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Sales-based Brand Equity as a Performance Driver in 'The Country of Soccer'



Brand Equity Baseado em Vendas como Driver do Desempenho no 'País do Futebol'

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ABSTRACT

Despite being the most popular sport in Brazil, soccer suffers from structural problems. Managers working in this reality know little about the factors that determine performance measures in stadiums. Existing research is undertaken according to an economic logic, which attributes importance to a dependent variable only, the total attendance of soccer matches. This article presents an approach that retrieves a sales-based brand equity (SBBE) measure responsible for performance (revenues and proportional demand) in Brazilian soccer stadiums. The methodology involved a process of a canonical regression model with two dependent variables using on-field performance and SBBE as the main drivers of marketing performance. The theoretical assumption underlying the models is the discussion about the multidimensionality of performance and the importance of testing the potential correlation amongst marketing performance variables. The model developed was estimated using all matches of the Premium Division of Brazilian Championship (Série A) held between 2012 and 2017. The main result highlights the power of SBBE as the primary driver of performance in Brazilian stadiums. Corinthians and Flamengo, the two most important Brazilian soccer club brands, exert a positive influence considerably higher than all other competitors.

Keywords: Attendance; Marketing performance; Sales-based brand equity; Sports marketing.

JEL Code: L83, L25, N26.

RESUMO

Apesar de ser o esporte mais popular do país, o futebol sofre com problemas estruturais. Profissionais de marketing pouco sabem sobre os fatores que determinam variáveis de desempenho. Pesquisas existentes são desenvolvidas segundo uma lógica estritamente econômica, atribuindo importância a uma variável dependente apenas, o público total das partidas. Este artigo apresenta uma abordagem que operacionaliza uma medida de Brand Equity baseado nas vendas (SBBE) como determinante do desempenho (receitas e demanda proporcional) em estádios de futebol brasileiros. A metodologia envolveu um modelo de regressão canônica com duas variáveis dependentes, utilizando o Desempenho em Campo e o SBBE como principais direcionadores do desempenho mercadológico. O pressuposto que norteou o desenvolvimento dos modelos foi a discussão a respeito da multidimensionalidade do desempenho e a importância em se testar a correlação potencial entre variáveis de desempenho. O modelo foi estimado sobre uma base de dados contendo todas as partidas da Série A do Brasileirão realizadas entre 2012 e 2017. O principal resultado destaca o poder do SBBE como 'driver' do desempenho nos estádios brasileiros. Corinthians e Flamengo, as duas principais marcas de clubes de futebol, exercem influência positiva consideravelmente superior aos seus concorrentes.

Palavras-chave: Brand Equity baseado nas vendas; Desempenho mercadológico; Marketing Esportivo; Presença de Público nos Estádios..

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INTRODUCTION

Marketing literature considers marketing performance as a multidimensional concept which must be characterized by multiple response variables (Katsikeas, Morgan, Leonidou & Hult, 2016; Rust, Ambler, Carpenter, Kumar & Srivastava, 2004). This is an already established reality of empirical research using traditional business models, which focuses on communication and promotion activities which have a measurable impact on the attitudinal and behavioral variables of their target audiences (Rust et al., 2004). However, certain specific marketing areas are characterized by low penetration of publications. Sports marketing is a case in question as there is a dearth of journals on the study of the topic (Lehmann, 2005) and the domain is not even considered as a subarea of the discipline (Baumgartner & Pieters, 2003). It is understandable, therefore, that little is known about the dynamics of performance in these circumstances.

In Brazil, sports marketing merits attention when soccer as a sport is being discussed. While it is the country's most popular sport, certain traditional centennial clubs face structural and organizational problems, such as poor management practices (Bortoluzzo, Bortoluzzo, Machado, Melhado, Trindade & Pereira, 2017; Madalozzo & Villar, 2009). The country's two biggest clubs, Flamengo and Corinthians alone, have 32.5 and 27.3 million supporters, respectively (IBOPE Inteligência, 2014). The total number of fans of these two clubs together is higher than the populations of South Korea, Spain or Colombia.

Extant research about revenues or spectator attendance in Brazilian context is solely based on an economic logic which seeks to identify the determinants of these variables usually assigning one dependent variable only, namely total attendance at matches (Bortoluzzo et al., 2017; Madalozzo & Villar, 2009; Wieser, 2016). This structure is usually based on empirical initiatives which measure the effect of managerial, demographic and socioeconomic variables on spectator attendance in stadiums (Ferreira & Bravo, 2007). There are other two components, which authors classify as Quality, games involving teams disputing top-rankings (Meier, Konjer & Leinwather, 2016), and uncertainty of the outcome, when teams with real chances of winning championships are involved (Peel & Thomas, 1992).

The common thread uniting all these perspectives is an analytical framework with a strictly economic bias. Researchers usually estimate a demand function, linear or linearized, and as explanatory factors use economic or performance variables which capture the heterogeneity proper to

the reality studied, namely soccer matches (Araújo, Shikida & Monasterio, 2005; García & Rodríguez, 2002). Therefore, an exclusive marketing-based approach is lacking capable of simultaneously: (a) identify the influence and strength of Brazilian soccer club brands in a context marked by low marketing management professionalization, a profusion of major clubs and enduring low attendances; (b) compare the relative influence of brands against on-field performance variables; (c) unveil the simultaneous process of these variables in explaining multiple performance measures which are related to each other, as performance has already been confirmed as a multidimensional concept in marketing (Katsikeas et al., 2016; Rust et al., 2004).

The present article addresses these shortcomings by presenting an integrated approach that retrieves a sales-based brand equity (SBBE) measure (Wetzel, Hattula, Hammerschmidt & Heerde, 2018) responsible for performance (revenues and proportional demand) in Brazilian soccer stadiums. The model was developed using a dataset which includes all the matches played between 2012 and 2017 in the first division of the Brazilian Championship (Série A).

Our study concomitantly responds to the call for research on this dynamic in the South American reality, where research is still scarce (Ferreira & Bravo, 2007) while presents an economically and highly relevant measure of brand strength based specifically on brand share (Datta, Ailawadi & Heerde, 2017). This article is organized according to the following structure. The second section presents a brief explanation of SBBE as a measure of brand equity, its importance and application to soccer reality. Next, we provide a brief review of the factors responsible for the variability of attendance in soccer stadiums. The fourth section describes the methodological approach, followed by results presentation and discussion. Implications and final remarks are presented in the last section.

A SALES-BASED INSPIRED MEASURE OF BRAND EQUITY: THE SBBE AND ITS APPLICATION TO SOCCER REALITY

Sales-Based Brand Equity (SBBE) is conceived as marketplace manifestations of the perceptual measures derived from the widely recognized Consumer-Based Brand Equity (Datta, et al., 2017) originated from Keller's (1998) conceptualization. It is defined as "the contribution of a brand's identity to sales or utility beyond the contribution of its objectively measured attributes" (Wetzel et al., 2018, p. 597). Marketing researchers resort to measuring SBBE using secondary data from

consumer-packaged goods. Ailawadi, Lehmann and Neslin (2003) and Slotegraaf and Pauwels (2008), for example, used data from an U.S. grocery retailer and what differentiates these approaches is the level of aggregation of the SBBE measure. The level varies from a brand (Datta et al., 2017), category (Slotegraaf & Pauwels, 2008) or market (Ailawadi, Lehmann & Neslin, 2003).

In the soccer context, Wetzel, Hattula, Hammerschmidt and Heerde (2018) had analyzed 50 years (1963 to 2014) of German professional soccer. Their results unveil a positive influence of SBBE on attendance. More importantly, they identify a brand leverage effect of SBBE conditional on time. Their comparison between high and low SBBE (Strong and Weak soccer club brands) shows an increasing attendance gap between the two groups. According to the authors, "the increasing brand leverage effect highlights the need for professional and long-term oriented sports and brand management" (Wetzel et al., 2018, p. 607), a need also latent in Brazil.

Factors responsible for the variability of attendance and revenue in stadiums

Literature on the determinants of revenue and attendance in soccer stadiums presents multiple independent variables which can be considered as either internal or external to the individual. **Internal** latent variables are the personal motives which lead people to attend a match, such as emotional excitement, and the desire to socialize and watch the game on the pitch (Karakaya, Yannopoulos & Kefalaki, 2016). **External** variables have to do with the environment which affects someone's decision to go to the stadium and are usually classified into some categories, according to the extensive literature review conducted by Villar and Guerrero (2009). These determinants are usually economical, refer to expected quality, uncertainty of outcome, opportunity costs and other factors (Borland & MacDonald, 2003; Villar & Guerrero, 2009).

Simmons (2006) suggests that the application of conventional consumer theory to sports is not straightforward. For example, if we consider the principles of economic theory dealing with the relation between price and demand, the initial supposition would be that one of the most critical determinants of why supporters go to stadiums is the cost of the ticket. This means that it could be assumed that the higher the price of the ticket the lower the demand. This presupposition is only partially confirmed by Bortoluzzo, Bortoluzzo, Machado, Melhado, Trindade and Pereira (2017) and Madalozzo and Villar (2009), as they did show that an increase in price does not necessarily mean that demand will decrease in the same proportion.

García and Rodríguez (2002) present a similar finding with data from the Spanish championship, since they noted that this elasticity is sensitive to questions of specificity, for example, the representativeness of certain teams, such as Barcelona and Real Madrid. Other factors are usually analyzed as determinants of the variability in attendance. Among the authors dealing with team (on-field) performance factors, Bortoluzzo et al. (2017) present a model in which the number of points gained, and goals scored in the recent past and the importance of the match affect people paying for sporting events. Accordingly, matches played mid-week pose a lower average spectatorship than those played on Saturdays or Sundays (Gómez-González, García-Unanue, Sánchez-Sánchez, Ubago-Guisado & Corral, 2016; Wieser, 2016). Recently inaugurated stadiums attract fans, and thereby increase spectator attendance. North-American researchers analyzing the effect of the construction of new stadiums in a variety of different sports classify this phenomenon as The Honeymoon Effect, which dissipates after five years (Leadley & Zygmunt, 2006).

Empirical studies on the determinants of attendance in soccer stadiums

The empirical literature about the determinants of attendance in soccer stadiums is mostly concentrated in the United Kingdom and other European leagues, as pointed out by the review conducted by Borland and MacDonald (2003). A common thread amongst all these studies is a clear economic bias and the concentration on attendance as the main dependent variable. Table 1 summarizes the studies dedicated to analyzing attendance in soccer stadiums. There is a concentration on a single dependent variable, whereas only a few studies attempt to analyze the phenomenon using multiple response variables. Table 1 also categorizes all these studies using the six common types of determinants outlined in literature reviews (Borland & MacDonald, 2003; Villar & Guerrero, 2009). A necessary implication drawn from this illustration is the opportunity to scrutinize this empirical reality using analytical approaches that appraise the multidimensionality condition of marketing performance (Katsikeas et al., 2016; Rust et al., 2004).

Table 1. Related studies on determinants of attendance in soccer stadiums

Study	Type of determinant							
	Demo-graphic	Econo-mic	Marketing		Tem-poral	Uncer-tainty	Effect on	Single or multiple measures
			Price	Team quality				
Allan (2004)			v		v		Attendance	Single
Allan & Roy (2008)					v	v	Attendance	Single
Baimbridge (1997)	v	v			v	v	Attendance and Proportion of stadium capacity	Multiple
Baimbridge et al. (1996)	v	v	v	v	v	v	Attendance	Single
Bird (1982)		v	v				Attendance	Single
Bortoluzzo et al. (2017)	v	v	v	v	v	v	Attendance	Single
Cox (2012)	v	v				v	Revenue	Single
Dobson & Goddard (1992)	v					v	Attendance	Single
Dobson & Goddard (1995)	v			v			Attendance	Single
Dobson & Goddard (1996)	v		v			v	Attendance	Single
Falter & Perignon (2000)	v	v				v	Attendance and Prematch winning probability	Multiple
Falter et al. (2008)		v		v		v	Attendance, percentage attendance and floating attendance	Multiple
Ferreira & Bravo (2007)	v		v		v		Attendance	Single
García & Rodríguez (2002)		v	v	v		v	Attendance	Single
Forrest & Simmons (2002)					v	v	Attendance	Single
Forrest & Simmons (2006)					v	v	Attendance	Single
Forrest et al. (2003)	v						Tickets per unit of population	Single
Gómez-González et al. (2016)					v	v	Attendance	Single
Hart et al. (1975)	v	v		v			Attendance	Single
Jennet (1984)	v	v	v		v	v	Attendance	Single
Madalozzo & Villar (2009)			v	v	v	v	Attendance	Single
Meier et al. (2016)	v					v	Attendance	Single
Peel & Thomas (1988)	v				v	v	Attendance	Single
Peel & Thomas (1992)						v	Attendance	Single
Peel & Thomas (1996)						v	Attendance	Single
Simmons (1996)			v	v			Attendance	Single
Szymanski (2001)					v	v	Ratio of average attendances and league matches over time	Single
Szymanski & Smith (1997)			v		v		Attendance	Single
Walker (1986)	v					v	Attendance	Single
Wetzel et al. (2018)			v	v	v	V	Attendance	Single
This study	v	v	v	v	v	v	Revenue and Proportional Demand	Multiple

Table 1 presents studies that sought to identify the influence of different variables on marketing performance of football matches in different countries. Based on these studies, our approach concentrates on Brazil, a place where soccer is the main sport and where empirical research is still scarce, specifically if we consider the impact of SBBE. A practical importance is that during the period under analysis (2012 - 2017) new stadiums (arenas) were built and old and traditional stadiums refurbished for the 2014 FIFA World Cup. The theoretical argument founded on the importance of SBBE and multidimensionality of marketing performance and the practical argument about Brazilian reality establish the development of the main hypothesis of the study:

Hypothesis 1. Sales-based Brand Equity (SBBE) positively and simultaneously influences marketing performance (revenue and proportional demand)

METHODS

Dataset

Data used in this study are public information from Brazil, which ensures a certain reliability. Variables related to the Brazilian main soccer division matches are available on the official website of the Brazilian Football Confederation (CBF), the representative body of Brazilian soccer, in the Competições section, where matches scoresheets can be accessed (Confederação Brasileira de Futebol, 2018). To collect general match information data, such as dates, venues and time, their website was accessed. In addition, financial information (club revenues from ticket sales) and economic and sales information (tickets offered for sale and tickets sold) were consulted in the Boletim Financeiro tab, also available within the Competições section. The time span was defined after realizing that CBF only provides this information from 2012 onwards. Thus, all the information on the first division of the Brazilian Championship, the country's top competition, was collected between 2012 and 2017.

The original dataset contains 2,014 matches in the six editions of the championship (2012-2017). However, due to the definition of certain dependent variables (as explained in next sections), the matches held in Santa Catarina had to be removed because there was no information on the number of tickets offered for sale, only for the number of tickets sold and revenue generated. Matches played without spectators and the double W.O. between Chapecoense and Atlético Mineiro in the 2016 Brazilian Championship were also discarded.

Detailing the development of the Sales-based brand equity (SBBE) measure

Of all the independent variables which will be presented in Table 2, one deserves special mention. From the survey of the literature on the determinants of spectator

attendance in stadiums, a need was felt to reproduce in Brazilian context the Sales-based brand equity (SBBE) measure. It reflects share in the marketplace (Datta et al. 2017) and on sports is inspired on the study conducted by Wetzel et al. (2018) with data from German professional soccer. Particularly, we adopted an aggregated measure of SBBE to unveil the effect of what some authors classify as Team Quality. Unlike major international championships where titles and revenues are concentrated in a certain few clubs, the Brazilian Championship brings together 12 major clubs, which won 54 of the 59 titles of the championships played between 1959 (the first edition of the competition) and 2018 (Confederação Brasileira de Futebol, 2018). Just by way of comparison, in the Spanish League, Real Madrid and Barcelona won, together, 57 of the 85 titles contested since the league began in 1928 (LaLiga, 2018).

This particular feature of Brazilian reality has been recognized by both specialist media sectors (Lancepress, 2015) and academic studies. In a study by Giovannetti, Rocha, Sanches and Silva (2006) which sets out to measure the fidelity of Brazilian fans, the sample is divided into two groups, one of which is made up of all the following major Brazilian clubs: Botafogo, Flamengo, Fluminense, Vasco, Corinthians, Palmeiras, São Paulo, Santos, Grêmio, Internacional-RS, Atlético Mineiro and Cruzeiro. However, these 12 major clubs present heterogeneity regarding the size of their fan clubs. The last survey of the size of the country's soccer fan presented Flamengo and Corinthians with 16.2% and 13.6%, respectively, well above all the other clubs. São Paulo, for example, which came closest, represented 6.8% of Brazil's fans (IBOPE Inteligência, 2014).

A statistical criterion used in our approach led to the development of the following steps to reach a SBBE measure that would later embrace Brazilian Série A particularities: estimate a preliminary regression where a measure of revenue premium is first calculated as the difference between the revenues of match i 's in year t and the revenue by the weakest competitor on that year. We developed this measure for the years 2012-2017, inspired by the study of Ailawadi et al. (2003) and Wetzel et al. (2018). The revenue premium is the dependent variable of the preliminary regression and the residuals of this model (where all independent variables that are going to be used in the final model are the predictors) are characterized as the SBBE. According to Datta, Ailawadi and Heerde (2017) SBBE has proven to exhibit a strong positive association with three dimensions of the popular Consumer-based Brand Equity (CBBE). Hence, it is a good measure of brand strength;

Canonical regression model to assess multiple dependent variables of marketing performance

The estimation of the influence of the independent variables was undertaken using a canonical regression model. This technique allows the analysis of the influence of a set of variables on multiple dependent variables (Fávero & Belfiore, 2017). Concomitantly, it naturally

accommodates the marketing theoretical assumption of multidimensionality of performance (Katsikeas et al., 2016). We developed this model to compare the relative influence of SBBE and on-field performance variables on two Brazilian soccer performance measures, namely revenues and proportional demand. The objective of this methodological approach is to compare the relative influence of soccer brands against on-field performance variables and unveil the simultaneous process of these variables in explaining multiple performance measures which are related to each other.

Revenues are widely regarded as a response measure in marketing (Katsikeas et al., 2016), while the use of demand in proportions is relatively common in the sports marketing research context. A similar procedure was used by Falter, Perignon and Vercruysse (2008), when they defined the Percentage Attendance variable. Thus, in

our approach the Proportional Demand variable represents a kind of efficiency rate of the game, a ratio of tickets sold to tickets offered for sale, especially if we consider that consumption in soccer reality is restricted, due to stadium capacity (Bortoluzzo et al., 2017).

Study variables

A total of 13 independent variables were constructed from the existing literature on the factors which influence revenues and attendance in stadiums. The variables were consolidated according to two main groups: marketing and on-field performance. Table 2 describes the set of variables and presents basic descriptive statistics, such as mean and standard deviation (for the quantitative variables) or proportions (for dummy or factor variables).

Table 2. Definitions and basic descriptive statistics of study variables.

Variables	Attribution in the canonical model	Operationalization	Mean/Proportion (in %) (SD)	Dimension
Proportional Demand	Dependent	Ratio of tickets sold to tickets offered for sale	86.11%	-
Revenue	Dependent	Revenue derived from ticket sales	R\$ 550.487,70 (R\$ 651.625,20)	-
Amplitude	Independent	Difference from the leader points and the average between the two clubs involved in a given match	14.14 (9.15)	on-field
Average ticket price	Independent	Average (revenues/number of tickets sold) ticket price	R\$ 27.61 (R\$ 16.07)	marketing
Chance for leadership	Independent	Matches which one of the two clubs have the chance of assuming the leadership	26.88%	on-field
Chance of leaving relegation group	Independent	Matches which the home team has the chance of leaving the relegation group (last four positions)	11.77%	on-field
Home team in Top 4	Independent	Matches in which the home team was in the classification group for the continental competition, in the round in which that match occurred	20.37%	on-field
Match at start of championship	Independent	Match played in the first 8 rounds of the Championship	21.12%	on-field
Match at the end of championship	Independent	Match played in the last 8 rounds of the Championship	23.11%	on-field
Match w/ champion of current year	Independent	Match involving the champion club of that year's Championship	10.63%	on-field
New World Cup stadium	Independent	Variable which identifies whether the match was played in any of the stadiums built or renovated for the 2014 World Cup	30.66%	on-field
Night	Independent	Matches played after 7'pm	62.12%	on-field
Sales-based Brand Equity (SBBE)	Independent	Residuals of a regression of revenue premium, compared to lowest performer on all independent variables of the primary model	-.00 (.92)	marketing
Squared difference of points	Independent	Squared difference of points between the two teams	113.81 (212.51)	on-field
State classic	Independent	Matches recognized as state classics	7.55%	on-field

Note. Additionally, we included in the model the year in which the championship occurred (2012 to 2017) as dummies control variables.

Modeling framework

As this study is based on the premise of the multidimensional condition of marketing performance (Katsikeas et al., 2016; Rust et al., 2004) an empirical configuration capable of accommodating multiple response variables was chosen. According to Fávero and Belfiore (2017) notational structure of canonical regression is defined as:

$$Y_1 \dots Y_p = f(X_1 \dots X_p) \quad (1)$$

where Y_s ($s = 1, \dots, p$) represents the dependent variables of the model and X_j ($X_1 \dots X_p$) the independent variables. Our canonical model is developed around two dependent variables, Proportional Demand and Revenue, defined as:

$$\text{Proportional Demand} = \frac{\text{Ticketssold}_{it}}{\text{Ticketsforsale}_{it}} \quad (2)$$

$$\text{Sales revenue} = \text{Ticketssold}_{it} * \text{Prices}_{it} \quad (3)$$

where the subscript i is the match played and the subscript t the year of the edition of the Brazilian Serie A Championship, 2012 through 2017, for Equations 2 and 3.

Before estimating the canonical model, we develop a revenue premium measure, calculated as:

$$\text{Revenue premium} = \frac{\text{Ticketssold}_i}{\text{Ticketssold}_{\text{lowestperformer},t}} \quad (4)$$

It is important to note that: (1) we developed this measure from year to year, as the lowest performer varies from 2012 to 2017; (2) and the Revenue premium is the dependent variable of a preliminary regression model against all the independent variables shown in Table 2. The residuals of this regression consolidate the SBBE measure, a revenue which is exogenous to the predictors, according to the definition of Slotegraaf and Pauwels (2008).

RESULTS

Descriptive statistics

Table 3 shows the evolution of means and standard deviations of the leading quantitative variables between 2012 and 2017 and allows one to identify a relatively increasing demand in prices and revenues until 2015. This increase coincides with Brazil's hosting of the FIFA World Cup and the inauguration of several new (and modern) stadiums for the competition, in 2014. Average ticket prices, for example, rose from R\$ 21.50 to R\$ 33.31 between 2012 and 2015 while Revenues went from R\$ 313.374 to R\$ 744.849,90 in the same period. This pattern repeats for Revenue premium: from R\$ 309.579 to R\$ 720.644.

Figure 1 depicts factorized boxplots, unveiling the behavior in time (2012-2017) of Average ticket price, Proportional Demand, Revenue, and Revenue Premium. It is possible to observe the decline after the World Cup, probably also due to the Brazilian economic crisis after the competition. The only variable which remained with increased means was Proportional Demand. It rose from 80.44%, in 2012, to 92.61%, in 2017. This variable reflects a managerial improvement in the understanding the relationship between the number of tickets sold and the ones put for sale. The increase in Proportional Demand suggests clubs more capable of predicting their demand.

Table 3. Evolution of means and standard deviations of main variables between 2012 and 2017.

Variable	Year	Mean	SD
Average Ticket Price ^a	2012	R\$ 21.50	R\$ 7.76
	2013	R\$ 25.45	R\$ 13.76
	2014	R\$ 30.03	R\$ 17.59
	2015	R\$ 33.31	R\$ 15.53
	2016	R\$ 28.58	R\$ 16.88
	2017	R\$ 28.01	R\$ 20.09
Continues			

Table 3 (Continued)

Variable	Year	Mean	SD
Proportional Demand	2012	80.44%	19.89%
	2013	79.77%	23.88%
	2014	86.39%	20.26%
	2015	88.65%	16.67%
	2016	89.75%	16.81%
	2017	92.61%	11.86%
Revenue	2012	R\$ 313.374	R\$ 267.775,80
	2013	R\$ 476.770,80	R\$ 675.018,70
	2014	R\$ 642.976,40	R\$ 730.132,90
	2015	R\$ 744.849,90	R\$ 722.476,40
	2016	R\$ 581.426,80	R\$ 686.076,70
	2017	R\$ 583.213,50	R\$ 653.272,20
Revenue Premium	2012	R\$ 309.579	R\$ 267.775,80
	2013	R\$ 458.077,80	R\$ 675.018,70
	2014	R\$ 633.666,40	R\$ 730.132,90
	2015	R\$ 720.664,90	R\$ 722.476,40
	2016	R\$ 573.976,80	R\$ 686.076,70
	2017	R\$ 576.103,50	R\$ 653.272,20
Sales-based Brand Equity	2012	-.15	.95
	2013	-.20	.99
	2014	.10	.96
	2015	.19	.91
	2016	-.05	.90
	2017	.15	.83

Note. Total number of matches consolidated in the dataset: (N for 2012 = 355; N for 2013 = 360; N for 2014 = 319; N for 2015 = 299; N for 2016 = 342; N for 2017 = 339). ^a Average Ticket Price variable is defined as the ratio of revenue from matches (presented in the CBF report) to the number of tickets sold.

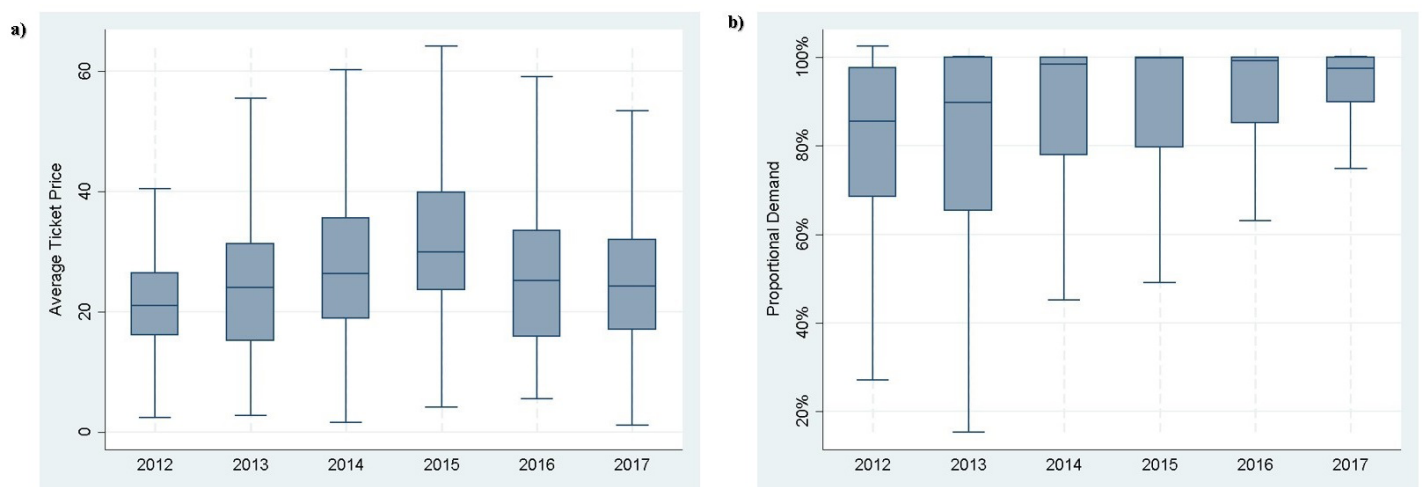


Figure 1. (A-B): Factorized boxplots of main quantitative variables. Graphs a-d depicts factorized boxplots of: a) Average ticket price; b) Proportional demand.

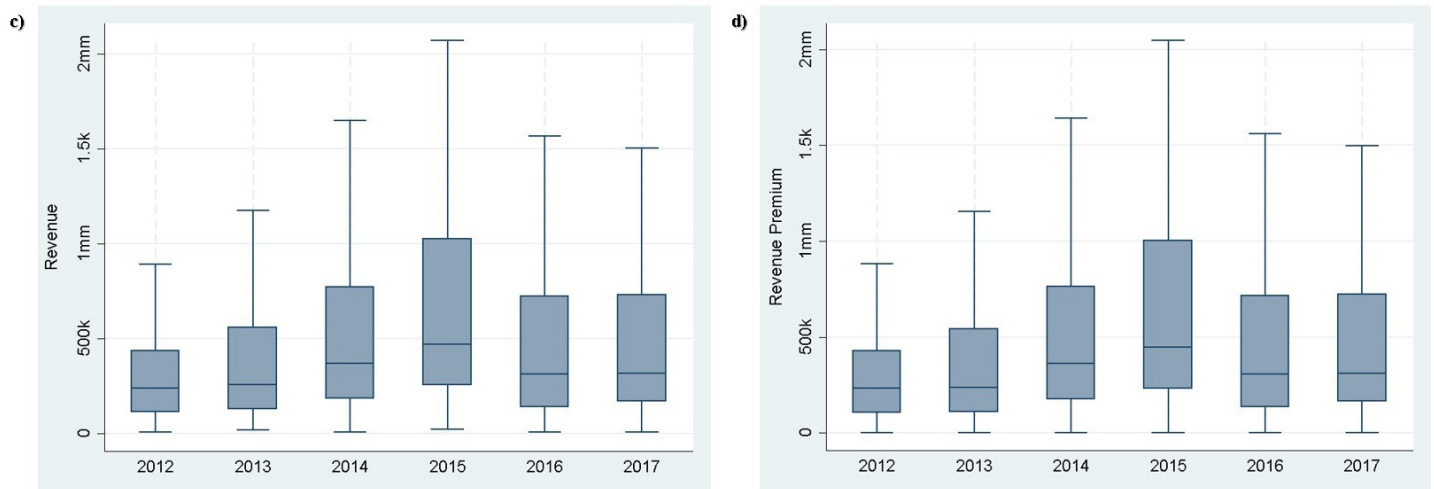


Figure 1. (C-D): Factorized boxplots of main quantitative variables. Graphs a-d depicts factorized boxplots of: c) Revenue; d) Revenue premium

Canonical regression model

Quantitative variables transformation and dealing with specification issues (Endogeneity and Multicollinearity)

Welog-transformed all quantitative variables depicted in Table 2, except for Sales-based Brand Equity. The transformation occurred before the preliminary regression in order to comply with an interpretation in terms of elasticities, as stated by Leeflang, Wieringa, Bijmolt and Pauwels (2015). Accordingly, this transformation ensured a scale-free interpretation of the coefficients (Wooldridge, 2015). Additionally, a standard procedure of response-modeling studies was undertaken (Hanssens & Parsons, 1993) when one unity (+1) was added to exclusive-positive values quantitative variables (Revenue, Revenue Premium and Squared difference of points) before the logarithm transformation, as Squared difference of points variables presented zero values. It was necessary to remove them before the final model.

Price is conceptually defined as endogenous, as unobserved (Ebbes, Papies, & Heerde, 2016) club characteristics may incite managers to set prices according to soccer club brands strength. Our approach for dealing with price endogeneity consisted of two steps: (1) decomposing ticket prices into an index (Bijmolt, Heerde & Pieters, 2005), dividing actual (i's match) by regular (the respective year's mean) price; (2) and following this procedure creating a Gaussian Copula Control Function approach (Papies, Ebbes & Heerde, 2017). This extra term

is an Instrument-free method (Park & Gupta, 2012), generated from a transformed inverse normal distribution of the empirical cumulative density function (CDF) of average ticket prices (Papies et al., 2017). Equation 5 shows Average Ticket Price transformation into an Index price, while Equation 6 unveils the Gaussian Copula transformation procedure. Appendix I compares Average Ticket Price and its copula distributions.

$$\text{Index_Average_Ticket_Prices} = \frac{\text{Average_Ticket_Price}_i}{\text{Average_Ticket_Price}_i} \quad (5)$$

$$\text{Copula_Ln}(\text{Index_Average_Ticket_Prices}) = \Phi^{-1}(H(p)) \quad (6)$$

where, according to Papies, Ebbes and Heerde (2017), $H(p)$ is the empirical cumulative density function (CDF) of Average Ticket Prices, and Φ^{-1} is the inverse normal CDF.

After dealing with the endogeneity issue, we evaluated multicollinearity using Variance Inflation Factors (VIFs) of individual regressions of Proportional Demand and Revenue. The values for variables remained below to four, with mean VIF of 1.63 for both individual models. Both values are way below of five, an acceptable criterion according to Leeflang et al. (2015). Results of these alternative individual regressions on Revenue and Proportional Demand using Ordinary Least Squares (OLS) are shown in Appendix II.

Canonical model results

Table 4 reveals linear combinations for canonical correlations, with coefficients estimates, standard errors, individual t-tests and p-values. Coefficients are interpreted in the same way as traditional regression models and what draws attention is the positive influence of the SBBE on both dependent variables. SBBE is stronger, however, to explain revenues than proportional demand (coefficient of .52 in Dimension 01 against .40 in Dimension 02). Wetzel et al. (2018) also found positive effects on revenues using German professional soccer data. Specifically, they found effects that varied between .22 and .54, using attendance at matches as the main dependent variable. Hence, the

results of our model unveil adherence with the extant literature.

Price elasticity is positive for Revenue and negative for Proportional Demand, but both coefficient values lie inside the expected distribution of price effects, according to the meta-analysis conducted by Bijmolt, Heerde and Pieters (2005). According to these authors, there is a need for empirical research that extends traditional bricks-and-mortar situations. Our approach is a concrete example, corroborating the mixed results found in soccer reality (Madalozzo & Villar, 2009).

Table 4. Linear combinations for canonical correlations

Variable	Canonical Dimension 01 (Revenue)			Canonical Dimension 02 (Proportional Demand)		
	Coefficient	Standard Error	t	Coefficient	Standard Error	t
Amplitude	-.01	.00	-7.69***	-.00	.01	-.24
Copula-Ln(Index price)	.63	.00	73.04***	-.25	.07	-3.28***
Chance for leadership	.04	.02	1.73*	.19	.21	.89
Chance of leaving relegation group	.02	.02	1.16	.35	.20	1.62
Home team in Top 4	.24	.02	11.82***	.22	.18	1.21
Match at start of championship	-.32	.02	-13.53***	-.97	.22	-4.39***
Match at the end of championship	.16	.02	7.81***	.05	.19	.03
Match w/ champion of current year	.00	.02	.05	.05	.25	.19
New World Cup Stadium	.55	.01	31.88***	-.72	.16	-4.53***
Night	-.20	.01	-13.40***	-.62	.13	-4.52***
SBBE (Hypothesis 1)	.52	.00	69.38***	.40	.06	5.81***
Ln(Squared diff. of points)	-.00	.00	-1.41	-.04	.04	-1.15
State classic	.26	.02	9.58***	-.34	.25	-1.35
Year (Control) ^a						
2013	.10	.02	4.14***	-.13	.22	-.60
2014	.15	.02	5.89***	.62	.24	2.61**
2015	.23	.02	8.80***	.69	.24	2.79**
2016	.07	.02	3.09***	1.26	.23	5.35***
2017	.11	.02	4.58***	1.65	.23	7.05***

Note. *** is statistically significant at the 99% level; ** is statistically significant at the 95% level; * is statistically significant at the 90% level. ^a 2012 is the reference group for the year dummies.

Additional on-field performance variables returned expected coefficients, especially regarding the Revenue Dimension of the canonical model. The higher the performance on-field (e.g. Chance for leadership, Home team in Top 4 and State classic), the higher are revenues. Other variables also reflect the reality of Brazilian Championship: matches at the start of championships seem less interesting (for both dimensions) than the ones at the end of the championship, as coefficients are negative for the former case and positive for the latter. Finally, revenue is higher for matches held on new World Cup stadiums, endorsing The Honeymoon Effect found by Leadley and Zygmunt (2006).

Table 5 shows values of canonical correlations between the set of independent variables and the dependent variables Revenue

(Dimension 01) and Proportional Demand (Dimension 02). Independent variables chosen exhibit a very strong correlation coefficient (.95) with Revenue and a reasonably low correlation coefficient with Proportional Demand (.32). Table 5 also illustrates a series of significance tests on canonical correlations. Firstly (tests for all canonical correlations), four tests revealing that the sets of variables are linearly related, as the null hypotheses is that sets are independent. This means that the independent variables chosen simultaneously predict both dependent variables of marketing performance. Next, individual tests of significances of canonical correlations 1-2 and 2 reveal that combined dimensions are significant together and dimension 2, by itself, is also significant.

Table 5. Significance tests of all canonical correlations.

Canonical correlations					
Dimension 01 (Revenue) .95					
Dimension 2 (Proportional Demand) .32					
Tests of significance of all canonical correlations					
Test	Statistic	df1	df2	F	Prob > F
Wilks' lambda	.07	36	3694	279.79	.00
Pillai's trace	1.01	36	3966	114.07	.00
Lawley-Hotelling trace	10.32	36	3962	567.92	.00
Roy's largest root	10.20	18	1983	1123.83	.00
Tests of significance of canonical correlations 1-2					
Wilks' lambda	.07	36	3694	279.79	.00
Tests of significance of canonical correlation 2					
Wilks' lambda	.89	17	1983	13.93	.00

DISCUSSION

The most important result of our empirical approach refers to SBBE, the Brand Equity measure inspired on a Team Quality variable. To show the power of this variable in predicting marketing performance we ran a complementary Analysis of Variance (ANOVA) model using Sales-based Brand Equity (SBBE) as the dependent variable and a 4-level factor variable (1 - Corinthians matches; 2 - Flamengo matches; 3 - all the 10 other Brazilian major clubs matches; 4 - other clubs matches in Brazilian Championship) as the only independent variable.

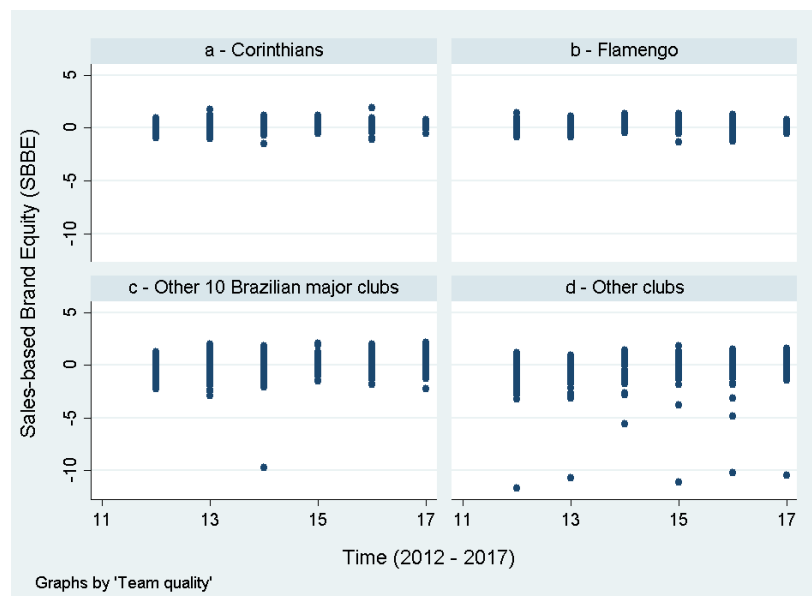
The inspiration for this variable is the 12 major clubs from Brazil. However, Flamengo and Corinthians are located more than two standard deviations above the mean of the proportion of supporters in Brazil, according to the last comprehensive survey conducted (IBOPE Inteligência, 2014), while the 10 other major clubs are very close to the mean, at less than one standard deviation (positive or negative). Thus, we created this 4-level factor variable to reveal the difference between groups. Results from the ANOVA procedure were significant (main effects $F = 20.93$, $p > F 0.00$), but are omitted due to reasons of parsimony. Table 6 cross-compares SBBE against the four levels created.

Table 6. Sales-based Brand Equity by 'Team quality'.

Club brand	Mean	Median	SD	N
Corinthians	.16	.15	.52	189
Flamengo	.16	.18	.53	193
Other 10 Brazilian major clubs	.04	.07	.75	1236
Other clubs	-.32	.00	1.54	384

Note. SD = Standard deviation. SBBE is computed using the residuals of a regression of revenue premium, compared to lowest performer (per year) on all independent variables of the primary model.

Figure 2 enhances the interpretation regarding the power of SBBE measure to predict marketing performance. It divides the analysis of the values of this variable amongst the four levels created, conditional on the years of the dataset (2012 to 2017). It is possible to observe that Corinthians (a) and Flamengo (b) exhibit values close or higher than zero. Yearly scatter distributions in Figure 2 show that distributions are fairly symmetric for these two primary levels, without outliers. Conversely, the other two groups present negative outliers. This pattern is even stronger for group 04 (Other Clubs), revealing that Corinthians and Flamengo are responsible for periodically generating higher revenue premium.

**Figure 2.** Year by year Sales-based Brand Equity (SBBE).

IMPLICATIONS AND FINAL REMARKS

Marketing performance has multiple facets and the relationship between performance measures is not straightforward (Hanssens & Pauwels, 2016). According to Katsikeas, Morgan, Leonidou and Hult (2016), there is little attention to how marketing performance is – and should be – conceptualized. Our empirical approach shows an attempt to conceptualize marketing performance in a particular stream, sports marketing. Extant empirical work which focuses on multiple performance measures usually present an economic bias (Baimbridge, 1997; Falter & Perignon, 2000; Falter, Perignon & Vercruysse, 2008), where the primary objective is to estimate elasticities of a demand function (Araújo et al., 2005; García & Rodríguez, 2002).

Our study is set out under the assumption that marketing performance in Brazilian soccer stadiums should be examined using multiple performance measures and considering a Sales-based Brand Equity (SBBE) measure, derived from team quality. Researchers must consider this variable in estimating its influence on response measures. Hence, our approach follows Chadwick (2006) appraisal about the Culturally Embeddedness of sports products: Brazilian Championship (Série A) exhibits an unusual profusion of major clubs with enduring low attendances. Hence, identifying the existence of simultaneous determinants of performance in this context can offer practical guidance to marketing management and professionalization in Brazil and shed light on the specificity of sports marketing in the Country.

REFERENCES

- Ailawadi, K. L., Lehmann, D. R., & Neslin, S. A. (2003). Revenue premium as an outcome measure of brand equity. *Journal of Marketing*, 67(4), 1-17. <https://doi.org/10.1509/jmkg.67.4.1.18688>
- Allan, S. (2004). Satellite television and football attendance: The not so super effect. *Applied Economic Letters*, 11(2), 123-125. <https://doi.org/10.1080/1350485042000200231>
- Allan, G., & Roy, G. (2008). Does television crowd out spectators? New evidence from the Scottish premier league. *Journal of Sports Economics*, 9(6), 592-605. <https://doi.org/10.1177/1527002508321458>
- Araújo, A. F. Jr., Shikida, C. D., & Monasterio, L. M. (2005). Uma análise econométrica do futebol brasileiro. *Análise Econômica*, 23(44), 217-240. <https://doi.org/10.22456/2176-5456.10824>
- Baimbridge, M. (1997). Match attendance at Euro 96: Was the crowd waving or drowning? *Applied Economic Letters*, 4(9), 555-558. <https://doi.org/10.1080/135048597355014>
- Baimbridge, M., Cameron, & Dawson, P. (1996). Satellite television and the demand for football: A whole new ball game? *Scottish Journal of Political Economy*, 43(3), 317-333. <https://doi.org/10.1111/j.1467-9485.1996.tb00848.x>
- Baumgartner, H., & Pieters, R. (2003). The structural influence of marketing journals: A citation analysis of the discipline and its subareas over time. *Journal of Marketing*, 67(2), 123-139. <https://doi.org/10.1509/jmkg.67.2.123.18610>
- Bijmolt, T. H. A., Heerde, H. J. Van, & Pieters, R. G. M. (2005). New empirical generalizations on the determinants of price elasticity. *Journal of Marketing Research*, 42(2), 141-156. <https://doi.org/10.1509/jmkr.42.2.141.62296>
- Bird, P. J. W. N. (1982). The demand for league football. *Applied Economics*, 14(6), 637-649. <https://doi.org/10.1080/00036848200000038>
- Borland, J., & MacDonald, R. (2003). Demand for sport. *Oxford Review of Economic Policy*, 19(4), 478-502. <https://doi.org/10.1093/oxrep/19.4.478>
- Bortoluzzo, A. B., Bortoluzzo, M. M., Machado, S. J., Melhado, T. T., Trindade, P. I., & Pereira, B. S. (2017). Ticket consumption forecast for Brazilian championship games. *Revista de Administração*, 52(1), 70-80. <http://dx.doi.org/10.1016/j.rausp.2016.09.007>
- Chadwick, S. (2006). Soccer marketing and the irrational consumption of sport. *International Journal of Sports Marketing & Sponsorship*, 7(3), 3-3. <https://doi.org/10.1108/IJSMS-07-03-2006-B002>
- Confederação Brasileira de Futebol (CBF) (2017). "Competições". Retrieved from <https://www.cbf.com.br/futebol-brasileiro/competicoes>
- Cox, A. (2012). Live broadcasting, gate revenue, and football club performance: Some evidence. *International Journal of the Economics of Business*, 19(1), 75-98. <https://doi.org/10.1080/13571516.2012.643668>
- Datta, H., Ailawadi, K. L., & Heerde, H. J. Van (2017). How well does consumer-based brand equity align with sales-based brand equity and marketing-mix response? *Journal of Marketing*, 81(3), 1-20. <https://doi.org/10.1509/jm.15.0340>
- Dobson, S. M., & Goddard, J. A. (1992). The demand for standing and seated viewing accommodation in the English Football League. *Applied Economics*, 24(10), 1155-1163. <https://doi.org/10.1080/00036849200000009>
- Dobson, S. M., & Goddard, J. A. (1995). The demand for professional league football in England and Wales, 1925-92. *Journal of the Royal Statistical Society. Series D (The Statistician)*, 44(2), 259-277. <https://doi.org/10.2307/2348449>
- Dobson, S. M., & Goddard, J. A. (1996). The demand for football in the regions of England and Wales. *Regional Studies*, 30(5), 443-453. <https://doi.org/10.1080/00343409612331349768>
- Ebbes, P., Papies, D., & Heerde, H. J. Van (2016). Dealing with endogeneity: A nontechnical guide for marketing researchers. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.). *Handbook of market research* (Chap 5). Cham: Springer International Publishing.
- Falter, J.-M., & Perignon, C. (2000). Demand for football and intramatch winning probability: An essay on the glorious uncertainty of sports. *Applied Economics*, 32(13), 1757-1765. <https://doi.org/10.1080/000368400421101>
- Falter, J. M., Perignon, C., & Vercruysse, O. (2008). Impact of overwhelming joy on consumer demand: The case of a Soccer World Cup victory. *Journal of Sports Economics*, 9(1), 20-42. <https://doi.org/10.1177/1527002506296548>
- Fávero, L. P., & Belfiore, P. (2017). *Manual de análise de dados*. Rio de Janeiro: Elsevier.
- Ferreira, M., & Bravo, G. (2007). A multilevel model analysis of professional soccer attendance in Chile 1990-2002. *International Journal of Sports Marketing & Sponsorship*, 8(3), 49-66. <https://doi.org/10.1108/IJSMS-08-03-2007-B006>
- Forrest, D., & Simmons, R. (2002). Outcome uncertainty and attendance demand in sport: The case of English soccer. *Journal of the Royal Statistical Society: Series D (The Statistician)*, 51(2), 229-241. <https://doi.org/10.1111/1467-9884.00314>
- Forrest, D., & Simmons, R. (2006). New issues in attendance demand: The case of the English football league. *Journal of Sports Economics*, 7(3), 247-266. <https://doi.org/10.1177/1527002504273392>
- Forrest, D., Simmons, R., & Feehan, P. (2003). A spatial cross-sectional analysis of elasticity of demand for soccer. *Scottish Journal of Political Economy*, 49(3), 336-356. <https://doi.org/10.1111/1467-9485.00235>

- García, J., & Rodríguez, P. (2002). The determinants of football match attendance revisited: Empirical evidence from the Spanish football league. *Journal of Sports Economics*, 3(1), 18-38. <https://doi.org/10.1177/152700250200300103>
- Giovannetti, B., Rocha, B. de P., Sanches, F. M., & Silva, J. C. D. da (2006). Medindo a fidelidade das torcidas brasileiras: Uma análise econômica no futebol. *Revista Brasileira de Economia*, 60(4), 389-406. <http://dx.doi.org/10.1590/S0034-71402006000400004>
- Gómez-González, C., García-Unanue, J., Sánchez-Sánchez, J., Ubago-Guisado, E., & Corral, J. del (2016). Evidence on soccer-specific stadiums and attendance: The Major League soccer case. *Revista de Psicología del Deporte*, 25(1), 19-22. Retrieved from https://www.rpd-online.com/article/view/v25-n3-gomez-gonzalez-garcia-et-al/G%C3%B3mez_González_Garcíaetal
- Hanssens, D. M., & Parsons, L. J. (1993). Econometric and time-series market response models. In J. Eliashberg & G. L. Lilien (Eds.). *Handbook in operations research and management science* (Vol. 5, Chap. 9, pp. 409-464). London: North-Holland.
- Hanssens, D. M., & Pauwels, K. H. (2016). Demonstrating the value of marketing. *Journal of Marketing*, 80(6), 173-190. <https://doi.org/10.1509/jm.15.0417>
- Hart, R. A., Hutton, J., & Sharot, T. (1975). A statistical analysis of Association Football attendances. *Journal of the Royal Statistical Society. Series C (Applied Statistics)*, 24(1), 17-27. <https://doi.org/10.2307/2346700>
- IBOPE Inteligência (2014). *Flamengo e Corinthians são os times brasileiros com mais torcedores e simpatizantes*. Retrieved from <http://www.ibopeinteligencia.com/noticias-e-pesquisas/flamengo-e-corinthians-sao-os-times-brasileiros-com-mais-torcedores-e-simpatizantes/>
- Jennet, N. (1984). Attendances, uncertainty of outcome and policy in Scottish league football. *Scottish Journal of Political Economy*, 31(2), 176-198. <https://doi.org/10.1111/j.1467-9485.1984.tb00472.x>
- Karakaya, F., Yannopoulos, P., & Kefalaki, M. (2016). Factors impacting the decision to attend soccer games: An exploratory study. *Sport, Business and Management*, 6(3), 320-340. <https://doi.org/10.1108/SBM-05-2014-0024>
- Katsikeas, C. S., Morgan, N. A., Leonidou, L. C., & Hult, T. M. (2016). Assessing performance outcomes in marketing. *Journal of Marketing*, 80(2), 1-20. <https://doi.org/10.1509/jm.15.0287>
- Keller, K. L. (1998). *Strategic brand management: Building, measuring, and managing brand equity*. Upper Saddle River: Prentice Hall.
- LaLiga (2018). *Historical league position LaLiga*. Retrieved from <https://www.laliga.com/en-GB/stats>
- Lancepress (2015). *Sete dos 12 grandes clubes não cumpriram nova exigência do futebol brasileiro em 2013*. Retrieved from <https://oglobo.globo.com/esportes/sete-dos-12-grandes-clubes-nao-cumpriram-nova-exigencia-do-futebol-brasileiro-em-2013-15647071>
- Leadley, J. C., & Zygmunt, Z. X. (2006). When is the honeymoon over? National Hockey League attendance, 1970-2003. *Canadian Public Policy / Analyse de Politiques*, 32(2), 213-232. <https://doi.org/10.2307/4128729>
- Leeflang, P. S. H., Wieringa, J. E., Bijmolt, T. H. A., & Pauwels, K. H. (2015). *Modeling markets - Analyzing marketing phenomena and improving marketing decision making*. New York: Springer.
- Lehmann, D. R. (2005). Journal evolution and the development of marketing. *Journal of Public Policy & Marketing*, 24(1), 137-142. <https://doi.org/10.1509/jppm.24.1.137.63891>
- Madalozzo, R., & Villar, R. B. (2009). Brazilian football: What brings fans to the game? *Journal of Sports Economics*, 10(6), 639-650. <https://doi.org/10.1177/1527002509335572>
- Meier, H. E., Konjer, M., & Leinwather, M. (2016). The demand for women's league soccer in Germany. *European Sport Management Quarterly*, 16(1), 1-19. <https://doi.org/10.1080/16184742.2015.1109693>
- Papies, D., Ebbes, P., & Heerde, H. J. Van (2017). Addressing endogeneity in marketing models. In P. S. H. Leeflang, J. E. Wieringa, T. H. A. Bijmolt, & K. Pauwels (Eds.). *Advanced methods for modeling markets* (Chap 18, pp. 581-627). Cham: Springer International Publishing
- Park, S., & Gupta, S. (2012). Handling endogenous regressors by joint estimation using copulas. *Marketing Science*, 31(4), 549-715. <https://doi.org/10.1287/mksc.1120.0718>
- Peel, D. A., & Thomas, D. A. (1988). Outcome uncertainty and the demand for football: An analysis of match attendances in the English football league. *Scottish Journal of Political Economy*, 35(3), 242-249. <https://doi.org/10.1111/j.1467-9485.1988.tb01049.x>
- Peel, D. A., & Thomas, D. A. (1992). The demand for football: Some evidence on outcome uncertainty. *Empirical Economics*, 17(2), 323-331. <https://doi.org/10.1007/BF01206291>
- Peel, D. A., & Thomas, D. A. (1996). Attendance demand: An investigation for repeat fixtures. *Applied Economic Letters*, 3(6), 391-394. <https://doi.org/10.1080/135048596356294>
- Rust, R. T., Ambler, T., Carpenter, G. S., Kumar, V., & Srivastava R. K. (2004). Measuring marketing productivity: Current knowledge and future directions. *Journal of Marketing*, 68(4), 76-89. <https://doi.org/10.1509/jmkg.68.4.76.42721>
- Simmons, R. (1996). The demand for English league football: a club-level analysis. *Applied Economics*, 28(2), 139-155. <https://doi.org/10.1080/000368496328777>
- Simmons, R. (2006). The demand for spectator sports. In W. Andreff & S. Szymanski (Eds.). *Handbook on the Economics of Sport* (Chap 8, pp. 77-89). Northampton: Edward Elgar.

- Slotegraaf, R. J., & Pauwels, K. (2008). The impact of brand equity and innovation on the long-term effectiveness of promotions. *Journal of Marketing Research*, 45(3), 293-306. <https://doi.org/10.1509/jmkr.45.3.293>
- Szymanski, S. (2001). Income inequality, competitive balance and the attractiveness of team sports: Some evidence and a natural experiment from English soccer. *The Economic Journal*, 111(469), F69-F84. <https://doi.org/10.1111/1468-0297.00599>
- Szymanski, S., & Smith, R. (1997). The English football industry: profit, performance and industrial structure. *International Review of Applied Economics*, 11(1), 135-153. <https://doi.org/10.1080/02692179700000008>
- Villar, J. G., & Guerrero, P. R. (2009). Sports attendance: A survey of the literature 1973-2007. *Rivista Di Diritto ed Economia dello Sport*, 5(2), 111-151.
- Walker, B. (1986). The demand for professional league football and the success of football league teams: Some city size effects. *Urban Studies*, 23(3), 209-219. <https://doi.org/10.1080/00420988620080241>
- Wetzel, H. A., Hattula, S., Hammerschmidt, M., & Heerde, H. J. Van (2018). Building and leveraging sports brands: evidence from 50 years of German professional soccer. *Journal of the Academy of Marketing Science*, 46(4), 591-611. <https://doi.org/10.1007/s11747-018-0580-y>
- Wieser, F. (2016). *A beautiful game, but nobody cares?: An analysis of the low attendances at Brazilian football league games* (Master's thesis). Norwegian School of Economics, Bergen, Norway.
- Wooldridge, J. M. (2015). *Introductory econometrics: A modern approach* (4th ed.). Scarborough, ON: Nelson Education.

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Contributions

1st author: Lead the research project, developed the framework, the research model and worked in the preliminary and final versions of the paper.

2nd author: Developed the framework, the research model and worked in the preliminary and final versions of the paper.

3rd author: Worked in the preliminary version of the paper and assisted in the development of the empirical model.

4th author: Worked in the preliminary version of the paper.

5th author: Developed the dataset and worked in the first draft of the paper.

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Supplementary Material

The authors of this article claimed to opt out of unrestricted public sharing of data and codes used in the publication. According to the authors, the reason for the decision lies in the fact that the database used in the article is continuously updated by the research group and used in various projects of the group's researchers. Data and codes may be provided upon request addressed to the authors.

APPENDIX I

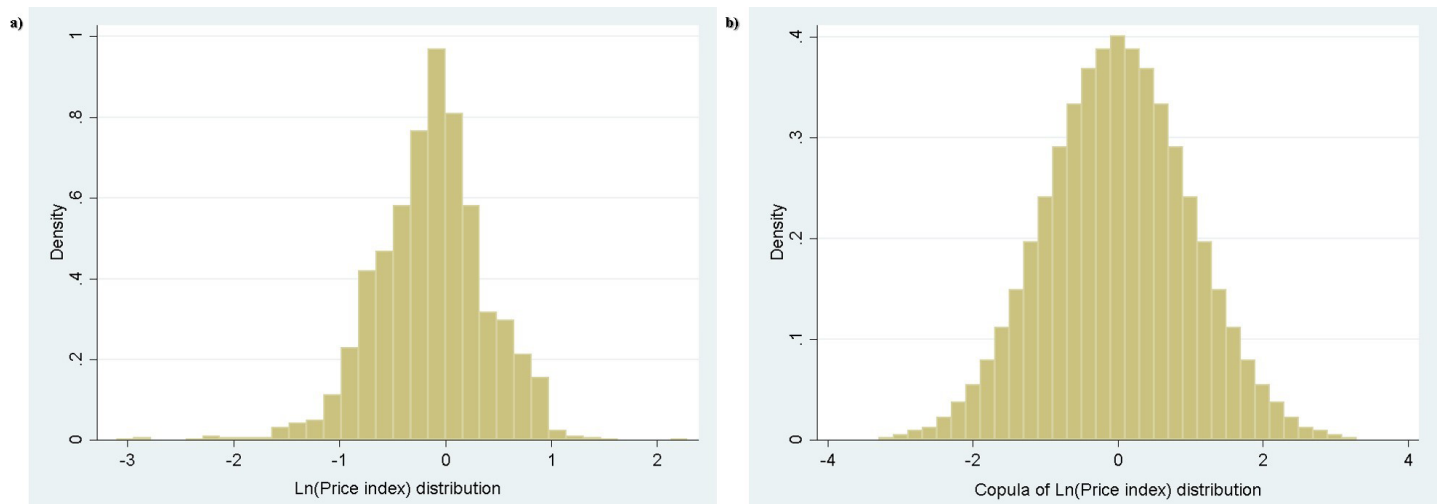


Figure A-I (A-B). Histogram of the logarithm of Index price and the copula transformation of this variable.

K-S test for normality showed that the logarithm of Index price (Figure A-I-a) is non-normal (p -value = .00, rejecting the null hypothesis of normality), complying with the main requirement of the Copula procedure, as stated by Papies, D., Ebbes, P., & Heerde, H. J. Van (2017). Addressing endogeneity in marketing models. In P. S. H. Leeflang, J. E. Wieringa, T. H. A. Bijmolt, & K. Pauwels (Eds.). *Advanced methods for modeling markets* (Chap 18, pp. 581-627). Cham: Springer International Publishing

APPENDIX II

Table A.II. Alternative individual regression models on Revenue and Proportional Demand

Independent Variables	VIF ^a	Individual Regression Model 01			Individual Regression Model 02		
		Dependent variable: Revenue			Dependent variable: Proportional Demand		
		R-Squared: .90 Root MSE: .33			R-Squared: .21 Root MSE: .17		
		Coefficient	Robust Standard Error ^b	t	Coefficient	Robust Standard Error ^c	t
Amplitude	3.08	-.01	.00	-5.97***	-.00	.00	-1.03
Copula-Ln(Index price)	1.45	.67	.01	55.49***	.02	.00	5.64***
Chance for leadership	2.15	.04	.02	2.14**	.01	.01	1.08
Chance of leaving relegation group	1.08	.03	.02	1.48	.02	.01	1.68*
Home team in Top 4	1.37	.25	.01	17.19***	.02	.00	2.94**
Match at start of championship	1.91	-.35	.02	-16.40***	-.07	.01	-5.73***
Match at the end of championship	1.55	.17	.01	9.15***	.01	.01	1.28
Match w/ champion of current year	1.52	.00	.02	.12	.00	.01	.22
New World Cup Stadium	1.31	.58	.01	33.46***	-.00	.01	.56
Night	1.07	-.22	.01	-13.75***	-.05	.00	-6.51***
SBBE (<i>Hypothesis 1</i>)	1.03	.56	.06	8.63***	.05	.00	6.31***
Ln(Squared diff. of points)	1.55	-.00	.00	-1.62	-.00	.00	-1.35
State classic	1.06	.27	.02	13.60***	-.00	.01	-.20
Year (Control) ^d							
2013	1.80	.10	.02	4.12***	-.00	.01	-.08
2014	1.83	.17	.03	4.74***	.04	.01	3.06***
2015	1.86	.26	.04	6.00***	.05	.01	3.75***
2016	1.86	.10	.02	3.65***	.07	.01	6.14***
2017	1.84	.14	.03	4.24***	.10	.01	8.31***
Constant		12.61	.03	319.83***	.87	.01	45.98***

Note. *** is statistically significant at the 99% level; ** is statistically significant at the 95% level; * is statistically significant at the 90% level.

^a Variance Inflation Factors (VIFs) values below than 5 are widely acceptable in marketing models, according to Leeflang, P. S. H., Wieringa, J. E., Bijmolt, T. H. A., & Pauwels, K. H. (2015). Modeling markets - Analyzing marketing phenomena and improving marketing decision making. New York: Springer.

^b Model was estimated with Robust Standard Errors. Breusch-Pagan test for heteroskedasticity rejected the null hypothesis of constant variance (Chi² = 13293.99, p-value = 0.00)

^c Model was estimated with Robust Standard Errors. Breusch-Pagan test for heteroskedasticity rejected the null hypothesis of constant variance (Chi² = 708.63, p-value = 0.00)

^d 2012 is the reference group for the year dummies.