



# Who is the better player? Off-field battle on Facebook and Twitter

Teresa Tiago<sup>\*</sup>, Flávio Tiago, Sandra Dias Faria, João Pedro Couto

*University of the Azores, Rua da Mae de Deus, 9501 Ponta Delgada, Portugal*

## KEYWORDS

Social media;  
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**Abstract** Social media networks have become essential to the modern business world, and are especially vital for sports firms and athletes. Social media networks are new channels for firms to connect with their audience and establish a social customer relationship. For sports firms, athletes play a special role, as they are the firms' ambassadors and the focus of virtual communities of fans. For most athletes, social media is a powerful tool to take advantage of their time in the spotlight. However, social media has much more potential. This work analyzes the social media profile and content created by six well-known sports figures—Cristiano Ronaldo, Lionel Messi, Tom Brady, Aaron Rodgers, LeBron James, and Kevin Durant—to develop a model (STAR) for social media use. The adoption of this model can enhance fan engagement online and therefore increase athletes' and firms' brand value and connectivity with consumers.

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## 1. The social media movement

Social networking increases the size of one's personal network through meeting friends of friends or family, and their friends or family. The ability to enlarge and maintain a personal network has been widely studied from a sociological perspective, and the key actors in these networks are the customers and users of a firm's products and services. This display of connections became digitally available

via social network sites, including Facebook, Twitter, Instagram, Badoo, and Orkut. These digital platforms give anonymous people—sometimes with less social ability—the capability to belong to wider networks with others who have common interests, and to be active participants in creating, sharing, and removing content. Social networking has become a valuable tool for sports firms and athletes. Thus, the primary objective of this study was to analyze social media content and develop a model for social media use for sports firms and athletes.

The exponential growth and influence of social media on firm and consumer behavior over the past decade has been well documented (Berthon, Pitt,

<sup>\*</sup> Corresponding author

E-mail addresses: [mariaborges@uac.pt](mailto:mariaborges@uac.pt) (T. Tiago), [flaviotiago@uac.pt](mailto:flaviotiago@uac.pt) (F. Tiago), [sfaria@uac.pt](mailto:sfaria@uac.pt) (S.D. Faria), [jpedro@uac.pt](mailto:jpedro@uac.pt) (J.P. Couto)

Plangger, & Shapiro, 2012; Dollinger, 2015; Kaplan & Haenlein, 2010; Tiago & Veríssimo, 2014). As social media became more common, firms and brands developed new communication approaches to generate revenue through interactive online tools (Filo, Lock, & Karg, 2015).

In 2014, social media was saturated with official and co-created content about the World Cup and Champions League. Athletes, sports organizations, and sports businesses were in the spotlight of millions of users worldwide. With fans, athletes, sports organizations, and journalists engaging in social media platforms, brand management and sports communication can be leveraged through social media adoption (Holzner, 2008).

In 2010, Kaplan and Haenlein suggested that firms could decide to either participate in this communication or continue to ignore it. Currently, the decision to participate in social media can be made by sports firms, but no longer by sports organizations or athletes since fans consume the media's representation of sports and sports figures. Through social media adoption, the representation of sports and athletes is composed of constantly changing tweets, 'likes,' videos, photos, and movies from firms, athletes, and other fans.

Social media has changed the sports world, making information instantaneously available to view, comment on, and share. In particular, social media can create or destroy images in real-time, since content communication about brands, sports events, and athletes occurs with or without permission from sports firms or athletes (Kaplan & Haenlein, 2010).

Although social media sites such as Facebook, Google+, Vine, and SportNetwork are considerably changing the sports world (Pieper, 2013), Twitter is still preferred by millions of users (Hull & Schmittle, 2015). An in-depth analysis of these networks shows that Twitter users can easily search for other people with similar interests by using hashtags (Hull & Schmittle, 2015).

According to Baird and Parasnis (2011a), firms must incorporate social media programs with customer relationship management (CRM). For the sports industry, this creates a unique opportunity to leverage the 'fan-sport' relationship and transform fans into consumers of the brands.

Gwinner and Swanson (2003) examined the impact of fan identification on brand sponsorship outcomes, acknowledging four distinctive impacts: sponsor recognition, attitude toward the sponsor, sponsor patronage, and satisfaction with the sponsor. However, sports revenues are not confined to sponsorship, and can be driven by ticket sales, players' value in the sports market, and media streams

(Fort & Winfree, 2013). Therefore, the relationship between fan attitudes and sports figures, organizations, and brands is crucial to many sports firms' performance. Brands must consider the implications of adopting social media, such as the requirements to set clear objectives, establish a uniform attitude toward social media, integrate social media with the traditional communication and promotion strategies, and—above all—explore the fan-sports figure relationship and fan identification with the brand.

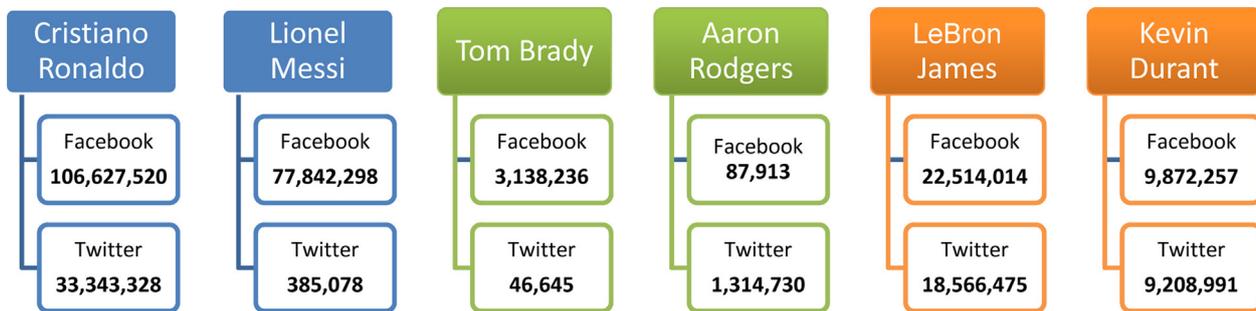
Social media creates a digital proximity between fans and athletes, particularly for those sports figures that use social media to invite interaction and leverage engagement and brand value. Considering global sports figures, we focus on players who are active in social media—specifically Facebook and Twitter—and who have a large number of followers. We studied:

- Cristiano Ronaldo (soccer player for Real Madrid);
- Lionel Messi (soccer player for Barcelona);
- Tom Brady (football player for the New England Patriots);
- Aaron Rodgers (football player for the Green Bay Packers);
- LeBron James (basketball player for the Cleveland Cavaliers); and
- Kevin Durant (basketball player for the Oklahoma City Thunder).

Filo et al. (2015) performed a careful review of the literature concerning sports and social media and noticed that most studies focused on Twitter, neglecting the other social networks. As advised by Billings, Butterworth, and Turman (2014), and as shown in Figure 1, focusing on Twitter can be deceiving, since in most cases the community built around the athletes is smaller than on Facebook. Even though the data retrieval process is open access, it will not cover all the sports figures and fan interactions. Therefore, further research of other social network sites with different analysis metrics is required.

In summary, as the social network phenomenon continues to evolve, sports organizations that focus on long-term consumer retention can improve their CRM and strengthen their brand value by adopting an active digital presence and promoting sports figures' activity on diverse social media sites.

Figure 1. Followers in social media



## 2. I'm a fan. . .

Wann (1995) observed that a large proportion of people are somewhat involved in sports as players, spectators, or fans. These people exhibit certain factors of fan behavior, such as a positive level of arousal, escape from routine, self-esteem benefits, entertainment, group affiliation, aesthetic qualities, and economic impacts.

Hunt, Bristol, and Bashaw (1999) considered a fan to be an enthusiastic devotee of some particular sport, and thus more willing to consume organized sports and sports-related products. The ubiquitous nature of sports in many contemporary societies creates a wider range of involvement. As Billings et al. (2014) noted, our role in sports as a player, watcher, or follower influences our physical and emotional state and consequently fosters our well-being. Across all levels and types of sports competitions, two common elements relevant to the vitality of the fan community have become the foundation of the sports culture: (1) the images produced and (2) the language used by sports media.

Unveiling sports fans' motives and foreseeing their behavior is important to sports marketers, and most research focuses on a team performance model as the main driver of fan behavior (Hunt et al., 1999; Pritchard & Kharouf, 2014). Likewise, Hunt et al. (1999) subdivided fans into several categories:

- *Temporary fans* are those who identify themselves with a specific group during a certain period, even though they may not adopt a public self-identification with the group.
- *Local fans* are those who choose their teams based on geography, and therefore their self-identification is related to locality and not the sports figures.
- *Devoted fans* are those who do not manifest any time or geographic constraints, and their

motivation is linked to a consumptive object, such as the athlete's personality, team, sport, or league.

- *Fanatical fans* are those who have superlative fan-like behavior that drives them to adopt a supportive behavior outside the sports context.
- *Dysfunctional fans* are those who consider being a fan as their primary method of self-identification.

Hunt et al. (1999, p. 440) argue that the development of fans into these different categories occurs through a halo process whereby the affiliation becomes a reflex of "a reservoir of memories feed[ing] fans' enthusiasm and passion for sports and link[ing] them to the sports institution, interpersonal relationships, and experiences" enhanced by social networks that incorporate fans', followers', or families' shared content.

In summary, athletes and sports figures are using social media to interact with fans (Pieper, 2013; Sanderson, 2013). As a result, sports fans employ social media to build community and promote their preferred representations of athletes and sports figures (Sanderson, 2013). Considering the most basic level, any online social network can become a community where individuals with similar interests or who belong to similar social structures can interact using their public persona (Acquisti & Gross, 2006). Thus, large online sports communities are created around a sport or sports figure.

A sports fan with no time or geographical boundaries (i.e., a devoted, fanatical, or dysfunctional fan) tends to replicate game day experiences and behaviors in other contexts. This sports fan considers the level of interactions documented in social media related to sports (Hambrick & Sanderson, 2013; Pedersen, 2014; Pieper, 2013; Varner, 2013) and adopts a social identity theory (SIT) (Tajfel & Turner, 2004) perspective by using the virtual communities to recreate sporting event environments. Using this knowledge, Underwood, Bond, and Baer

(2001) analyzed how firms can explore social identity in sports to build service brands.

Additionally, brand personality dimensions, traditionally applied to tangible brands, can also be applied to sports (Aaker, 1997). Recent studies such as Carlson, Todd Donovan, and Cumiskey (2009) suggest that athletes and teams can enhance their sport's brand awareness and emotional ties with fans, and social media provides such opportunities.

Although sports are intangible and not all multi-faceted dimensions of brand personality can be applied, evidence reveals that athletes and team prestige and distinctiveness are positively influenced by both the shared and unique facets of brand personality (Carlson et al., 2009). Athletes and teams that have high-value brands are able to extend into different areas to enhance their brand value without the risk of a brand personality change (Diamantopoulos, Smith, & Grime, 2005). More specifically, athletes and teams may offer meaning to brands for fans. The endorsement of famous sports stars and their personalities can assist brand managers in positioning their brands and promoting fans to identify with brands and sports stars (Ross, 2008). The emotional involvement and commitment that occurs among sports fans establishes the basis for a community that shares the same values, likes or dislikes, and similar consumer behavior. The specific environment surrounding these consumers can be used by marketers to enhance consumer identification with a sports-related product or service and, in due course, increase brand equity and sales revenue.

Therefore, and as Kavoura (2014) suggests, online communities offer unique communication opportunities for marketers and advertisers by providing direct access to specific consumer targets that are updated continuously through comments about their state of mind, desires, and likes. These virtual communities provide opportunities for reinforcing brands by making or strengthening the emotional connection with the community members. This emotional tie is intimately related with fan

engagement, allowing social media to significantly shorten the distance between the sports figure and fans, and consequently changing fan engagement levels. One of the major tasks facing sports marketers is maintaining engagement levels, since this reflects consumer interest and actual sports-consumer behavior.

### 3. Data and results

A cluster analysis was performed based on the network structure of the six athletes studied. The cluster analysis was used to identify groups of individuals that were similar but different from other groups so that specific profiles within the fans and followers could be recognized. Three clusters were found, as presented in Table 1.

By examining the three clusters and comparing the analysis with the Hunt et al. (1999) fan classification structure, local and dysfunctional fans were not found; however, that might be due to an insignificant number of these types of fans in the sample. There are no fans based solely on their location and/or with geographical constraints. This is consistent with the ubiquity of social media, which allows anyone, anywhere with an Internet connection and an account to be linked with a sports figure.

The most interesting and challenging dimensions of analysis are intimacy and influence, since they are closely related to consumer sentiments. Additionally, sports fans have strong opinions and feelings and their engagement may vary with their emotions. Thus, a content analysis must be performed to translate human emotions and opinions into engagement bases. By analyzing the social media content shared on Facebook by the six players, some conclusions can be made (see Figure 2).

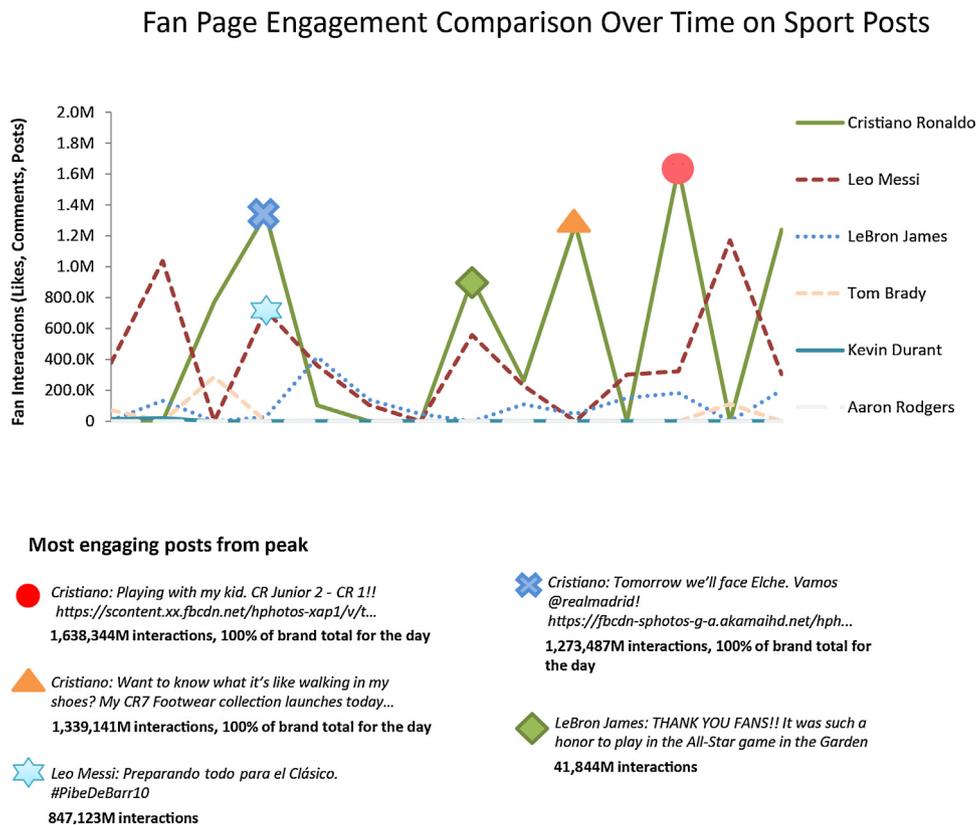
Sports fans tend to deeply engage with specific players. However, not all content shared by these players creates the same engagement level, and specific content leads to interaction peaks. For example, Cristiano Ronaldo's social media content

Table 1. Mean differences between fan segments

Dimension	Cluster 1 Temporary fans	Cluster 2 Devoted fans	Cluster 3 Fanatical fans	Mean difference
Like it	18.65	35.64	43.36	1<2,3
Comment	2.17	3.30	4.11	1<2,3
Post activity	0.32	0.51	2.13	1,2<3
Share links	2.91	3.10	4.85	1,2<3
Location	0.65	0.58	0.64	NS
Gender	0.67	0.68	0.69	NS

NS- Non significant

Figure 2. Fan page engagement over 15 days and peak content



exhibited peaks over a 15-day period regarding three distinctive subjects: team agenda (next-day games between Real Madrid and Barcelona), brand sponsorship, and his private life. Over the same period, the social media of Ronaldo's closest rival, Lionel Messi, exhibited a major peak related to a match game, followed by another post related to the Real Madrid and Barcelona game. The Real Madrid versus Barcelona game was in both players' shared content, but led to different engagement rates, which reveals that engagement can be related to elements other than content. During this period, no brand sponsorship reached an engagement peak.

Therefore, for firms related to sports and players, engagement should not be assumed (Baird & Parasnis, 2011a). However, this content analysis can help decision makers forge specific brand positioning and communication strategies based on fans' emotional connectors.

#### 4. Discussion and conclusion

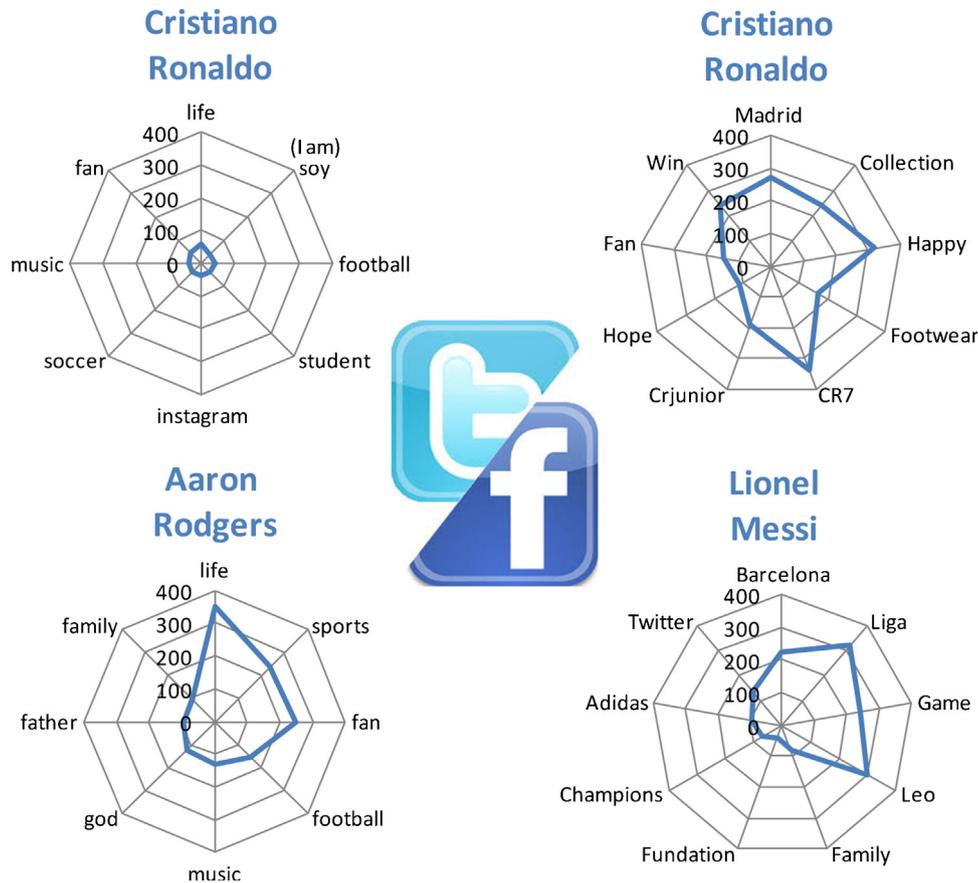
The analysis of the level of engagement raises the question of whether sports figures and companies use the same posture on Facebook, Twitter, and

other social media sites. Social media has changed how sports firms and figures operate, and the fans are in control, as most sports fans are very active on social media. The challenges and opportunities inherent to social media adoption by sports firms and figures have catalyzed academic research in this area. Williams and Chinn (2010) argue that social media networks present sports figures and brands with the opportunity to communicate, interact, and add value to the consumer experience.

Sports figures and firms initially used these networks in a relaxed manner. However, they rapidly realized the implications of athletes' use of social media on sports media processes and sports organizations (Pieper, 2013). For some, "YouTube is an endless source of video highlights and bloopers. Twitter is a gigantic news wire. And, Facebook is a place for trash talk with friends" (Laird, 2013).

In Figure 1 and Figure 3, the EU soccer star athletes have more engaging relationships on social media networking than the U.S. star athletes. This might reflect two different elements: soccer is a worldwide sport and these players compete for fans' attention on a global scale; and online activity is now integrated in a personal/athlete marketing strategy, which is professionally guided by their agencies. For instance, Ronaldo changed his

Figure 3. The most popular athletes on Facebook and Twitter



communication language posture over the past years and now refers to himself in the third person, which reinforces his brand name awareness. The U.S. players maintain discourse in the first person, showing less concern with brand management. However, these social media sites play a larger role than ever in the lives of sports fans around the world, allowing for pre-, during-, and post-game interactions with players and other fans.

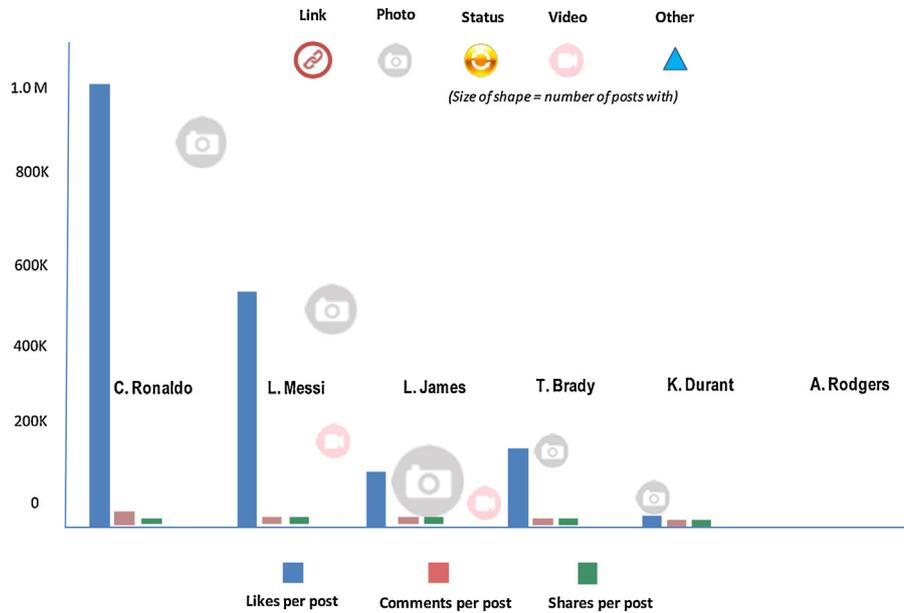
On both Twitter and Facebook, Cristiano Ronaldo is the athlete with the highest rate of participation. For this reason, we looked into his activity on both networks and compared it with the athlete ranking second in amount of activity, which for Facebook was Lionel Messi and Twitter was Aaron Rodgers. While Ronaldo is active in both networks, integrating some of the content but customizing the rest to specific fans, Rodgers and Messi tend to focus mainly on one social network. Rodgers uses mostly Twitter, which is widely used in the U.S., yet does not pay as much attention to Facebook, which is the main social network outside the U.S. Moreover, his language patterns are very culturally linked to the U.S., which can create a positive bond with U.S. fans but may not have the same positive effect with other

countries' fans. For brands trying to promote their products on the world stage, this domestic focus does not enhance the relationship to the world's virtual fan communities, and therefore is less attractive than sponsoring soccer players or other international sports athletes.

As reported by [Sanderson and Truax \(2014\)](#), audience interpretation of media text stresses can be used to construe the background of each fan. To make the fan experience seamless across social media and other channels, sports firms need to think like fans by assessing what fans value and creating content that mirrors these values, thus monetizing social media. There is little extant literature regarding how people come to be involved in digital sports fans communities. Undeniably, sports are the initial key elements and the athletes are the community ties. As observed in [Figure 3](#), regardless of the social network adopted, the players emphasize their personal life and state of mind in their shared content, which causes fans to feel emotional, be engaged, and share their own content.

The aspects related to emotion and the practical value of the content that leads to fan engagement have been debated. As [Figure 4](#) shows, photos

Figure 4. Facebook fan page comparison: Engagement on players' posts



remain the most active triggers of fan emotion and action.

Driven by the results of this study, a four dimensions stream referred to as the STAR model—storytelling, triggers, amusement, and reaction—is proposed to leverage brands’ and players’ roles in social media. The area of each role corresponds to the weight calculated in the multidimensional analysis performed (see Figure 5).

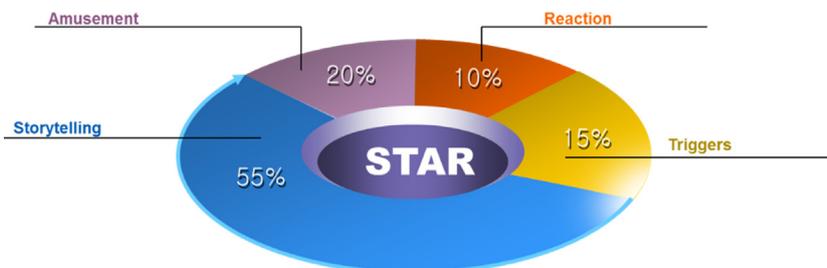
With so much time focused on the messenger, the message tends to be devalued. The STAR model reveals that sports fans’ engagement reflects the capability of the messenger to combine these four dimensions. Storytelling should account for at least 55% of the content generated on a public profile. This storytelling is exhibited in how more people are creating their own ‘digital stories.’ As explained by Singh and Sonnenburg (2012), storytelling in social media is nonstop and mostly improvisational, comprised of interlinked content that enhances the peer-to-peer relationship. Baird and Parasnis (2011b) described how storytelling can promote

more than individual relationships, allowing brands to move from social media communication to social CRM.

Furthermore, as referenced in the work of Copeland and Miskelly (2010), storytelling can stimulate the feeling of community belonging. Thus, the focus needs to be on how to make sports brands and figures more appealing to support virtual communities and social network engagement. Considering the content shared on Twitter by Messi, Ronaldo is a key figure, thus transforming social media into their personal battlefield.

Comparing Aaron Rodgers’ and Cristiano Ronaldo’s performance on Twitter, clear differences in content preference and frequency were identified. These differences reflect the need for sports firms or athletes to stimulate fans to think about a topic or event, and share information frequently with their digital communities, friends, and family. Both links and images can act as amusement or triggers, depending on whether they stimulate an emotional state of mind or simply make the content

Figure 5. STAR model



memorable. These two dimensions should account for 35% of the user content generated. Embedded links and images are common ways to enhance this behavior, as seen in Aaron Rodgers' Twitter profile. Considering Facebook data, LeBron James is the leader with 40% content in the amusement and triggers dimensions.

The smallest dimension found in the STAR model was reaction, which accounts for 10% of the activity in the virtual fan community. This dimension is concerned with the active posts and comments created by fans individually, and it is not entirely controlled by the sports figure. Considering Twitter data, Kevin Durant has the highest participation of fans in this type of content creation at 14%.

Although all four STAR dimensions are not mandatory, balanced use can achieve upper levels of fan engagement. Even though there were significant differences between the six players studied, all have attained high levels of engagement and have established a virtual community of fans and followers using the STAR model.

An effective storytelling application can be found in Ronaldo's social media profile, via which the athlete shares a little bit of his personal and professional lives. However, his storytelling is not complete without a specific touch: an image that is worth a thousand words.

In general, to enhance engagement, the content shared should have a common or underlying theme that connects different posts, creating a story that fans want to follow. Otherwise, content is only a bunch of images and unrelated posts that may or may not generate immediate engagement, which is not sustainable over time.

The effective use of social media can create opportunities for sports firms in terms of social relationship management. Social media allows sports firms to easily connect with customers, improve brand awareness, stay relevant, and keep track of customers. Based on this research, the practical implication for sports figure-created content is to like it, create it, and enhance it through the STAR model.

## References

- Aaker, J. L. (1997). Dimensions of brand personality. *Journal of Marketing Research*, 34(3), 347–356.
- Acquisti, A., & Gross, R. (2006). Imagined communities: Awareness, information sharing, and privacy on the Facebook. In A. Danezis & P. Golle (Eds.), *Privacy enhancing technologies* (pp. 36–58). New York: Springer-Verlag.
- Baird, C. H., & Parasnis, G. (2011a). From social media to social customer relationship management. *Strategy and Leadership*, 39(5), 30–37.
- Baird, C. H., & Parasnis, G. (2011b). From social media to social CRM: Reinventing the customer relationship. *Strategy and Leadership*, 39(6), 27–34.
- Berthon, P. R., Pitt, L. F., Plangger, K., & Shapiro, D. (2012). Marketing meets Web 2.0, social media, and creative consumers: Implications for international marketing strategy. *Business Horizons*, 55(3), 261–271.
- Billings, A. C., Butterworth, M. L., & Turman, P. D. (2014). *Communication and sport: Surveying the field*. Thousand Oaks, CA: Sage Publications.
- Carlson, B. D., Todd Donovan, D., & Cumiskey, K. J. (2009). Consumer-brand relationships in sport: Brand personality and identification. *International Journal of Retail and Distribution Management*, 37(4), 370–384.
- Copeland, S., & Miskelly, C. (2010). Making time for storytelling: The challenges of community building and activism in a rural locale. *Seminar.net*, 6(2), 192–207.
- Diamantopoulos, A., Smith, G., & Grime, I. (2005). The impact of brand extensions on brand personality: Experimental evidence. *European Journal of Marketing*, 39(1/2), 129–149.
- Dollinger, M. J. (2015). Social media: Cui bono? Who benefits from all this socialness? *Business Horizons*, 58(3), 235–236.
- Filo, K., Lock, D., & Karg, A. (2015). Sport and social media research: A review. *Sport Management Review*, 18(2), 166–181.
- Fort, R., & Winfree, J. (2013). *Two sports myths and why they're wrong*. Stanford, CA: Stanford University Press.
- Gwinner, K., & Swanson, S. R. (2003). A model of fan identification: Antecedents and sponsorship outcomes. *Journal of Services Marketing*, 17(3), 275–294.
- Hambrick, M. E., & Sanderson, J. (2013). Gaining primacy in the digital network: Using social network analysis to examine sports journalists' coverage of the Penn State football scandal via Twitter. *Journal of Sports Media*, 8(1), 1–18.
- Holzner, S. (2008). *Facebook marketing: Leverage social media to grow your business*. New York: Pearson Education.
- Hull, K., & Schmitt, A. (2015). A fumbled opportunity? A case study of Twitter's role in concussion awareness opportunities during the Super Bowl. *Journal of Sport and Social Issues*, 39(1), 78–94.
- Hunt, K. A., Bristol, T., & Bashaw, R. E. (1999). A conceptual approach to classifying sports fans. *Journal of Services Marketing*, 13(6), 439–452.
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59–68.
- Kavoura, A. (2014). Social media, online imagined communities, and communication research. *Library Review*, 63(6/7), 490–504.
- Laird, S. (2013, October 3). How sports fans engage with social media. *Mashable*. Retrieved January 25, 2015, from <http://mashable.com/2013/10/03/sports-fans-social-media/#4CybWtXu6kkL>
- Pedersen, P. M. (2014). A commentary on social media research from the perspective of a sport communication journal editor. *Communication and Sport*, 2(2), 1.
- Pieper, L. P. (2013). It's a whole new ball-game: How social media is changing sports. *Journal of Sport Management*, 27(3), 261–262.
- Pritchard, A., & Kharouf, H. (2014). Leisure consumption in cricket: Devising a model to contrast forms and time preferences. *Leisure Studies*, 1–16.
- Ross, S. D. (2008). Assessing the use of the brand personality scale in team sport. *International Journal of Sport Management and Marketing*, 3(1), 23–38.
- Sanderson, J. (2013). From loving the hero to despising the villain: Sports fans, Facebook, and social identity threats. *Mass Communication and Society*, 16(4), 487–509.

- Sanderson, J., & Truax, C. (2014). "I hate you man!": Exploring maladaptive parasocial interaction expressions to college athletes via Twitter. *Journal of Issues in Intercollegiate Athletics*, 7, 333–351.
- Singh, S., & Sonnenburg, S. (2012). Brand performances in social media. *Journal of Interactive Marketing*, 26(4), 189–197.
- Tajfel, H., & Turner, J. C. (2004). The social identity theory of intergroup behavior. In J. T. Jost & J. Sidanius (Eds.), *Political psychology: Key readings in social psychology* (Vol. xiii, pp. 276–293). New York: Psychology Press.
- Tiago, T., & Veríssimo, J. (2014). Digital marketing and social media: Why bother? *Business Horizons*, 57(6), 703–708.
- Underwood, R., Bond, E., & Baer, R. (2001). Building service brands via social identity: Lessons from the sports marketplace. *Journal of Marketing Theory and Practice*, 9(1), 1–13.
- Varner, R. (2013, October 13). *Technological game changer: How social media and second screen devices have changed sports*. Retrieved December 11, 2014, from <http://www.russellvarner.com/wp-content/uploads/2014/03/Lit-Review-ACM.pdf>
- Wann, D. L. (1995). Preliminary validation of the sport fan motivation scale. *Journal of Sport and Social Issues*, 19(4), 377–396.
- Williams, J., & Chinn, S. J. (2010). Meeting relationship-marketing goals through social media: A conceptual model for sports marketers. *International Journal of Sport Communication*, 3(4), 422–437.