaction => Intention to Pay	0.2403***	0.1374***	0.0853***	Partial

\*\*\*  $p < 0.01$ .\*\*  $p < 0.05$ .

## Discussion

As observed, the scale showed satisfactory results for unidimensionality, based on the results for Cronbach's alpha, factor loadings, CR, AVE and squared correlations. Therefore, Sherry et al. (2006) scale for arousal, challenge, competition, diversion and fantasy; Jin (2014) scale for diversion; Wei and Lu (2014) scale for intention to play; Toni and Mazzon (2014), Park and Lee (2011) and Chou and Kimsuwan (2013) scales for the intention to pay; and the enhanced scale for time flexibility are all appropriate tools to assess these constructs, regarding the behavior of electronic games' consumers.

The measurement model had satisfactory results, which shows that the proposed model based on the theoretical framework is appropriate. The structural model proved to fit with suitable values (Byrne, 2013; Hair et al., 2005). Based on the hypotheses test, six out of nine hypotheses were confirmed.

H1 hypothesis stated that time flexibility positively affects the intention to play (Pe-Than et al., 2014). Other than expected, this hypothesis was not confirmed. This means that the players approached by this study do not play as a result of having time flexibility, but play even when they have something else to do. A possible explanation for this finding may be the sample attributes: about 35% of the respondents play more than once a day, and most of them between 3 and 6 h. This indicates a highly active player profile. Moreover, the sample is composed of players who use different types of devices, and the time flexibility

construct is considered to be particularly valued by those who use smartphones (Wei & Lu, 2014).

H2 hypothesis stated that arousal positively affects the intention to play (Engl & Nacke, 2013; Sherry et al., 2006). This hypothesis was also rejected, which demonstrates that users are not motivated to play, or to keep playing, by excitement or emotions that stem from the game. A possible explanation rests on the fact that arousal is linked to a physiological sensation – a result of adrenaline production – that may give the player a sense of well-being in relation to the stimulus received while playing, but that is difficult to recognize. Someone saying that he plays 6 h everyday might be easier than agreeing that games are linked to an obsessive state that can make players unable to turn off the game for several hours.

H3 hypothesis stated that challenge positively affects the intention to play (Engl & Nacke, 2013; Jin, 2014; Pe-Than et al., 2014; Shelton, 2010; Sherry et al., 2006). This hypothesis was accepted, which shows that users play electronic games, and intend to keep playing them, due to their challenges. This means that challenging games tend to have greater levels of acceptance in the Brazilian market, which has also strong design implications for product developers. This is an opportunity that will certainly result in new games with new features.

H4 hypothesis stated that competition positively affects the intention to play (Sherry et al., 2006). This hypothesis was rejected, and we could observe that competition has a negative effect on the intention to play. A possible explanation is that when a player loses, he does not feel inclined to keep playing.

Another explanation from the literature (Ferreira et al., 2011) relates to an uneasy attitude when faced with competitive situations, associated to feelings of embarrassment and inferiority, while playing games that have competition as a key feature. Beyond this study, it is still possible to imagine that competition is perceived as antisocial. Thus, it is reasonable to assume that the desire to socialize is more important than the desire to win.

H5 hypothesis argued that diversion positively affects the intention to play (Jin, 2014; Shelton, 2010; Sherry et al., 2006). Once this hypothesis was accepted, we can infer that electronic games' consumers wish to find a distraction from everyday problems and they succeed in escaping by diverting their attention to other factors. Moreover, games provide to players the possibility of escaping from daily challenges, as they establish their own rules, usually less restrictive than real life's rules.

H6 hypothesis claimed that fun has a positive influence on the intention to play (Cohen, 2014; Jin, 2014; Pe-Than et al., 2014; Shelton, 2010; Wei & Lu, 2014). This relation showed the most standardized effect, which indicates that this construct is the most influential on the intention to play. Therefore, the main reason to play electronic games is fun. An electronic game should be fun in order to be played, once its main goal is entertainment.

H7 hypothesis postulated that fantasy has a positive influence on the intention to play (Jin, 2014; Shelton, 2010; Sherry et al., 2006). One of the features that lead people to play is the possibility to act in ways they are not allowed in real life. Therefore the acceptance of this hypothesis implies that it is important for games to provide this fantasy world that creates a simple and deliberate representation of reality.

H8 hypothesis stated that social interaction affects the intention to play (Pe-Than et al., 2014; Shelton, 2010; Sherry et al., 2006). This hypothesis was accepted, proving that games that allow players to interact are appealing to consumers. In practical terms, the game can enable social interaction through tools that allow players to know one another, to get information, and to communicate with other players. This variable is different from competition, since players do not compete between them. In fact, in many cases, cooperation takes place.

Finally, H9 hypothesis stated that the intention to play positively affects the intention to pay (Chou & Kimsuwan, 2013; Gedigames, 2014; Park & Lee, 2011). Once this hypothesis was confirmed, mediation tests were conducted in order to understand the influence that intention-to-play independent variables have on the intention to pay. These tests were carried out on the following independent variables: challenge, competition, diversion, fun, fantasy, and social interaction.

We observed that challenge, diversion, fun and fantasy constructs influence the intention to pay; and there is a partial mediation of the intention to play in these relations. Intention to play has a positive effect, since the direct effect with mediation is greater than the direct effect without mediation, thus enhancing the intention to pay; while for the social interaction construct there is an opposite effect, reducing the intention to pay. This happens because social interaction has a greater effect on the intention to pay when there is no effect of the mediating variable intention to play. It is vital that the player has the intention to play, in order to buy something related

to the game; but if the game is perceived as a means of socialization, the act of playing minimizes the intention to pay.

In addition, the relationship between competition, intention to play and intention to pay is not properly explained when these constructs are directly related. This means that the competition construct does not affect the intention to pay. Even when intention to play mediates the relation, competition still has no significance, and the indirect effects of the construct are also insufficient to influence the intention to pay, showing that competition is a less important construct, as compared to others.

## Conclusion

Given the importance for the national market of games, this research presents relevant data on the main features that motivate players. The leading attribute that affects the intention to play is the fun provided by electronic games, a condition that must be ensured by game developers. Fantasy and challenge are the other variables that should be highlighted. Looking behind the game's scenario and considering the rules that define gameplay, it is paramount that the challenges faced by players are clear, how they will result in fun, and the stories of the characters in a world that has its own fantasy.

Besides, results show that the intention to play has a high degree of influence on the intention to pay, and mediation tests demonstrate that previous variables also have a strong influence on the intention to pay. Thus, it should be emphasized that the current strategy of *freemium* and play-to-pay games is an efficient way to stimulate the intention to play and, eventually, the intention to pay.

As for theoretical contributions, this study proposes the use of eight constructs to explain the intention to play and the intention to pay. These features were considered after an extensive literature review, ranging from empirical evidences of research studies on how human beings interact with machines, to psychological studies that demonstrate how games motivate and affect people. Starting with the proposed model, with a sample of players who use different devices to play, we demonstrated that time flexibility, arousal, and competition do not have a significant relationship with the intention to play. Further studies should try to understand, by using this same model, how these constructs operate on players who use specific platforms, such as massively multiplayer online (MMO) games, where competition is a relevant factor.

Despite our results, we should highlight their limitations, regarding the use of a non-probabilistic sample. Another limitation is that we did not conduct tests on the individual construct models, due to the difficulty of calculating the fitting measures. This is because in most models the degrees of freedom were equal to zero, and we decided not to do these tests. Also, the time flexibility construct should be revisited in future studies, since variables were removed from its content.

This research focused only on players of electronic games and their motivations. Therefore, we did not study the profiles of those who do not play. Another limitation is that we chose

games' end users, dealing only with part of the data of the entire network that comprises the games market.

Finally, we suggest that the impact of piracy on the games market should be studied. In addition, a detailed survey should be conducted to understand which motivations influence the choice of the device used for playing, and also how the *freemium* strategy actually affects the consumption intention, once the user has already tried the game and needs further motivation to pay for extensions or additional benefits.

## Conflicts of interest

The authors declare no conflicts of interest.

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