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Article

Explaining the Number of Social Media Fans for North American and European Professional Sports Clubs with Determinants of Their Financial Value

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Abstract: The aim of this article is to investigate the explanatory variables of the number of Facebook fans and Twitter followers for professional sports clubs based on the financial value literature. Such explanatory variables are related to local market conditions and on-field and off-field performance. Based upon a sample of North American major league clubs and the most valuable European soccer clubs as evaluated by Forbes over the 2011–2013 period (423 observations), our results indicate a range of variables with a significant positive impact on the number of social media fans: population, no competing team in the market, current sports performance, historical sports performance, facility age, attendance, operating income, expenses/league mean, and being an English football club. An improved understanding of the effectiveness of clubs' social media presence is important for contemporary sport managers in terms of enhancing supporter communication, involvement, and accountability, as well as maximizing clubs' revenue generation possibilities. Our findings could help sport managers to realize their clubs' social media potential in pursuit of these objectives, specifically to understand which variables are under-exploited and why some clubs over-perform, which will allow managers to prioritize decisions to increase their number of social media fans and financial value.

Keywords: social media; Facebook fans; Twitter followers; professional sports clubs; North America; Europe; local market variables; on-field and off-field performance variables; financial value

JEL Classification: L83; Z23

1. Introduction

Social media is increasingly popular among Internet users (Filo et al. 2015). In particular, this is true for two social media platforms: Facebook and Twitter. As of August 2017, Facebook boasted 2.05 billion and Twitter 328 million active monthly users (Statista 2017). Sports organizations, particularly high profile professional sport teams, are very active on these two platforms and attract a large number of fans/followers. As of 25 August 2017, Real Madrid and FC Barcelona had respectively more than 105 M and 103 M Facebook fans, much more than other pages related to sports entities like Nike Football (44 M), Adidas Originals (31 M) or Olympic (19 M); Real Madrid had more than 25 M Twitter followers and FC Barcelona 23 M, again considerably in excess of the followers of Nike (7.1 M), Olympics (5.5 M), and Adidas Originals (3.8 M). Social media tools like Facebook and Twitter are

attractive to fast moving sport organizations as they provide managers with a convenient and rapid way of communicating with their supporters (Evans and Smith 2004; Seo et al. 2007). Moreover, they provide relationship marketing opportunities for sport organizations and hence a further mechanism through which supporters can engage with sport, while also providing organizations with the opportunity to leverage additional income (Williams and Chinn 2010). Encompassing a wide range of forums, social media presents a unique platform for marketers to create a dialogue with consumers and for consumers to interact with each other (Stavros et al. 2014). Considering both the number of professional sport teams' supporters who use Facebook and Twitter and such individuals' high levels of engagement with their teams, they are particularly adapted for such organizations to achieve their objectives in terms of supporter communication.

In the literature, several articles deal with the relationship between Facebook and/or Twitter and professional sports teams, focusing mainly on three aspects: the reasons for Facebook and Twitter use by professional sports teams (García 2011; Hopkins 2013; Wang and Zhou 2015; Waters et al. 2011; Watkins and Lewis 2014); fans' expectations when using Facebook and Twitter (Gibbs et al. 2014; Stavros et al. 2014); and the drivers of changes in the number of Facebook fans and Twitter followers (Hopkins 2013; Pérez 2013; Watanabe et al. 2015)¹. These articles show that Facebook and Twitter are important for fans and thus demonstrate their importance for the relationship marketing strategy adopted by professional sports teams. What is clear is the need for teams to understand both fans' expectations (what they anticipate from teams on Facebook and Twitter once following them—for example interactivity and live games updates) and drivers of following (why they began to follow teams on Facebook and Twitter—for example, on-field success—so as to have a better understanding of their number of fans and followers) to optimize their use of Facebook and Twitter, and fan interest.

Consistent with these elements, Miranda et al. (2014) suggest a Facebook Assessment Index (FAI) based on popularity, interactivity, and content as an approach to evaluate the efficacy of professional sports teams on social networks. Popularity is measured by the number of followers or fans of their pages (Michaelidou et al. 2011). If Miranda et al. (2014) consider that this number needs to be taken into account in any definition of a measurement instrument, they do not investigate its causes. For example, is the number of social media followers or fans for a club a consequence of the quality and quantity of its star players? Or of the number of inhabitants in its local area? Or of its sporting history? Jensen et al. (2014) explore the factors affecting popularity on Twitter measured as the number of followers but for Football Bowl Subdivision head coaches rather than professional sports clubs. Pérez (2013) and Watanabe et al. (2015) explain respectively the change twice a week (every Tuesday and Friday) and the percent change from the previous day in the number of Twitter followers for professional sports clubs over specific lengths of time. However, they are not interested in the total number of Twitter followers, their explanatory variables focusing only on short-term on-field success and including limited market variables, specifically the number of season ticket holders for Pérez (2013) and a dummy for teams designated as being in a smaller market for Watanabe et al. (2015). Our hypothesis is that the number of social media fans for a club (its popularity) is to a large degree the result of its local market characteristics (population, number of clubs in the local area . . .) and its past and present performance—both on and off-field (attendance, ability to attract stars, financial performance . . .).

In the present paper, the aim is to investigate the explanatory variables of the number of fans for professional sports clubs both for Facebook and Twitter with our previous hypothesis in mind. As a consequence, we focus on local market characteristics and past and present performance indicators as

¹ O'Shea and Alonso (2011) and O'Shea and Alonso (2013) deal with social media and professional sports teams without specifying an (some) explicit platform(s). O'Shea and Alonso (2011) demonstrate the blending of traditional marketing strategies and technology, including social media, in an effort to convert and build fruitful long-term club-supporter relationship (reasons for use). O'Shea and Alonso (2013) examine the strategies an Australian professional sports organization is using to communicate through and moderate social media content (challenges faced).

explanatory variables, and do not take into account clubs' specific activities on Facebook and Twitter (interactivity and content). Such variables are important variables in sports finance (Rohde and Breuer 2016; Soebbing n.d.). Indeed, the explanatory variables chosen in this paper have already been tested to explain the financial value of professional sports clubs, with eight articles published on this topic since 2004 (Alexander and Kern 2004; Büschemann and Deutscher 2011; Humphreys and Lee 2010; Humphreys and Mondello 2008; Miller 2007, 2009; Scelles et al. 2013, 2016). Their test as explanatory variables of the number of social media fans will allow us to know which of the determinants of financial value are also significant in explaining the numbers of Facebook fans and Twitter followers and to what extent they explained them. As a result, it is anticipated that it will be possible to provide an enhanced understanding of these numbers. Moreover, we will be able to identify those clubs which are over- or under-performers on Facebook and Twitter. Hence, our results could help clubs to better understand their social media potential in terms of numbers of followers and as necessary to learn from those clubs which over-perform in terms of their social media fans. We believe that this is the first time that the determinants of financial value have been used to explain the number of social media fans.

Our data correspond to 423 observations for all North American clubs in the four major leagues—MLB (Major League Baseball), the NBA (National Basketball Association), the NFL (National Football League), and the NHL (National Hockey League)—and those most valuable European soccer clubs evaluated by Forbes over the 2011–2013 period. The paper consists of five parts. First, we present the research context then the literature review, before going on to specify our empirical model and describe how we collected our data and the data itself. In the second to last section we present our results before discussing them with their implications, limitations, and future research directions.

2. Research Context: Facebook and Twitter

Facebook and Twitter are two different types of social media: Facebook is a social network; Twitter is a microblogging platform. As a consequence, they do not have the same features, in particular as business tools. Through an online media network Facebook enables consumers to interact with brands as an extension of face-to-face interaction (Kujath 2011). The network content is specific to the user-generated content uploaded and shared daily on this platform (Schultz and Sheffer 2010). Facebook features are categorized into items associated with uploading content, reviewing content uploaded by others in the network, and items related to responses to content (Wallace et al. 2011). In the sporting context, Wallace et al. (2011, p. 425) note that “Fans may interact by posting directly on a page’s wall or by commenting or using the like button on the content item. These types of interactions allow sports entities to establish authentic relationships with target markets while also enhancing and reinforcing a strong brand presence”.

Twitter is a personal communication tool, news-distribution vehicle, and celebrity tracker all-in-one platform (Gibbs et al. 2014). While Twitter messages (“tweets”) are limited to 140 characters, Twitter is still able to influence news, opinion, search, and advertising through end-user innovation (Johnson and Yang 2009). Twitter users have created user conventions including RT for retweet, @ for reply, and # for hashtag trend finding, which researchers can use to identify different Twitter functions (Java et al. 2007; Kwak et al. 2010). Twitter users have also created over 15,000 applications to improve use and function: tracking trends (e.g., Twitscoop, Tweetscan, Tpsy); integrating Twitter with files and images (e.g., Twitpic, Twitvid); providing Twitter account-analysis tools (e.g., Klout, Twitter Grader); iPhone-specific apps (e.g., Tweetdeck, Tweetlogix); and acting as utilities for sharing linked information (e.g., Bit.ly, miny url) (Gibbs et al. 2014). Following this last type of application, Twitter began to shorten all links (URLs) posted in tweets in 2011. As a result, a URL of any length is altered to 22 characters. This means that a tweet can convey information far beyond 140 characters. In the sporting context, professional sports teams use Twitter to connect directly with fans (Gibbs et al. 2014).

3. Literature Review

3.1. Social Media and Parasocial Interactions

The literature on social media has dramatically grown since its emergence. Of particular interest in terms of this study is literature focusing on parasocial interactions on social media since these can be applied to relationships with sports celebrities and also professional sports clubs. The concept of parasocial interactions is not new in the literature, being introduced more than 60 years ago by [Horton and Wohl \(1956\)](#). Parasocial interactions arise when individuals are repeatedly exposed to a media persona, resulting in the individuals developing a sense of intimacy, perceived friendship, and identification with the celebrity ([Horton and Wohl 1956](#)).

[Labrecque \(2014\)](#) proposes that parasocial interactions may be used as a theoretical lens for designing successful social media strategies for a brand. She finds that this sense of feeling connected with the brand goes beyond the interaction itself and drives increased feelings of loyalty intentions as well as willingness to provide information to the brand. Nevertheless, she warns that these effects may not hold when consumers are aware of the possibility that the brand's social media response may be automated. [Tsotsou \(2015\)](#) is also interested in the role of parasocial relationships on loyalty, but focuses on social networking site (SNS) loyalty rather than brand loyalty. She examines how parasocial relationships consumers developed with SNSs members precede and contribute to the creation of social relationships expressed as identification with the SNS group and engagement with the SNS group which in turn lead to SNS related behavioral intentions and SNS loyalty.

Other studies focus on celebrities. [Kim and Song \(2016\)](#) investigate how celebrities' self-disclosure on personal social accounts, particularly Twitter, affects fans' perceptions. Their results demonstrate that celebrities' professional self-disclosure (e.g., sharing their work-related life), personal self-disclosure (e.g., sharing their personal life such as friends and family), and fans' retweeting behavior, enhanced fans' feeling of social presence, thereby positively affecting parasocial interaction with celebrities. Further, the study finds that the effects of self-disclosure and retweeting on parasocial interaction are mediated by social presence. [Chung and Cho \(2017\)](#) explore the underlying mechanisms through which the use of social media affects endorser effectiveness. Their results show that consumers' parasocial interactions with celebrities through social media have a positive impact on celebrity endorsement. Specifically, the authors find that parasocial relationships mediate the relationships between social media interactions and source trustworthiness, that social media interactions influence parasocial relationships via self-disclosure and that source trustworthiness has a positive effect on brand credibility which, in turn, leads to purchase intention.

Among studies interested in celebrities, a number focus specifically on athletes. [Frederick et al. \(2012\)](#) examine parasocial interaction and fan motivations for following athlete archetypes on Twitter. They posted an Internet-based survey on the Twitter feeds and Facebook pages of one predominantly social and one predominantly parasocial athlete to ascertain the similarities and differences between their follower sets in terms of parasocial interaction development and follower motivations. They find a sense of heightened interpersonal closeness based on the interaction style of the athlete with followers of the social athlete driven by interpersonal constructs while followers of the parasocial athlete rely more on media conventions in their interaction patterns. To understand follower motivations, exploratory factor analyses were conducted for both follower sets. For followers of the social athlete, most of the interactivity, information-gathering, personality, and entertainment items load together, while for followers of the parasocial athlete, fandom and community items load alongside information-gathering items. [Yuan et al. \(2016\)](#) are interested in parasocial relationship effects on customer equity in the social media context. They show that motivation to use social network services and celebrity—LeBron James in their research—source credibility positively affects parasocial relationships; parasocial relationships positively affects attitudes towards using social network services; parasocial relationships positively affects customer equity drivers; and customer equity drivers positively affect customer lifetime value.

3.2. Facebook and/or Twitter and Professional Sports Clubs

In total, ten articles were identified that deal with Facebook and/or Twitter and professional sports clubs, all published since 2011. As noted in the introduction, nine of these focus mainly on three aspects, each of which will be considered in turn below. In addition, [Miranda et al. \(2014\)](#) introduce a fourth aspect suggesting a Facebook Assessment Index.

The first group of articles deals with the reasons for Facebook and Twitter use by professional sports teams. Some were identified specifically for Facebook: to cultivate relationships with fans using stewardship strategies ([Waters et al. 2011](#)); to test content, gain feedback, and understand things from fans' perspective ([García 2011](#)). Other reasons were identified specifically for Twitter: platform for broadcasting large volumes of short content and information ([Hopkins 2013](#)); direct narrations of games and the follow-up of fans' "retweets" to deliver the messages created in the communication department ([García 2011](#)); building professional, personal, and community relationships ([Wang and Zhou 2015](#)). Some were identified both for Facebook and Twitter: resending traffic to website ([García 2011](#); [Hopkins 2013](#)); use on mobile apps to share information about the teams and their performance ([Watkins and Lewis 2014](#)). The reasons provided in these papers seem appropriate to the characteristics of Facebook and Twitter. At the same time, however, from a management perspective it is of course necessary to understand fans' motives for using these two platforms so as to ensure that they are used strategically by teams.

The second group of articles assists in that alignment as it focuses on fans' expectations. [Stavros et al. \(2014\)](#) identify four key motives for using Facebook: passion, hope, esteem, and camaraderie. Awareness of these motives helps sport managers to better understand why fans engage with sport, particularly through social media, and provides a basis for facilitating meaningful interactions as part of the organization's relationship marketing strategy. [Gibbs et al. \(2014\)](#) are interested in gratifications sought and obtained by users on Twitter. They find four primary gratifications: interaction, promotion, live game updates, and news. These findings confirm that teams use Twitter for appropriate reasons but also suggest that the reasons of Facebook use by teams identified in the literature can be applied to Twitter. However, while such studies help to understand individual fans' motives, how best to maximize the number of Facebook fans and Twitter followers requires a consideration of more generic explanatory variables.

The third group of articles focuses on the drivers of change in Facebook fans and Twitter followers and hence opens the door for a consideration of more generic explanatory variables. [Hopkins \(2013\)](#) finds that improvements in content structure (for Facebook pages) and process management (for both Facebook and Twitter) lead to an increase in the number of Facebook fans and Twitter followers. However, his findings are based on a single case study of a professional Australian Rules Football club (Richmond FC). [Pérez \(2013\)](#) explains changes in Twitter following on a twice weekly basis (every Tuesday and Friday) in Spanish First Division Soccer teams. His results show that the most successful and those with the most season ticket holders benefit from the highest rates of recruitment of new Twitter followers. [Watanabe et al. \(2015\)](#) explain the percent change from the previous day in the number of Twitter followers for teams in MLB. The results reveal specific determinants that have a significant positive relationship with Twitter following: the number of tweets; participating in the playoffs or the World Series; a winning streak of four or more games (or negative impact of a losing streak of four or more games); 31 July trading deadline; the first day of free agency; all days compared to Sunday; February, March, and April compared to January (negative impact of November and December); teams participating in nationally televised games; and teams designated as being in a smaller market. From a team management perspective, the authors consider that factors such as the content of social media messages, certain calendar events, and postseason appearances can be utilized to enhance fan interest on social media.

While the third group of articles contributes to a better understanding of variables explaining changes in following, it does not focus on variables explaining the number of Facebook fans and Twitter followers. This key issue is the focus of our study. Our hypothesis is that the number of social

media fans for a club is to a large degree the result of its local market characteristics and its past and present on and off-field performance, variables already tested as explaining the financial value of professional sports clubs.

3.3. Determinants of Financial Value of Professional Sports Clubs

As noted in the introduction, we identified eight articles that have focused on the determinants of the financial value of professional sports clubs, all published since 2004. In such articles it is essential to know whether authors try to explain real or estimated values. [Humphreys and Mondello \(2008\)](#) and [Humphreys and Lee \(2010\)](#) rely on real transaction prices in the United States, whereas the other authors are concerned with financial values as estimated by the North American economic and financial newspapers *Financial World* and *Forbes*. These financial values are a multiple of revenue estimates, adjusted for specific facility lease factors ([Fort 2006](#)). *Forbes* prefers the use of revenue rather than operating income because it is considered more representative of financial long-term value ([Vine 2004](#)).

The literature review highlights several determinants of financial value of professional sports clubs, and these can be classified into three categories.

The first category concerns local market characteristics. [Alexander and Kern \(2004\)](#) use real, per-capita income to control for differences in ticket demand that will affect a team's revenue and, hence, franchise profitability. The authors also use a city's population to control for market-size effects on franchise profitability. Large market teams have a larger potential fan base to support their franchises and, hence, are in a better position to fill their stadium or arena and negotiate lucrative cable television contracts. [Alexander and Kern \(2004\)](#) find a significant positive impact of income and population on financial value of North American franchises, results confirmed by [Miller \(2007\)](#) and [Miller \(2009\)](#). A significant positive impact of population on financial value of North American franchises is also found by [Humphreys and Mondello \(2008\)](#), [Humphreys and Lee \(2010\)](#), [Büschemann and Deutscher \(2011\)](#), and [Scelles et al. \(2013\)](#). Nevertheless, [Scelles et al. \(2013\)](#) and [Scelles et al. \(2016\)](#) find a significant negative impact of population on financial value for the 20/25 most valuable European football clubs. For the latter, they find a significant positive impact of income but [Scelles et al. \(2013\)](#) find a significant negative impact for the NBA. [Humphreys and Mondello \(2008\)](#) incorporate a third local market characteristic, namely competing teams in the market. Their argument is that professional teams in a metropolitan area are competitors, and hence the presence of more competitors reduces the franchise sale price, holding other market characteristics like metropolitan population constant. They find a significant negative impact of competition on financial value, a result confirmed by [Scelles et al. \(2013\)](#) for the NFL in contrast to a significant positive impact that they find for the 20/25 most valuable European football clubs.

The second category of determinants concerns on-field performance. [Alexander and Kern \(2004\)](#) use a team's final standing from the previous season. They expect a negative sign because as team performance worsens (e.g., first to fourth), revenue will likely decrease (diminution of the team's reputation or of the renewal of season tickets by holders). They find a significant impact with a negative sign, meaning a significant positive impact of sports performance in $t - 1$ for North American franchises. [Miller \(2007\)](#) and [Miller \(2009\)](#) confirm this result with winning percentages instead of standings. [Scelles et al. \(2013\)](#) and [Scelles et al. \(2016\)](#) also find a significant positive impact of sports performance in $t - 1$ but for the 20/25 most valuable European football clubs only. [Miller \(2007\)](#) and [Miller \(2009\)](#) extends sports performance to the current year and finds a significant positive impact for North American franchises. [Scelles et al. \(2013\)](#) also find a significant positive impact of sports performance in t for NBA and the 20/25 most valuable European football clubs but a significant negative impact for MLB. Sports performance can also be considered on a longer term basis. Thus, [Humphreys and Lee \(2010\)](#) integrate team winning percentage over the previous 10 years and find a significant positive impact for North American franchises. [Scelles et al. \(2013\)](#) and [Scelles et al. \(2016\)](#) use historical sports performance, measured by the percentage of championship titles since the

beginning of the competition and find a significant positive impact both for North American franchises and the 20/25 most valuable European football clubs.

The third category of determinants concerns off-field performance. Some of these are specifically related to facilities. Alexander and Kern (2004) use an indicator variable called “new facility” that equals 1 if the team is playing in a new stadium or arena, and 0 otherwise. They anticipate a positive impact because it affords owners additional revenue generating means such as luxury suites and enhanced concession revenues. They find a significant positive impact for North American franchises. Miller (2007) and Miller (2009) replace “new facility” by facility age, considering this to be a more accurate measure of the “newness” of a facility. He finds a significant negative impact, consistent with the idea of a positive impact of a new facility. Büschemann and Deutscher (2011), Scelles et al. (2013), and Scelles et al. (2016) find the same result, respectively for NHL, and NFL and the 20/25 most valuable European football clubs. Nevertheless, Scelles et al. (2013) find a significant positive impact of facility age for MLB. Miller (2007) and Miller (2009) include an ownership dummy equal to 1 for teams playing in stadiums or arenas owned by that team, and expects a positive effect for private ownership in comparison with public ownership on franchise profitability. He finds a significant positive impact which is confirmed by Humphreys and Mondello (2008), Scelles et al. (2013), and Scelles et al. (2016). Büschemann and Deutscher (2011) include attendees per game. They assume that, since each attendee generates revenue for the franchise, the higher the number of attendees, the greater the team value. They find a significant positive impact for the NHL which is confirmed by Scelles et al. (2013) for all North American franchises and Scelles et al. (2016) for the 20/25 most valuable European football clubs.

Still in the third category, some determinants are not specifically related to facilities. Humphreys and Mondello (2008) includes franchise age to observe if team buyers are effectively buying the history of the team; the idea being that the longer the team has been in existence, the more team history there is to buy. For this, they find a significant positive impact for North American franchises. Büschemann and Deutscher (2011) incorporate the team payroll and assume that a team with high payroll expenses would offer a superior team quality and, therefore, would provide a better utility to fans. Due to this assumption, they anticipate that higher team expenses would positively influence the team value. They find a significant positive impact for NHL. Scelles et al. (2016) include player value as part of a club’s assets and generator of additional revenue. They find a significant positive impact for the 20/25 most valuable European football clubs. They also incorporate clubs’ operating income as an indicator of managerial and financial expertise and find a significant positive impact.

4. Empirical Models and Data Description

4.1. Empirical Models

A quantitative approach, utilizing regressions, was adopted to explore the explanatory variables of the number of social media fans for professional sports clubs. The empirical models that we examined take the form of:

$$F_{tji} = X_{tji}\beta + \varepsilon_{tji}$$

F_{tji} is alternatively the logarithm of the number of Facebook fans (Model 1) and Twitter followers (Model 2) for team i operating in league j in year t , X_{tji} is a matrix of independent variables that affect the team’s social media fans and value, β is a vector of parameters to be estimated, and ε_{tji} is a vector of random error terms.

The X_{tji} matrix includes variables used in previous studies on determinants of financial value (Alexander and Kern 2004; Büschemann and Deutscher 2011; Humphreys and Lee 2010; Humphreys and Mondello 2008; Miller 2007, 2009; Scelles et al. 2013, 2016).

For the local market variables, we incorporate the logarithms of Metropolitan Statistical Area (MSA for North American teams) or regional (for European teams) annual real per capita income; MSA or Functional Urban Area (FUA) population; and the number of other clubs ranked in Forbes lists in the MSA or FUA (local competition).

For the on-field performance variables, we include sports performance in t and $t - 1$ which correspond to a measure with a predetermined code: 6 for a champion title; 5 for final; 4 for semi-final; 3 for quarter-final; 2 for eighth-final or elimination in regular season with at least 50% in MLB; 1 for elimination in regular season with at least 40% in the NBA, 25% in NFL, 42.5% in NHL and between 45% and 50% in MLB (we take into account competitive balance and the number of games to determine the percentages) or the first round in the Champions League; 0 for elimination in regular season without obtaining the previous percentages in North American leagues or no participation in the Champions League. We also incorporate historical sports performance (percentage of championship titles) in the league (for North American teams) or in the Champions League (for European teams). A team can use its past performance and more generally its history to strengthen its brand, with a positive impact on the present number of social media fans.

For the off-field performance variables, we include elements specifically related to facilities: facility age (difference between the season of the observation and the season in which it first opened); a dummy for private ownership of the facility (1 if private, 0 if public); and annual average attendance. We considered whether the fact that a particular stadium/arena has been rebuilt should be included but decided against so doing. The rationale is that “old” stadia/arenas, even if rebuilt, do not benefit from a new location which may be better in terms of improved and more modern infrastructure (e.g., shops, services, new technologies and modern public transport in and around the stadium/arena, elements) that may enable enhanced marketing and communication opportunities and, as such, may have a positive impact on the number of social media fans. We also incorporate variables not specifically related to facilities: operating income and a proxy for player valuations. As the latter are not available for North American leagues, we chose team expenses as a proxy for player salaries which in turn is a proxy of player quality. More precisely, we calculated the ratio between a team’s expenses and the average team expenses in its league. A team is in competition with other teams in the same sport for players, not with teams in other sports, hence it makes more sense to calculate a ratio relative to expenses in a team’s own league. We choose this variable rather than “ESPN’s World Fame 100 Ranking” or “# of marquee players” since it allows us to incorporate information on all players while the latter focus on the best players only. The fact that our model includes both team payroll and sports performance enables us to capture that some players may contribute to sports performance more than expected based on their wages.

In addition, we also incorporate dummies for leagues and years.

4.2. Data Collection and Description

The sample consists of a pooled, cross-sectional, time-series panel of team-specific data for the four North American major leagues and the most valuable European soccer clubs as evaluated by Forbes. It spans the period from 2011 to 2013, which corresponds to 423 observations². We believe that there is some value in comparing two different markets (North America and Europe) since this can provide social media marketers with some insights about elements which are potentially underdeveloped in their respective markets. In particular, we think that the league effects are interesting as they may suggest differing levels of globalization and this direction seems fruitful to increase the number of social media fans. Per capita income data were obtained from the Bureau of Economic Analysis for American teams, Statistics Canada for Canadian teams, and Eurostat for European teams. Population data was available on populationdata.net. Local competition, operating income, and expenses data

² Over the 2011–2013 period, 17 European soccer clubs have always belonged to the 20 most valuable soccer clubs: Arsenal, Chelsea, Liverpool, Manchester City, Manchester United, and Tottenham (England); Lyon and Marseille (France); Bayern Munich, Borussia Dortmund, Hamburg, and Schalke 04 (Germany); AC Milan, Inter Milan, and Juventus (Italy); FC Barcelona and Real Madrid (Spain). The other European soccer clubs having belonged to the 20 most valuable soccer clubs over the period 2011–2013 are Napoli (Italy) in 2012 and 2013; Stuttgart, Werder Bremen (Germany) and Atletico Madrid (Spain) in 2011; AS Roma (Italy) and Valencia (Spain) in 2012; Newcastle (England) in 2013 (the Brazilian club Corinthians having been the first non-European soccer club among the 20 most valuable in 2013).

were generated by Forbes. Sports performance, facility age, and ownership data were available on Wikipedia. Annual global attendance data were obtained from ESPN for American and Canadian teams and European Football Statistics for European teams. We collected the numbers of Facebook fans and Twitter followers for each club from their Facebook and Twitter accounts on the 1st of February 2012, 2013, and 2014 as proxies for 2011, 2012, and 2013. Our results were obtained by ordinary least squares regressions with White (1980) correction robust to heteroscedasticity. We also wanted to test for endogeneity. In his article about the drivers of the number of new Twitter followers between $t - 1$ and t , Pérez (2013) tests for endogeneity with the stock of Twitter followers in $t - 1$ as instrumental variable. Unfortunately, however, we did not have the necessary data for $t - 1$ in 2011. As a result, a third of our observations would be lost if we were to apply Pérez (2013)'s test for endogeneity. For this reason, but also because we did not identify another variable which could be used as instrument, we did not test for endogeneity even if this can be suspected³. Table 1 shows summary statistics for the variables used in the regressions. The full dataset is available online as Supplementary Materials.

Table 1. Summary statistics.

Variable	Minimum	Maximum	Mean	Standard Deviation
Facebook fans	42,229	53,664,178	2,465,706	5,970,312
Twitter followers	0	11,016,588	390,714	982,549
Income (\$)	15,560	61,395	43,821	9335
Population	279,485	22,232,494	6,486,310	5,556,406
Local competition	0	8	2.61	2.07
Sports performance t	0	6	1.82	1.54
Sports performance $t - 1$	0	6	1.83	1.53
Historical sports performance	0	26.56%	2.92%	4.77%
Facility age	1	136	27.10	27.34
Private ownership	0	1	0.397	0.489
Attendance	6851	88,531	36,366	21,898
Operating income (\$Mil)	-123	250.7	22.26	36.85
Expenses/league mean	39.72%	219.65%	100%	23.42%
MLB	0	1	0.213	0.409
NBA	0	1	0.213	0.419
NFL	0	1	0.227	0.419
NHL	0	1	0.208	0.406
England	0	1	0.045	0.207
France	0	1	0.014	0.118
Germany	0	1	0.033	0.179
Italy	0	1	0.028	0.166
Spain	0	1	0.019	0.136
Number of observations			423	

5. Results

Before presenting our results, it is worth noting that Bayern Munich and Manchester United had no Twitter account in 2011, and that Manchester United had very few followers in 2012. For these reasons, we chose the regression without Bayern Munich 2011 and Manchester United 2011 and 2012 for the number of Twitter followers.

5.1. Results of the Models

Table 2 presents our results for the numbers of Facebook fans and Twitter followers. First of all, it is worth noting that our two models explain around 80% of variance. In other words, about 80% of

³ It is worth noting that Pérez (2013)'s instrumental variable is not significant.

variance for the numbers of Facebook fans and Twitter followers is explained by local market, and on and off-field performance variables.

Table 2. Estimates of the log of the numbers of Facebook fans and Twitter followers.

Variable	Model 1 (Facebook)		Model 2 (Twitter)	
	Coefficient	<i>p</i>	Coefficient	<i>p</i>
Income	0.106	0.699	0.332	0.102
Population	0.212 ***	0.006	0.119 *	0.068
Local competition	−0.067 *	0.051	−0.052 **	0.038
Sports performance <i>t</i>	0.113 ***	<0.001	0.095 ***	<0.001
Sports performance <i>t</i> − 1	0.098 ***	<0.001	0.087 ***	<0.001
Historical sports performance	5.606 ***	<0.001	3.445 ***	<0.001
Facility age	0.004 *	0.055	0.002 *	0.092
Private ownership	−0.090	0.217	0.056	0.310
Attendance	0.564 ***	0.002	0.563 **	0.030
Operating income	0.007 ***	<0.001	0.003 ***	<0.001
Expenses/league mean	1.274 ***	<0.001	1.061 ***	<0.001
MLB	−1.542 ***	<0.001	−1.646 ***	<0.001
NBA	−1.050 **	0.015	−0.801 **	0.011
NFL	−1.620 ***	<0.001	−1.737 ***	<0.001
NHL	−1.995 ***	<0.001	−1.325 ***	<0.001
England			ref.	
France	−0.811 **	0.039	−1.020 **	0.041
Germany	−1.432 ***	<0.001	−2.434 ***	<0.001
Italy	−0.798	0.102	−1.065 ***	<0.001
Spain	−1.355 ***	<0.001	−0.431 **	0.035
2011	−0.586 ***	<0.001	−1.290 ***	<0.001
2012	−0.309 ***	<0.001	−0.563 ***	<0.001
2013			ref.	
Constant	3.343	0.393	1.345	0.699
Number of observations		423		420
R ²		0.805		0.795

*, ** and *** for significance at the 10%, 5% and 1% level, respectively.

Population, sports performance in *t*, *t* − 1, and historical sports performance, facility age, attendance, operating income, and expenses/league mean have a significant positive impact in the two models. For attendance, this is consistent with Pérez (2013), even if the comparison is not fully reliable as his dependent variable is the twice weekly change in the number of Twitter followers, his exact explanatory variable is the number of season ticket holders and his focus is only on Spanish football teams. By contrast, our result for population is contrary to Watanabe et al. (2015) who find a significant positive impact of a dummy for teams designated as being in a smaller market. However, their dependent variable is the percentage change from the previous day in the number of Twitter followers, while their focus is only on MLB teams.

The significant positive impact of facility age may seem surprising. Indeed, we might expect a negative impact due to new facilities being more likely to enable clubs to implement technology encouraging the use of social media by attendees. However, social media users are not automatically attendees. The unexpected result could also be due to some long standing and popular clubs with old facilities like Boston Red Sox or Chicago Cubs in MLB, still being more likely to attract Facebook fans and Twitter followers than other clubs. It is worth noting that facility age is significant only at the 10% level in the two models. As a consequence, its significance has to be kept in proportion.

Local competition, the league dummies, and the time dummies have a significant negative impact in the two models (other than for Italy in the Facebook model). For local competition, even if a fan may follow several local clubs, it makes sense that competition between clubs limits the potential number of fans for each club. For the league dummies, it suggests an advantage for English football

clubs compared to clubs in North American major leagues and other European football clubs. This could be associated both with a better globalization of European football compared to North American major sports (Desbordes 2007) (and specifically an English Premier League effect given its greater international reach), as well as the prevalence of the English language compared to French, German, Italian, and Spanish. Such an interpretation is consistent with Stavros et al. (2014) who note that with the increasing globalization of numerous sport leagues, technology inherent in social media can deliver innovative experiences and interactions to strengthen relationships with supporters outside of a team's home market. For the time dummies, the significantly negative impact with larger coefficients for 2011 than 2012 is consistent with a strong progress in attracting followers/users for the two social media platforms. Such progress is even higher for Twitter in relative terms since the Twitter model has higher coefficients in absolute value than the Facebook one, despite the deletion of Bayern Munich in 2011 and Manchester United in 2011 and 2012 for Twitter.

Individuals' income and private ownership of the facility have an insignificant impact in the two models, which could be expected since firstly, one only requires access to the Internet to be able to follow a club on social media, something which is not prohibitively expensive in areas where the clubs studied are located, and secondly, there being no obvious reason why fans would prefer a club where the facility is in private rather than public ownership⁴.

5.2. Over- and Under-Performing Clubs

Thanks to coefficients provided in Table 2, we can estimate the values predicted by our models for the numbers of Facebook fans and Twitter followers and compare them to the actual values. Thus, we can identify over- and under-performing clubs for each of the three seasons analyzed (Tables 3 and 4; Bayern Munich in 2011 and Manchester United in 2011 and 2012 not considered in Model 2). Out of the six cases, FC Barcelona is the most over-performing club in four cases and Los Angeles Lakers in two; Manchester United and Real Madrid are the most under-performing clubs in two cases each, and New York Yankees and Inter Milan in one each.

⁴ All clubs in the four major North American leagues belong to our sample whereas this is the case only for the most valuable clubs for European soccer. This may skew the results. For this reason, we also tested our model with just the North American data, and just the European soccer data. Unfortunately, the lack of observations for the European soccer data (59 for Facebook, 56 for Twitter) leads to a lack of robustness of our results with limited significant variables: for Facebook ($R^2 = 0.847$), significant positive impact of operating income, expenses/league mean and historical sports performance, and significant negative impact of sports performance in $t - 1$, Germany, Spain, 2011 and 2012; for Twitter ($R^2 = 0.894$), significant positive impact of expenses/league mean, and significant negative impact of Germany, 2011 and 2012. For the North American data, results are very similar to those with all data ($R^2 = 0.607$ for Facebook and 0.696 for Twitter). The only difference is for income: its impact becomes significant and positive instead of insignificant. If Internet access is not expensive, inhabitants in richer areas are perhaps more likely to use Internet and social media. We also find a significant positive impact of NBA and no significant impact of MLB and NHL compared to NFL. This result is consistent with the idea of a positive impact of globalization as basketball is more globalized than baseball, ice hockey and American football. Detailed results with just the North American data and just the European soccer data are available upon request.

Table 3. Over- and under-performing clubs on Facebook in absolute values.

Years	Over-Performing Clubs		Under-Performing Clubs	
2011	1. FC Barcelona (Spain)	+8,573,044	1. Manchester United (England)	−14,374,893
	2. Los Angeles Lakers (NBA)	+4,316,518	2. New York Yankees (MLB)	−8,647,975
	3. Miami Heat (NBA)	+3,883,566	3. Inter Milan (Italy)	−6,351,084
	4. Chicago Bulls (NBA)	+3,118,888	4. Tottenham (England)	−2,043,088
	5. Pittsburgh Steelers (NFL)	+2,773,112	5. Bayern Munich (Germany)	−1,365,549
2012	1. FC Barcelona (Spain)	+11,689,690	1. Real Madrid (Spain)	−25,452,576
	2. Los Angeles Lakers (NBA)	+9,004,117	2. Manchester United (England)	−14,610,985
	3. Chicago Bulls (NBA)	+6,022,214	3. New York Yankees (MLB)	−9,722,221
	4. AC Milan (Italy)	+5,736,607	4. Inter Milan (Italy)	−3,264,905
	5. Miami Heat (NBA)	+5,389,399	5. Tottenham (England)	3,254,011
2013	1. FC Barcelona (Spain)	+24,101,557	1. New York Yankees (MLB)	−10,947,453
	2. AC Milan (Italy)	+10,227,554	2. Real Madrid (Spain)	−9,766,230
	3. Arsenal (England)	+9,162,695	3. Chelsea (England)	−4,879,107
	4. Chicago Bulls (NBA)	+7,925,957	4. Dallas Cowboys (NFL)	−4,351,081
	5. Juventus (Italy)	+7,350,873	5. New England Patriots (NFL)	−2,456,352

Table 4. Over- and under-performing clubs on Twitter in absolute values.

Years	Over-Performing Clubs		Under-Performing Clubs	
2011	1. Los Angeles Lakers (NBA)	+1,614,609	1. Inter Milan (Italy)	−321,540
	2. Orlando Magic (NBA)	+860,252	2. Chelsea (England)	−300,248
	3. Philadelphia Phillies (MLB)	+529,296	3. New York Yankees (MLB)	−284,370
	4. FC Barcelona (Spain)	+483,880	4. Tottenham (England)	−174,818
	5. Real Madrid (Spain)	+442,796	5. Boston Celtic (NBA)	−150,307
2012	1. Los Angeles Lakers (NBA)	+1,892,064	1. Real Madrid (Spain)	−1,408,601
	2. FC Barcelona (Spain)	+1,789,911	2. New York Yankees (MLB)	−750,822
	3. Arsenal (England)	+843,825	3. Tottenham (England)	−405,006
	4. Orlando Magic (NBA)	+813,729	4. Chelsea (England)	−359,612
	5. Liverpool (England)	+718,557	5. Inter Milan (Italy)	−271,614
2013	1. FC Barcelona (Spain)	+3,523,084	1. Manchester United (England)	−2,496,003
	2. Los Angeles Lakers (NBA)	+1,443,725	2. Real Madrid (Spain)	−1,896,056
	3. Arsenal (England)	+1,024,209	3. New York Yankees (MLB)	−1,292,719
	4. Miami Heat (NBA)	+938,976	4. Chelsea (England)	−653,969
	5. Liverpool (England)	+925,550	5. Newcastle (England)	−299,481

What happens if we consider relative rather than absolute values? Tables 5 and 6 provide the 10 over- and under-performing clubs based on the ratio (actual values—predicted values)/predicted values for each of the three seasons analyzed. Such a ratio is useful to complement absolute values regarding the heterogeneity of data between clubs (see Table 1). Indeed, FC Barcelona, Los Angeles Lakers, Manchester United, New York Yankees, and Real Madrid are more likely to over- or under-perform in absolute value given that their numbers of fans and followers (actual or predicted) are markedly larger than the other clubs. By contrast, they are less likely to over- or under-perform in relative value: actually, FC Barcelona and Real Madrid, which have the largest number of Facebook fans and Twitter followers, are not in Tables 5 and 6. Hence, both absolute and relative values are necessary.

Table 5. Over- and under-performing clubs on Facebook in relative values.

Years	Over-Performing Clubs		Under-Performing Clubs	
2011	1. Miami Heat (NBA)	+491%	1. Inter Milan (Italy)	−94%
	2. Pittsburgh Steelers (NFL)	+229%	2. Charlotte Bobcats (NBA)	−71%
	3. Pittsburgh Penguins (NHL)	+225%	3. Lyon (France)	−70%
	4. Colorado Avalanche (NHL)	+218%	4. Tottenham (England)	−68%
	5. Chicago Bulls (NBA)	+210%	5. New York Yankees (MLB)	−63%
2012	1. Juventus (Italy)	+376%	1. Inter Milan (Italy)	−95%
	2. Chicago Bulls (NBA)	+296%	2. Tottenham (England)	−67%
	3. Miami Heat (NBA)	+260%	3. New York Yankees (MLB)	−61%
	4. Pittsburgh Penguins (NHL)	+205%	4. Florida Panthers (NHL)	−61%
	5. Pittsburgh Steelers (NFL)	+193%	5. Washington Nationals (MLB)	−60%
2013	1. Juventus (Italy)	+294%	1. Winnipeg Thrashers (NHL)	−76%
	2. Pittsburgh Steelers (NFL)	+261%	2. Washington Nationals (MLB)	−68%
	3. Chicago Bulls (NBA)	+241%	3. Newcastle (England)	−67%
	4. Borussia Dortmund (Germany)	+159%	4. New York Yankees (MLB)	−62%
	5. Colorado Avalanche (NHL)	+159%	5. Florida Panthers (NHL)	−60%

Table 6. Over- and under-performing clubs on Twitter in relative values.

Years	Over-Performing Clubs		Under-Performing Clubs	
2011	1. Orlando Magic (NBA)	+431%	1. Lyon (France)	−84%
	2. Philadelphia Phillies (MLB)	+384%	2. Stuttgart (Germany)	−83%
	3. Miami Heat (NBA)	+243%	3. Inter Milan (Italy)	−77%
	4. Los Angeles Lakers (NBA)	+229%	4. Schalke 04 (Germany)	−75%
	5. Edmonton Oilers (NHL)	+155%	5. Arizona Cardinals (NFL)	−65%
2012	1. Orlando Magic (NBA)	+294%	1. Detroit Lyons (NFL)	−99%
	2. Philadelphia Phillies (MLB)	+203%	2. Minnesota Twins (MLB)	−87%
	3. Kansas City Chiefs (NFL)	+185%	3. Arizona Cardinals (NFL)	−64%
	4. Los Angeles Lakers (NBA)	+180%	4. Inter Milan (Italy)	−60%
	5. Juventus (Italy)	+180%	5. Lyon (France)	−59%
2013	1. Borussia Dortmund (Germany)	+273%	1. Arizona Cardinals (NFL)	−60%
	2. Orlando Magic (NBA)	+268%	2. Manchester United (England)	−57%
	3. Marseille (France)	+259%	3. New York Yankees (MLB)	−55%
	4. Juventus (Italy)	+149%	4. Jacksonville Jaguars (NFL)	−50%
	5. Philadelphia Phillies (MLB)	+143%	5. Newcastle (England)	−47%

Out of the six cases, Juventus and Orlando Magic are the most over-performing clubs in two cases each, and Borussia Dortmund and Miami Heat in one each; Inter Milan is the most under-performing club in two cases, and Arizona Cardinals, Detroit Lions, Lyon, and Winnipeg Thrashers in one each.

One reason explaining the differences between actual and predicted values could be the non-inclusion in our models of explanatory variables related to interactivity and content. [Miranda et al. \(2014\)](#) distinguish popularity, interactivity, and content in their Facebook Assessment Index but it may be that interactivity and content impact fans' satisfaction, which in turn influences popularity. Interestingly, [Miranda et al. \(2014\)](#) find that Miami Heat has the best interactivity value in NBA and is ranked third within a sample including all clubs of the English Premier League, Spanish La Liga, NBA, and NFL, behind FC Barcelona and Manchester United, which could partially explain its over-performance. By contrast, Orlando Magic's interactivity value is smaller than the mean reported for the NBA, suggesting that a different explanation should be considered to explain its over-performance. Arizona Cardinals has the third worst interactivity value in NFL, which could partially explain its under-performance. However, Detroit Lions' interactivity value is larger than the mean in NFL, thus an explanation other than interactivity should be considered to explain its under-performance.

6. Discussion

6.1. Implications

Our results provide a range of explanatory variables for the numbers of Facebook fans and Twitter followers of professional sports clubs. From our perspective, there is a four-step process that sport managers could follow in using our results as follows: (1) comparing the current and potential number of social media fans of their club (identification of possible under-performance); (2) focusing in turn on each explanatory variable, specifically those variables that managers consider to represent under-achievement and hence that contribute to their club's under-performance; (3) focusing on over-performing clubs and their activities on social media (benchmarking); and (4) managing the balance between Facebook and Twitter.

The first step involves comparing the current and potential number of social media fans. Sport managers are perhaps not all fully aware of their club's social media potential. Drawing on the data provided in the previous sub-section which identifies over- and under-performing clubs on social media, our model allows them to benchmark themselves against their competitors.

The second step involves focusing on the different explanatory variables identified as significant in our model and interpreting results that are not always straightforward. For example, we have found a significant positive impact of operating income on the number of social media fans. While it is doubtful that the majority of supporters pay much attention to the financial results of their club (other than in times of financial distress), one hypothesis is that clubs with good financial performance are more likely to invest in social media (employees, tools related to social media) with a resultant positive effect on the number of fans and followers. As a consequence, sport managers could compare their club with its competitors on these specific elements; namely employees and tools related to social media. Of course, sport managers cannot influence some of the variables such as population, local competition, or inhabitants' income. However, this does not mean that such variables are not of interest to managers. Indeed, arguably they are perhaps under-exploited: sport managers could implement specific actions in some locations within an urban area to better exploit local potential in terms of the number of inhabitants; they could think about innovative ways to create a competitive advantage compared to local competitors; while in the North American context where inhabitants' income has a significant positive impact, sport managers could take advantage of this information to think about specific offers and thus generate additional revenues.

The third step involves focusing on over-performing clubs and on their activities on social media. As noted in the previous sub section, Miami Heat's over-performance could be explained by its excellent interactivity value in the FAI. [Miranda et al. \(2014\)](#) suggest a couple of reasons as to why Miami Heat obtained such a good score. The primary reason is its use of Facebook to provide fans with in-depth information and statistics, independent of their official Web pages. The consequence is a positive impact on the components taken into account in the calculation of the interactivity value: over 40,000 likes per post (among the top four with FC Barcelona, Manchester United, and Real Madrid); more than 6000 shared posts (greatest value with FC Barcelona); more than 2000 comments per post (among the top three with FC Barcelona and Manchester United). There is a great deal that sport managers could learn from benchmarking their performance against best practice teams with a view to understanding how to improve their club's interactivity on social media.

The fourth step is concerned with managing the balance between Facebook and Twitter. When considering our results for the time dummies, we underlined the stronger progress for Twitter compared to Facebook. In fact, the average number of fans on Facebook doubled from 1.66 to 3.33 million between 2011 and 2013 whereas the number of Twitter followers was increased by more than a factor of three over the same time period (from 183,000 to 614,000). It could be associated with a later development for Twitter, something which was particularly true for major international clubs like Bayern Munich and Manchester United. As a consequence, the hierarchy among clubs would be less stabilized for Twitter. Nevertheless, the number of Twitter followers should be more and more

correlated to the number of Facebook fans. It is worth noting that the coefficient of correlation between the two numbers has increased over the period: 0.82 in 2011, 0.86 in 2012, and 0.92 in 2013. Even so, it does not mean that the number of Twitter followers should be closer and closer to the number of Facebook fans. Table 1 indicates a ratio of more than six between Facebook and Twitter over the period 2011–2013. For 2013, this ratio was still more than five. In the evaluation of their actual potential on social media, clubs should distinguish Facebook and Twitter and bear in mind that around five times fewer Twitter followers than Facebook fans is the standard.

6.2. Limitations and Future Directions

Notwithstanding the contribution of this article to the understanding of the explanatory variables of the number of social media fans for professional sports clubs, at least four points remain to be considered: first, whether the recent advances in the social media landscape would impact our results; second the relationship between social media and globalization; third, the links between identity of players, players' use of social media and the numbers of social media fans both for players and their club; and fourth, the impact of social media on club's financial value and how to monetize Facebook fans or Twitter followers. It would also be useful to extend the sample for European soccer clubs beyond the most valuable and highest profile clubs.

Our results cover the period 2011–2013. Since then, the social media landscape has changed. As such, some of our results may be impacted by these changes. Future research drawing on more recent data would allow consideration of the impact of the evolution in the social media landscape, as well as changes in the nature of professional sports clubs on our reported results. For clubs, one reason may be their social media account activity so it would be worth relating this to their number of social media fans.

When presenting our results, we discussed the possible relationship between social media and globalization. Nevertheless, our data is based on the number of Facebook fans and Twitter followers without distinction between local and non-local fans. Such a distinction was not possible until a recent period. Now, Facebook has implemented a statistical tool (the Graph API) which facilitates study of the geographical origins of connections. It could be interesting to use the Graph API to identify the geographical origins of professional team fans on Facebook and observe if the greater globalization of European football compared to North American leagues is confirmed for this social medium. A similar approach could be developed for Twitter. It would also be worth investigating whether the percentage of foreign players per team impacts globalization and, as such, the number of social media fans.

Our results reveal a significant positive impact on the number of social media fans of the ratio expenses/league mean considered as a proxy for player quality. Beyond their supposed sporting skills, we can wonder whether other player characteristics could impact the number of social media fans for a club. For example, does a player's involvement in community events boost the number of social media fans for his club? More generally, does his image impact upon this number? These questions raise the possibility of different configurations in terms of fan identification such as: long term team identification due to initial player identification; identification to a player but not to his team; or identification to a team only due to the presence of a particular star player. This suggests that the number of social media fans for a club need not automatically equate to the number of social media fans for one of its players, something which is backed up by the fact that Cristiano Ronaldo has more Facebook fans and Twitter followers than Real Madrid (122 M Facebook fans vs. 105 M and 57 M Twitter followers vs. 25 M). Could Real Madrid improve its approach to capturing Cristiano Ronaldo fans, and if so how best to capitalize on and monetize them?

More specifically, the number of a club's players on social media and their use of the platform may impact the number of social media fans for a club. Hambrick et al. (2010) and Pegoraro (2010) examined athletes' use of Twitter. The two studies each relied on six categories derived from previous research (Clavio 2008; Funk et al. 2002; Seo and Green 2008; Wolfradt and Doll 2001): interactivity (responding to fans), diversion (relating to personal life and pop culture or landmark reference),

information sharing (relating to business life excluding promoting products), content (links to pictures, videos and Web sites), fandom (other sport or athlete reference), and promotional (promoting products). The two articles found that athletes mainly interact with fans and talk about their private life. It would be interesting to link such findings with the number of social media fans for clubs, as it would be to include the motivations of social media fans in regard to following athletes (Witkemper et al. 2012).

In this article, we have tested the impact of the determinants of financial value as identified in the literature on social media. An avenue for further research would be to test the impact of the number of social media fans on financial value. We can expect a positive impact if clubs successfully monetize their fans' engagement. Of course, this begs the question as to how that would be achieved. There is a need to focus on actions, contents, and management that clubs implement to monetize their fans' engagement, potentially including a distinction between Facebook and Twitter. As Sean Parker, the former Director of Digital Media at the NHL's Washington Capitals, observed: "we do look at each platform and say how it is going to extend our brand, are we going to be able to engage with fans and ultimately will this make us money"? (Turnbull 2012). According to Helleu and Karoutchi (2013), a digital strategy should be seen more as a relational and experiential matter than a transactional one. Thus, rather than focusing only on Return On Investment (ROI), the consultant Carson McKee, a specialist in monetization strategies in sport, prefers to speak of Digital Return Optimization (DRO), which he defines as "The methodology of maximizing and leveraging digital and social media assets to achieve specific growth, interaction and/or revenue goals" (McKee 2012). Finally, we can envisage that a team which focuses not only on its financial value or financial indicators will be financially more valuable than another team which focuses only on such elements.

Supplementary Materials: The following are available online at www.mdpi.com/link/2227-7072/5/4/25/s1. Dataset with all observations for dependent and independent variables explaining the number of Facebook fans and Twitter followers for professional sports clubs over the period 2011–2013.

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References

- Alexander, Donald L., and William Kern. 2004. The economic determinants of professional sports franchise values. *Journal of Sports Economics* 5: 51–66. [CrossRef]
- Büschemann, Arne, and Christian Deutscher. 2011. Did the 2005 collective bargaining agreement really improve team efficiency in the NHL? *International Journal of Sport Finance* 6: 298–306.
- Chung, Siyoung, and Hichang Cho. 2017. Fostering parasocial relationships with celebrities on social media: Implications for celebrity endorsement. *Psychology & Marketing* 34: 481–95. [CrossRef]
- Clavio, Galen. 2008. Uses and Gratifications of Internet Collegiate Sport Message Board Users. Ph.D. dissertation, Indiana University, Bloomington, IN, USA. Available online: <https://scholarworks.iu.edu/dspace/bitstream/handle/2022/8163/umi-indiana-2039.pdf?sequence=1> (accessed on 25 August 2017).
- Evans, Daniel M., and Aaron C. T. Smith. 2004. Internet sports marketing and competitive advantage for professional sports clubs: Bridging the gap between theory and practice. *International Journal of Sports Marketing & Sponsorship* 6: 86–98. [CrossRef]
- Filo, Kevin, Daniel Lock, and Adam Karg. 2015. Sport and social media research: A review. *Sport Management Review* 18: 166–81. [CrossRef]
- Fort, Rodney. 2006. The value of Major League Baseball ownership. *International Journal of Sport Finance* 1: 9–20.

- Frederick, Evan L., Choong Hoon Lim, Galen Clavio, and Patrick Walsh. 2012. Why we follow: An examination of parasocial interaction and fan motivations for following athlete archetypes on Twitter. *International Journal of Sport Communication* 5: 481–502. [CrossRef]
- Funk, Daniel C., Daniel F. Mahony, and Lynn Ridinger. 2002. Characterizing consumer motivation as individual difference factors: Augmenting the Sport Interest Inventory (SII) to explain level of spectator support. *Sport Marketing Quarterly* 11: 33–43.
- García, César. 2011. Real Madrid Football Club: Applying a relationship-management model to a sport organization in Spain. *International Journal of Sport Communication* 4: 284–99. [CrossRef]
- Gibbs, Chris, Norm O'Really, and Michelle Brunette. 2014. Professional team sport and Twitter: Gratifications sought and obtained by followers. *International Journal of Sport Communication* 7: 188–213. [CrossRef]
- Hambrick, Marion E., Jason M. Simmons, Greg P. Greenhalgh, and T. Christopher Greenwell. 2010. Understanding professional athletes' use of Twitter: A content analysis of athlete tweets. *International Journal of Sport Communication* 3: 454–71. [CrossRef]
- Helleu, Boris, and Maxence Karoutchi. 2013. The Internet, online social networks, and the fan digital experience. In *The Business of Sport Management*, 2nd ed. Edited by Simon Chadwick and John Beech. Harlow: Pearson, pp. 298–320. ISBN 978-0273721338.
- Hopkins, John L. 2013. Engaging Australian rules football fans with social media: A case study. *International Journal of Sport Management and Marketing* 13: 104–21. [CrossRef]
- Horton, Donald, and R. Richard Wohl. 1956. Mass communication and para-social interaction: Observations on intimacy at a distance. *Psychiatry: Interpersonal and Biological Processes* 19: 215–29. [CrossRef]
- Humphreys, Brad R., and Yang Seung Lee. 2010. Determinants of franchise values in North American professional sports leagues: Evidence from a hedonic price model. *International Journal of Sport Finance* 5: 280–95.
- Humphreys, Brad R., and Michael Mondello. 2008. Determinants of franchise values in North American professional sports leagues: Evidence from a hedonic price model. *International Journal of Sport Finance* 3: 98–105.
- Java, Akshay, Xiaodan Song, Tim Finin, and Belle Tseng. 2007. Why We Twitter: Understanding microblogging usage and communities. Paper presented at the 9th WebKDD and 1st SNA-KDD 2007 Workshop on Web Mining and Social Network Analysis, San Jose, CA, USA, August 12.
- Jensen, Jonathan A., Shaina M. Ervin, and Stephen W. Dittmore. 2014. Exploring the factors affecting popularity in social media: A case study of Football Bowl Subdivision head coaches. *International Journal of Sport Communication* 7: 261–78. [CrossRef]
- Johnson, Philip, and Sung-Un Yang. 2009. Uses and gratifications of Twitter: An examination of user motives and satisfaction of Twitter use. Paper presented at the Communication and Technology Division, Association for Education in Journalism and Mass Communication, Boston, MA, USA, August 5.
- Michel Desbordes, ed. 2007. *Marketing and Football: An International Perspective*. Oxford: Butterworth-Heinemann (Elsevier).
- Kim, Jihyun, and Hayeon Song. 2016. Celebrity's self-disclosure on Twitter and parasocial relationships: A mediating role of social presence. *Computers in Human Behavior* 62: 570–77. [CrossRef]
- Kujath, Carlyne L. 2011. Facebook and MySpace: Complement or substitute for face-to-face interaction? *Cyberpsychology, Behavior, and Social Networking* 14: 75–78. [CrossRef] [PubMed]
- Kwak, Haewoon, Changyun Lee, Hosung Park, and Sue Moon. 2010. What Is Twitter, a Social Network or a News Media? Paper presented at the 19th International Conference on World Wide Web, ACM, Raleigh, NC, USA, April 26–30.
- Labrecque, Lauren I. 2014. Fostering consumer: Brand relationships in social media environments: The role of parasocial interaction. *Journal of Interactive Marketing* 28: 134–48. [CrossRef]
- McKee, Carson. 2012. Digital Return Optimization. Direct Contact. Available online: <https://www.slideshare.net/carsonmckee/direct-contact-2012> (accessed on 25 August 2017).
- Michaelidou, Nina, Nikoletta Theofania Siamagka, and George Christodoulides. 2011. Usage, barriers and measurement of social media marketing: An exploratory investigation of small and medium B2B brands. *Industrial Marketing Management* 40: 1153–59. [CrossRef]
- Miller, Philip. 2007. Private financing and sports franchises values: The case of Major League Baseball. *Journal of Sports Economics* 8: 449–67. [CrossRef]

- Miller, Philip. 2009. Facility age and ownership in major American team sports leagues: The effect on team franchise values. *International Journal of Sport Finance* 4: 176–91.
- Miranda, Francisco Javier, Antonio Chamorro, Sergio Rubio, and Oscar Rodriguez. 2014. Professional sports teams on social networks: A comparative study employing the Facebook assessment index. *International Journal of Sport Communication* 7: 74–89. [CrossRef]
- O'Shea, Michelle, and Abel Duarte Alonso. 2011. Opportunity or obstacle? A preliminary study of professional sport organisations in the age of social media. *International Journal of Sport Management and Marketing* 10: 196–212. [CrossRef]
- O'Shea, Michelle, and Abel Duarte Alonso. 2013. Fan moderation of professional sport organisations' social media content: Strategic brilliance or pending disaster? *International Journal of Web Based Communities* 9: 554–70. [CrossRef]
- Pegoraro, Ann. 2010. Look who's talking—Athletes on Twitter: A case study. *International Journal of Sport Communication* 3: 501–14. [CrossRef]
- Pérez, Levi. 2013. What drives the number of new Twitter followers? An economic note and a case study of professional soccer teams. *Economics Bulletin* 33: 1941–47.
- Rohde, Marc, and Christoph Breuer. 2016. Europe's elite football: Financial growth, sporting success, transfer investment, and private majority investors. *International Journal of Financial Studies* 4: 12. [CrossRef]
- Scelles, Nicolas, Boris Helleu, Christophe Durand, and Liliane Bonnal. 2013. Determinants of professional sports firm values in the United States and Europe: A comparison between sports over the period 2004–2011. *International Journal of Sport Finance* 8: 280–93.
- Scelles, Nicolas, Boris Helleu, Christophe Durand, and Liliane Bonnal. 2016. Professional sports firm values: Bringing new determinants to the foreground? A study of European soccer, 2005–2013. *Journal of Sports Economics* 17: 688–715. [CrossRef]
- Schultz, Brad, and Mary Lou Sheffer. 2010. An exploratory study of how Twitter is affecting sports journalism. *International Journal of Sport Communication* 3: 226–39. [CrossRef]
- Seo, Won Jae, and B. Christine Green. 2008. Development of the motivation scale for sport online consumption. *Journal of Sport Management* 22: 82–109. [CrossRef]
- Seo, Won Jae, B. Christine Green, Yong Jae Ko, Seungwhan Lee, and Jarrod Schenewark. 2007. The effect of web cohesion, web commitment, and attitude toward the website on intention to use NFL teams' websites. *Sport Management Review* 10: 231–52. [CrossRef]
- Soebbing, Brian P. n.d. Sports Finance. Special Issue, International Journal of Financial Studies. Available online: http://www.mdpi.com/journal/ijfs/special_issues/sports-finance (accessed on 25 August 2017).
- Statista. 2017. Most Famous Social Network Sites Worldwide as of August 2017, Ranked by Number of Active Users (in Millions). Available online: <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/> (accessed on 25 August 2017).
- Stavros, Constantino, Matthew D. Meng, Kate Westberg, and Francis Farrelly. 2014. Understanding fan motivation for interacting on social media. *Sport Management Review* 17: 455–69. [CrossRef]
- Tsiotsou, Rodoula H. 2015. The role of social and parasocial relationships on social networking sites loyalty. *Computer in Human Behavior* 48: 401–14. [CrossRef]
- Turnbull, Trevor. 2012. Washington Capitals Director of Digital Media Talks Social Media (VIDEO). Sports Networker. Available online: <http://www.sportsnetworker.com/2012/03/21/washington-capitals-director-of-digital-media-talks-social-media/> (accessed on 25 August 2017).
- Vine, David. 2004. The Value of Sports Franchises. Wharton Undergraduate Research Scholars, University of Pennsylvania, Philadelphia, PA. Available online: <https://www.scribd.com/document/50893000/Valuation-of-Sports-Franchises> (accessed on 25 August 2017).
- Wallace, Laci, Jacquelyn Wilson, and Kimberly Miloch. 2011. Sporting Facebook: A content analysis of NCAA organizational sport pages and Big 12 athletic department pages. *International Journal of Sport Communication* 4: 422–44. [CrossRef]
- Wang, Yuan, and Shuhua Zhou. 2015. How do sports organizations use social media to build relationships? A content analysis of NBA clubs' Twitter use. *International Journal of Sport Communication* 8: 133–48. [CrossRef]
- Watanabe, Nicholas, Grace Yan, and Brian P. Soebbing. 2015. Major League Baseball and Twitter usage: The economics of social media use. *Journal of Sport Management* 29: 619–32. [CrossRef]

- Waters, Richard D., Kimberly A. Burke, Zachary H. Jackson, and Jamie D. Buning. 2011. Using stewardship to cultivate fandom online: Comparing how National Football League teams use their web sites and Facebook to engage their fans. *International Journal of Sport Communication* 4: 163–77. [CrossRef]
- Watkins, Brandi A., and Regina M. Lewis. 2014. Winning with apps: A case study of the current branding strategies employed on professional sports teams' mobile apps. *International Journal of Sport Communication* 7: 399–416. [CrossRef]
- White, Halbert. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48: 817–38. [CrossRef]
- Williams, Jo, and Susan J. Chinn. 2010. Meeting relationship-marketing goals through social media: A conceptual model for sport marketers. *International Journal of Sport Communication* 3: 422–37. [CrossRef]
- Witkemper, Chad, Choong Hoon Lim, and Adia Waldburger. 2012. Social media and sports marketing: Examining the motivations and constraints of Twitter users. *Sport Marketing Quarterly* 21: 170–83.
- Wolfradt, Uwe, and Jörg Doll. 2001. Motives of adolescents to use the Internet as a function of personality traits, personal and social factors. *Journal of Educational Computing Research* 24: 13–27. [CrossRef]
- Yuan, Chun Lin, Juran Kim, and Sang Lin Kim. 2016. Parasocial relationship effects on customer equity in the social media context. *Journal of Business Research* 69: 3795–803. [CrossRef]



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