

Disseminating the Olympic values on Facebook and Twitter during Rio 2016: content, influencers and engagement

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Abstract

This paper analyses the activity generated by the main Olympic actors and users' participation on Facebook and Twitter during Rio 2016 through techniques and computational procedures called Digital Methods based on big data. This research is based on the analysis of 38,037 Facebook posts diffused by the main Olympic actors, which generated a total of 144.3 million interactions on behalf of the users, and the analysis of 43.3 million tweets, which were retrieved and stored due to their likeness to the official Rio 2016 event hashtags. It examines the strategies employed by the Olympic Family via social media, and the complex interaction between the various actors involved. This analysis contributes to discover whether Facebook and Twitter have capacity to create realities independently of the traditional mass media during a global event such as the Olympic Games, and the need for a more comprehensive and strategic approach to the opportunities presented by social media in the context of the Olympic Movement.

Keywords

Olympic Games, Rio 2016, Social Media, Digital Methods, Facebook, Twitter.

Pardo Gila, J. M. (2018). Disseminating the Olympic values on Facebook and Twitter during Rio 2016: content, influencers and engagement. *Diagoras: International Academic Journal on Olympic Studies*, 2, 61–82. Retrieved from <http://diagorasjournal.com/index.php/diagoras/article/view/39>



Introduction

The Olympic Movement, considered a pioneer amongst the major international sport organisations in terms of development and new technology implementation in communications fields (Fernández Peña, 2009; Miah, 2017), has found a suitable scenario on internet and social media to spread the Olympic values and ideals amongst the audience.

If we study Olympism from the perspective of social media during the “Biggest Olympic Games ever on social media platforms” (IOC, 2016) we come across two aspects which dynamically complement each other: New forms of communication of major organisations related to the world of sports, especially those revolving around younger generations, are analysed, as well as new social mediums which subsist due to this same audience (Fernández Peña, 2016). This participation-calling graven in the DNA of these new means of communication requires addressing this investigation whilst constantly taking in account the presence of the public. In this social media environment, defined by the lead role users have as creators and distributors of messages, the key term which measures the relevance of the content posted by brands, and how committed fans or followers are within social media is the engagement. This term refers to the public’s participation or to its level of involvement in posts published by a third-party, be it an organization, firm or individual (Fernández Peña et al., 2014).

The Olympism irrupted on social media in Pekin 2008 experimenting new types of communication through YouTube (Fernández Peña, 2009; Hutchins & Mikosza, 2010; Miah & Garcia, 2012) and at the start of 2010 due to the Vancouver Olympic Games with the use of isolated strategies on Facebook and Twitter, developed by the International Olympic Committee and the Organising Committee (Fernández Peña, 2011). The IOC Facebook page obtained more than one million Facebook users in less than one month during the weeks prior to and during Vancouver 2010. Nevertheless, the London 2012 Olympic Games have been classified as the first major global sports event in which social media is used massively to encourage audience participation (Fernández Peña et al., 2017; Rooney, 2012). The Rio 2016 Olympics allowed the consolidation of the success of social media across differentiated platforms with their own specific natures. The summer of 2016 Olympic event at Rio de Janeiro did not solely top-up the use of social medial by users

during global sports events such as the Olympic Games (Kapko, 2016), but also broke user activity and participation records (Mathur, 2016) accomplishing the highest level of engagement on social media in the Olympic Games (IOC, 2016: 2) surpassing 7.2 thousand million video views of official content (IOC 2016: 8). For the first time in the Olympic Games, stories could be observed on social media such as *live* and *360 degrees* videos from Rio de Janeiro and its venues. More than 1.5 thousand million Facebook interactions during its coverage have allocated the Rio 2016 Olympic Games the label of the “most social Olympics” (Tang & Cooper, 2017).

Research subject and objectives

This paper examines the role of social media platforms as new communication channels which enable the diffusion of the Olympic values among young people. It is divided into two distinct parts according to the particularities of the platforms Facebook and Twitter. Firstly, the activity on Facebook from the main actors comprising the Olympic Movement will be analysed and assessed in terms of engagement with users. Secondly, the project analyses models and systems of interaction with users on Twitter. The overall goal, in both cases, is to understand the intricacies of communication via social media within the context of a highly complex model (i.e. the Olympic Movement).

This study examines the means by which content successfully engaged fans through these social media platforms during the Rio 2016 Summer Olympic Games. The attention is therefore focused on analysing what type of content fostered higher levels of user participation, at what moment in time and through which kinds of strategies. Simultaneously, it offers a perspective on how the Olympic Movement shares the Olympic values with the digital community.

In brief, this study is underpinned by the following goals:

- 1) To analyse the interaction system of the main actors
- 2) To examine the content published by the main actors of the Olympic Movement in terms of its format, nature and their commitment with the Olympic values on Facebook
- 3) To identify users' communities and influencers on Twitter.

Research limitations

One of the first limitations in our field of study is the complexity of the studied phenomenon. The numbers explain one part of the facts, but not everything can be measured numerically. The results are limited as they are originated from a complex phenomenon, which implies the acknowledgement of possible disorder and uncertainty (Morin, 1981). A second limitation is related with technical aspects such as the recovery and processing of massive data in services such as social media in the Internet. On the one hand, data retrieving depends on computer software developed by third parties. In turn, this software follows the rules dictated by the platforms which control access to said data (Rieder, 2013; Steen-Johnsen & Enjolras, 2015), which by doing so confront particular issues such as privacy and security (Mayer-Schonberger & Cukier, 2013; Wu et al., 2014). In our particular case, the developed database with all the necessary information to conduct all the following analysis surpassed eight gigabytes of memory capacity.

Social media allows free and open access to large quantities of data from individuals in virtual spaces. This issue must be addressed cautiously, as one unique individual can create unlimited accounts and profiles in these platforms quickly and easily. In a similar way, it is not rare for major global brands to acquire bots packages, computer software which can run repetitively programmed tasks on internet simulating peoples capabilities, with the goal of augmenting their fans community and beating their competition when it comes to objectives related to marketing. These issues align themselves with the necessity for authenticity and representation of the samples (boyd & Crawford, 2012) in social studies, something far from the possibilities big data can offer nowadays when noise and disorder are unavoidable (Silver, 2014).

Another limitation is linked with the selecting of the Olympic actors for the sample, and choosing the hashtags from Twitter which content is retrieved. For example, facing the impossible scenario of including in our analysis every television channel which acquired television rights for Rio 2016, we selected the channels which adjusted themselves better to our study purposes based on proximity and popularity. As a result, our subject of study constitutes a finite portion over the total content posted in relation to the Olympics, as a large fraction of the user's activity is

produced within their personal timelines. In a Facebook scenario, observations and analysis are strictly linked with the selected Olympic actors in the body of the analysis and their capability to generate content in their own personal pages encouraging participation from users in an enclosed environment.

Methodology

We propose an innovative methodology that takes advantage of the analytical potential offered by techniques and procedures based on computational processes. For this purpose, we have resorted to Digital Methods (Rogers, 2013), which are differentiated precisely in order to better exploit the possibilities of New Media as a source of data and methods for research. By deploying this methodology we use a program for data extraction and analysis called Netvizz, which was developed and designed for scholarly use. Netvizz functions as if it were yet another platform application. It accesses data via Facebook's Application Programming Interfaces (APIs), which are simply a development environment that regulates data access for third-party applications in accordance with the platform's terms and conditions of access (Rieder, 2013). For Twitter, we compile and analyse a collection of tweets from keywords using the DMI-TCAT (Digital Methods Initiative - Twitter Capture and Analysis Toolset), a tool designed to store and analyse tweets in order to carry out research in the field of social and human sciences (Borra & Rieder, 2014). Finally, we also use various computational processes and information visualisation techniques to explore and present the results.

Sample description and methods

As mentioned previously, this study is based on a quantitative analysis of the extracted data from Facebook and Twitter which ranges from the 1st to the 26th of August 2016, during the Rio 2016 Olympics, which encompasses the 17 days during which the Rio 2016 Olympic Games took place, as well as five days before the start, and five days after it finalised. The dates have been converted to Central European Summer Time (CEST), which implies the opening ceremony took place at early morning of the 6th of August 2016 and the closing ceremony at early morning of the 22nd of August 2016.

The methodology is based on Digital Methods, an initiative originated at the University of Amsterdam which, "instead of

drawing from the common research methodologies in the social sciences and adapting them to study the new media, proposes to draw from digital research methods that repurpose the specific computer data and social media processes to study the medium based on its objects, formats, devices and platforms” (Rogers, 2013, cited by Coromina, 2016). The specificity of the new media also becomes a specificity of the method through the use and study of digital-native objects like websites, links, search engine algorithms and social media on the Internet, and the processes that articulate them.

To extract data from Facebook and Twitter, two types of software designed for academic use are employed, namely Netvizz and DMI-TCAT. These software packages reuse the technical and analytical features of digital platforms to obtain datasets that can then be exploited to analyse cultural and social phenomena. Instead of taking advantage from the traditional methodologies used in the Social Sciences and adapting them (making them digital), the software employs digital research methods that make use of computerised data and processes in order to study the medium, based on its native platform, devices, format and objects. In other words, the specificity of new media can be transformed into a specificity of method by studying digital objects such as links, APIs, search results and other characteristic elements of social media (Rogers, 2013).

In the case of Facebook, we analyse the interaction systems as well as posts published by the 100 main actors of the Olympic Movement (IOC, OCOG, IFs, NOCs, TVs Channels and TOP Sponsors). In order to choose the Olympic actors to be included in the data set, it was considered a requirement to have an official Facebook verified page, and to post content during the analysis period. The analysis body was composed by a total of 38,037 analysis units: International Olympic Committee (n=824); National Organising Committee (n=15,312); International Federations (n=4,937); Televisions (n=14,818); Olympic Sponsorship Members (n=766). These 38,037 analysis units are publications diffused by Olympic actors through Facebook which generated 129,995,122 reactions, 11,106,825 shares and 3,262,994 comments. In total, this sums up to 144.3 million interactions (engagement).

The popularity of content and comments is determined by metrics, such as engagement, offered by the platform. Interaction systems define how Facebook pages are related to each other,

determined by whether or not a page has “Liked” another page. After downloading the files from Netvizz with this information (format .gdf) they are then analysed in Gephi, a piece of software designed to create and analyse graphs. Our first hypothesis would argue that the IOC and OCOG are in a central position due to the vertebral importance of these actors in the Olympic Movement.

With respect to Twitter, the analysis starts from a previously entered data set related to Rio 2016 and includes more than 43 million tweets containing the following keywords defined as the official Olympic Games hashtags: #Rio2016, #RioOlympics, #OpeningCeremony, #ClosingCeremony, #OlympicGames, #JuegosOlímpicos.

DMI-TCAT is not only used for the extraction and storage of data, but has a number of features to facilitate the tasks of analysis and data visualization through features such as filtering and data segmentation that allows to export reports which are then compatible with software such as Excel and Gephi. These files have information about the content of the tweets, elements of Twitter (mentions, replies, retweets, urls, etc.) and basic indicators of users who have published the captured tweets (tweets published, following, followers, etc.). These files allow the analysis of communities of users and influencers, and how they relate to each other, as well as determining the most popular content, thereby allowing us to reconstruct the dominant story from users’ participation.

The developed analysis strategies in this investigation use as reference the methodological processes used in similar recent projects (Ben-David & Matamoros Fernández, 2016; Coromina, 2016; Dey & Roy, 2016; Fernández Peña et al., 2017; Rieder et al., 2015) which approached their subjects of study accompanied by the use of methodological approximations based on Digital Methods (Rogers, 2013). The results analysis of this investigation is based in these methodological processes which facilitate the recollecting and information processing by providing a sample with millions of pieces of data which would be impossible to retrieve through social science’s classical methods, as well as aiding in the comprehension and visualisation of the digital phenomenon and their role in social platform’s dynamic structure (Marres, 2012).

As for the content posted by the Olympic actors, the following steps are performed: 1) extraction and cleaning of data, 2) analysis and categorization and 3) data visualisation. To clean, analyse and

categorize data we use the programmes Open Refine and Excel, which allow us to simplify and analyse the sample. Finally, data is presented in graphs and tables prepared using Excel and Tableau.

The content published by the Olympic actors on Facebook is analysed in search of particularities when it comes to content's format and nature. Subsequently, content with higher popularity is identified using Facebook's own tools which by means of metrics, indicate active participation of users. Netvizz codes individually each publication by assigning them one format (picture, video, link... etc.), one web address and the numbers representing the different metrics such as reactions, shares and comments, amongst other variables. As a result, to determine the nature of the content, the web address can be used for each unit of analysis retrieved by Netvizz to classify the content as native or non-native using Excel's functionalities. To do so Excel evaluates the web address, from which it will identify the host, those hosted on Facebook's platform will be classified as native, and those hosted in external sites, such as news from communication channels which redirect the user to a different website, will be classified as non-native.

Results

Olympic actors' interaction systems

To better comprehend the interaction systems between Olympic actors, the application Netvizz and the software Gephi, tools developed with the purpose of analysing and representing graphs, have been used. The interaction analysis of these actors allows us to study the structural properties of these network systems. All of them combined have produced a graph consisting of 9,777 nodes and 69,375 links.

Firstly, the distribution algorithm Force Atlas 2 has been applied, such algorithm spaces out the nodes in space, resulting in edges acting as an attracting force, and nodes as a repelling force (Jacomy, Heymann, Venturini, & Bastian, 2011, cited by Coromina, 2016: 162). As a result, those actors or entities (nodes) which share more links are allocated in nearby positions, whilst on the other hand, those which share less links are allocated further away. Likewise, some parameters of this function have been manipulated in an attempt to prevent nodes from overlapping each other so the graph can be easily read.

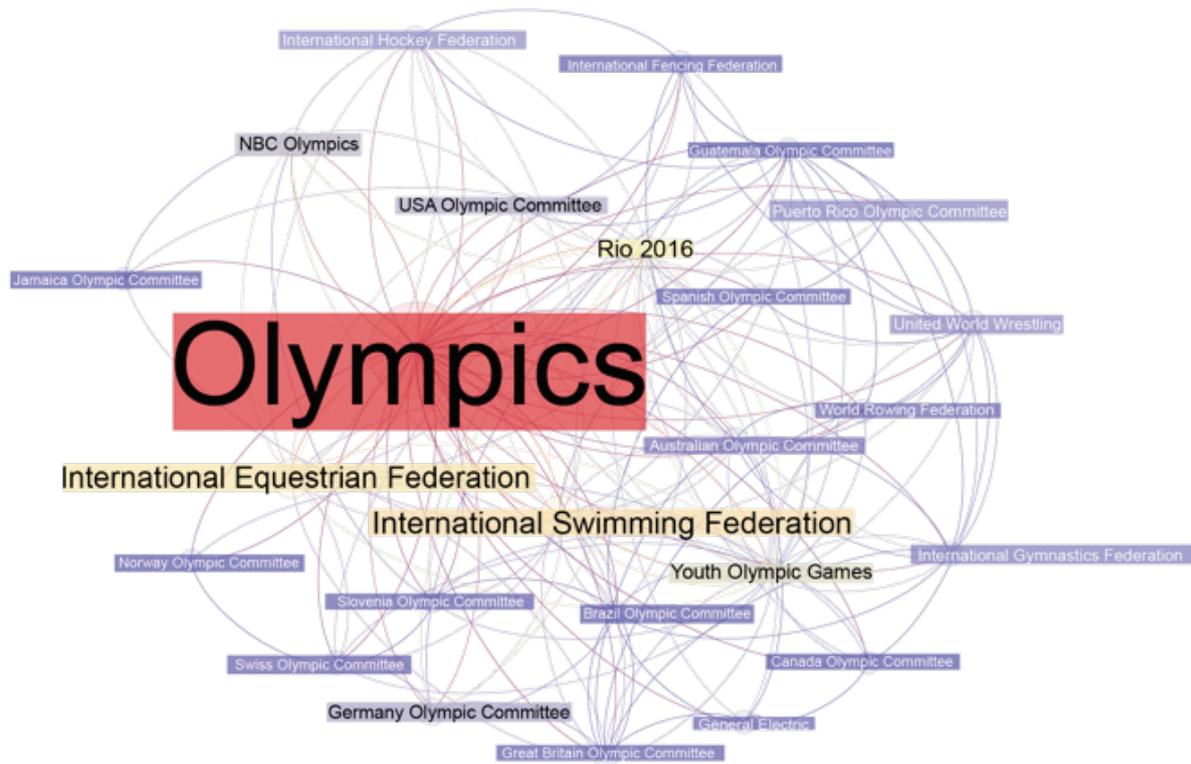
In second place, and with the objective of understanding the structural qualities of the system formed by the links between Olympic actors on Facebook, the function *Betweenness Centrality* has been applied, which displays the centrality of the network's nodes. This indicator allows us to spot the actors which play the most relevant roles regarding the celebration of the Rio 2016 Olympic Games. The gradual change in nodes colour (from red to blue, passing through yellow) exhibits the degree of centrality, red colour indicates a higher level of centrality whilst a blue colour indicates a lower level of centrality for the element. Likewise, this indicator has also been used to establish the size of the node's circumferences and the label's colour. Gephi software functionalities have been used to analyse the networks as well as the complex structures of the actors who most stood out.

The graph presented in Figure 1 displays a minuscule portion of the total number of links. In order to improve its presentation and easing the task of identifying the fundamental actors which comprise the Olympic system on Facebook, only 25 out of the 9,777 nodes (0.26%) and 176 out of the 69,375 links (0.25%) are displayed. These 25 nodes represent the actors with the highest degree of centrality, that is to say, those who by means of their connections with others are situated in prominent positions within the network.

The Olympic system's key actor on Facebook is the Olympics (IOC), due to its bonds with the rest of actors displayed in Figure 1. Some actors such as the International Swimming Federation (FINA), the International Equestrian Federation (FEI) and the Rio 2016 Organising Committee are part of the large swarm of connections which endow them a central role inside the system.

When it comes to the United States, its Olympic Committee and television channel NBC Olympics have a leading role as a result of their local links with federations, sponsors and professional athletes. The only sponsor which can be found amongst the actors with a centralised role is General Electric. Its important role is explained by the sponsor's links with the National Committees from Canada, United Kingdom, Brazil and Australia as well as its connections with key actors such as Olympics and Rio 2016.

Figure 1. Interaction system between top 25 Olympic actors on Facebook



Source: Own elaboration with data extracted from Netvizz.

Facebook content: format and nature based on the engagement

Content format

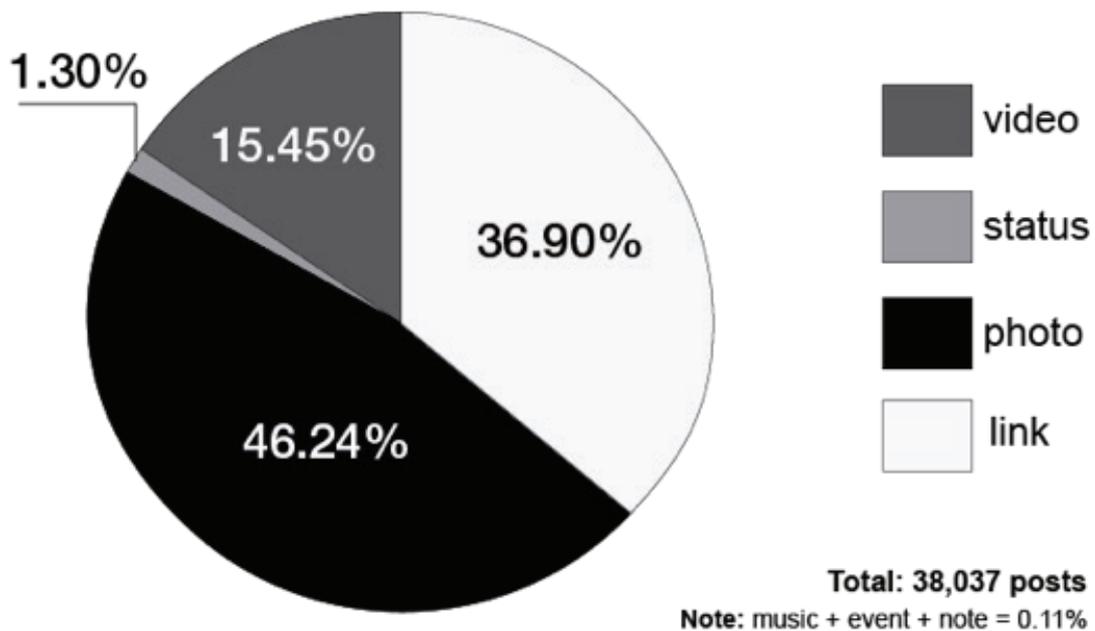
The most popular format was photos (n=17,588) by producing 80,745,156 reactions, 5,888,828 shares and 1,398,617 comments. The second most used format was links (n=14,034), producing 29,129,343 reactions, 2,034,901 shares and 792,642 comments. Followed by video (n=5,875) which produced 19,699,853 reactions, 3,151,491 shares and 1,050,283 comments. Finally and in a more distant position, text (n=494) producing 409,104 reactions, 31,507 shares and 20,969 comments. Figure 2 displays the data about the format use in percentage terms.

As previously mentioned, 90.05% of user interactions were reactions, which stand at the lowest level of engagement, and thus require a less active participation. This fact suggests shares and comments higher level of engagement is not reflected suitably on Facebook's automatic tool which calculates engagement. In fact, Facebook's own API determines the engagement value by attributing the same degree of relevance to the three previously

mentioned variables. If we look at the numbers, we can see shares (7.69% of total engagement) and comments (2.26%) have a very significant difference.

Video seems to be the format which obtains a larger active response on behalf of the users as it accumulates a higher number of shares (536.42) and comments (178.77) per post. Even though the photo format obtained many more reactions per post (4,590.92) compared to the rest of formats, it produced a lower number of shares (334.82) and comments (79.52) per post than video. Based on these numbers, video can be considered the most viral format, as it is diffused the most throughout Facebook users, while at the same time it also accounts for producing the most conversation, that is to say, more comments.

Figure 2. Type of format percentages over the total number of posts by all the Olympic actor on Facebook during Rio 2016



Source: Own elaboration with data extracted from Netvizz.

Content nature

In this section the relationship between the total number of posts and engagement taking in account the nature of all the studied Olympic actor’s posts, is analysed in more detail. This initial approach towards content’s nature attempts to discern the issues which arise when a post’s host is native or non-native, these issues are related to the compensation or engagement prejudice the

posts may receive, which is, the extent to which Facebook rewards or handicaps posts according to their host, as they may be directly hosted on Facebook or in external servers. Table 1 exhibits a general display of the activity produced by the set of Olympic actors according to the content's nature. As it can be seen, 62.03% of posts (n=23,596) was posted directly on Facebook, whilst on the other hand 37.97% (n=14,441) was hosted on external sources. The native content, which is hosted on Facebook, produced more than 100 million reactions, surpassed nine million shares and two million comments. On the non-native content's behalf, which is hosted externally to Facebook, it registered 29 million reactions, more than two million shares and 802,873 comments.

Table 1. Engagement according to the nature of the content posted by all Olympic actors on Facebook during Rio 2016

Type of nature	Posts	Reactions	Shares	Comments	Engagement
Native	23,596	100,538,448	9,049,623	2,460,121	112,048,192
Non-native	14,441	29,456,674	2,057,202	802,873	32,316,749
Total	38,037	129,995,122	11,106,825	3,262,994	144,364,941

Source: Own elaboration with data extracted from Netvizz.

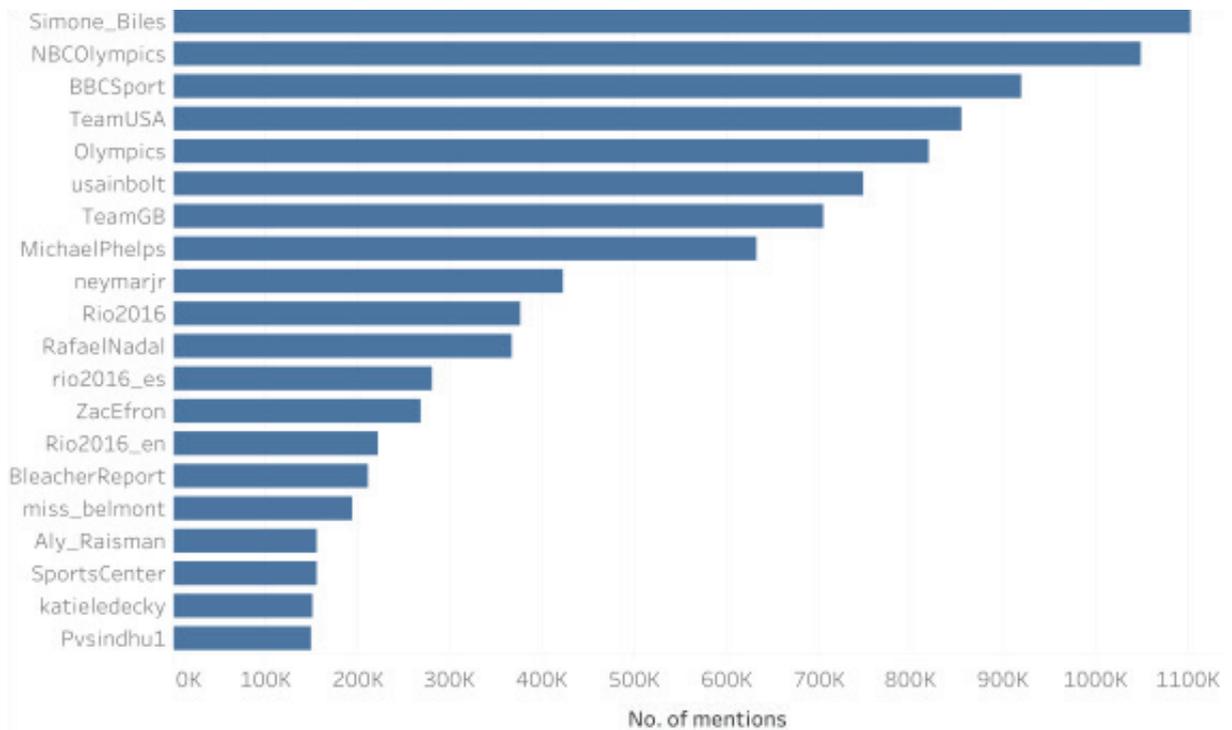
Influencers and content on Twitter during Rio 2016

In order to develop the analysis of Twitter the official Rio 2016 Olympic Games hashtags were monitored (#Rio2016, #RioOlympics, #OpeningCeremony, #ClosingCeremony, #OlympicGames, #JuegosOlímpicos) by means of the software DMI-TCAT (Borra & Rieder, 2014). As a result of this process 43.3 million tweets posted during the event were retrieved, which can be considered a significantly representative sample, taking in account the Streaming API of Twitter has “a bandwidth limitation so the output can never be more than 1% of the totality of Twitter” (Coromina, 2016: 73). Furthermore, the different functionalities built upon the software were used to answer the previously established investigation questions. Consequently, the tool “user visibility” (mention frequency) which recovers the lists, usernames and the number of times they were mentioned by others, was used to locate which users were influencers. In order to find the most popular content, the “identical tweet frequency” function combined with the addition of a filtered search for content exceeding 10,000 tweets was applied.

Influencers on Twitter during Rio 2016

As can be seen in Figure 3, and taking in account the monitored hashtags, the most mentioned athletes on Twitter were Simone Biles, Usain Bolt, Michael Phelps, Neymar Jr. and Rafa Nadal. Furthermore the Spanish tennis player was also the most mentioned athlete during the Opening ceremony. Among the most popular users who generated a large volume of conversation, the Spanish swimmer Mireia Belmonte can be found, as well as the American gymnast Alexandra Raisman, the swimmer Katie Ledecky, and the Indian Badminton athlete Pusarla Sindhu. The accounts from communication media which accumulated the most mentions were NBC Olympics followed by BBC Sport. Having made less of an impact, but still among the most popular, the website Bleacher Report and the sports news show Sports Center, broadcasted on the television channel ESPN, can be found. The Olympic Committees from United States (TeamUSA) and Great Britain (TeamGB) are the only NOCs, positioned amongst the most influencing accounts. The official profiles of the IOC (Olympics) and OCOG (Rio 2016, in its various linguistic versions), as well as American actor Zac Efron were also positioned at the top of the most influential accounts on Twitter during Rio 2016.

Figure 3. Influencers on Twitter during Rio 2016 (most mentioned accounts)



Source: Own elaboration with data extracted from DMI-TCAT.

Content on Twitter

According to official records, Rio 2016 generated 187 million tweets and 75 thousand million impressions (Filadelfo, 2016). Our body of analysis represents approximately 23% of the total number of tweets. Out of the 43.3 million tweets retrieved by DMI-TCAT, almost 11.9 million tweets (27.7%) contain external links, whilst on the other hand, 31.4 million tweets (72.3%) contain text, photos or videos hosted on the Twitter platform. Amongst the most commented events during the competition, Brazil's victory in men's Football stands out; more specifically, the minute Neymar scored the decisive penalty against Germany. Usain Bolt and Michael Phelps's victories in their respective events were also positioned amongst the events which generated the higher amount of tweets. In a similar way, the swimming, football and athletics competitions were leaders in this same category on Twitter.

Table 2. Most popular content on Twitter during Rio 2016 (most retweeted tweets)

No.	Tweet
1 st	@Simone_Biles: proof: had to do a retake bc I thought we were taking a picture then he kissed me instead https://t.co/rld33V14qe
2 nd	@usainbolt: Olympics Record Beijing 2008 100 200 4x100 London 2012 100 200 4x100 #Rio2016 100 200 4x100 #Gold
3 rd	@Simone_Biles: he kissed me on the cheek just letting y'all know @ZacEfron https://t.co/VLYc62DXY7
4 th	@ZacEfron: Surprise!! #Rio2016 #Gold #FinalFive https://t.co/yUswjZeHsa
5 th	@neymarjr: A ti, toda a honra e toda a glória https://t.co/pE1t1meuYc
6 th	@MsFastTwitch: I tweeted that 5 years ago. It's 2016. I graduate from Texas in December. I'm going to the Olympics next week. https://t.co/vusyh5G5Y3
7 th	@SimoneEli_: My favorite quote on display in one picture: "Winners focus on winning. Losers focus on winners." #Rio2016 #Phelps https://t.co/Iv8uDVLxOr
8 th	@Olympics: At the last #closingceremony this happened! #olympics https://t.co/z0IWGvdva0
9 th	@KhadiDon: A performance for my haters. #Olympics https://t.co/p0HxGiiqFT
10 th	@RafaelNadal: Emocionados, felices, difícil describir estas sensaciones. Tenemos la medalla de #oro!!! Grande @marclopeztarres https://t.co/nLnOK1Aqtq
11 th	@espn: He was a 15-yr-old Baltimore kid at the 2000 Olympics. Now, all these years later, he retires with 23 golds. LEGEND https://t.co/SwwXdRE2AH
12 th	@Gurmetramrahim: #MSGwishes Congrats to Sakshi Malik for winning India's first medal at Rio Olympics! Power of a daughter! Outstanding performance! Blessings
13 th	@usainbolt: My fans you guys never doubted me a min and for that I belong to you guys forever #blessed https://t.co/j5xcwI0wXf
14 th	@Simone_Biles: 2016 Olympic Team GOLD Medalist https://t.co/ALrNThAsOE
15 th	@usainbolt: Congrats to Brasil football team on winning gold #Rio2016 @neymarjr https://t.co/gEeGej70st

Source: Own elaboration with data extracted from DMI-TCAT.

However, as it can be appreciated in Table 2, the content which was most retweeted during Rio 2016 was completely unrelated to the actual competition. Such publication is a video in which American actor Zac Efron surprises gymnast Simone Biles in of NBC's studios located in Rio de Janeiro, to retransmit the sports megaevent. In the video, which surpassed 155,000 retweets, Zac Efron can be seen kissing the gymnast, who also is Zac's huge follower. Other competition content which are displayed in Table 2 about Usain Bolt, Neymar, Rafa Nadal and Simone Biles, became viral during Rio 2016. Amongst others, a tweet which was hugely shared was that of Morolake Akinosun (@MsFastTwitch), American athlete who successfully predicted in July 2011 that she would graduate and participate in the Olympic Games in 2016.

Conclusion

The premature field of study of social networking sites applied to the world of global sport suggests the consideration of this study as a starting point into future researches which can validate or reject some of the following conclusions.

This research is based on the analysis of 38,037 Facebook posts diffused by 100 Olympic actors, which generated a total of 144.3 million interactions on behalf of the users, and the analysis of 43.3 million tweets which were retrieved and stored due to their likeness to the official Rio 2016 event hashtags. The differences between the features of the analysed platforms, Facebook and Twitter, serve as evidence to prove the significant extent of analysis complexity when we attempt to compare the results between the two social networking sites. Furthermore, the retrieved units of analysis and the methods applied correspond to two similar computational processes, but with a great variety of differential contrasts.

In accordance to the results of this investigation, there is an existing relationship between the social media's storytelling and the real events which took place during Rio 2016. However, even though Facebook and Twitter's systems have a great capacity to rank the information depending on user participation, it results risky to affirm social media possesses the power to create realities, which is a capability more known to television. Despite this, everything seems to indicate that unlike Facebook, which

until now has been used as a complementary media to television during the Olympic Games (Fernández Peña et al., 2017), Twitter possesses characteristics which allow it to create alternate realities with more ease. Its open character, decentralization, its dynamic design to enhance conversation and its mechanisms to disseminate information allow Twitter to position successfully comedic content diffused by users. When it comes to Facebook, which is more oriented towards private use among users and with a clear purpose when it comes to advertising, only some users, institutions or privileged companies have the capability of creating viral content.

In this research, the only Olympic actor which adjusts itself to this idea in on Facebook would be the International Olympic Committee due to its capability of creating viral contents which surpassed the temporality of the Rio 2016 Olympic Games.

General activity and Facebook interaction systems of Olympic actors

The Olympic actor of greatest relevance was the International Olympic Committee followed by the Rio 2016 Organising Committee. The National Olympic Committees of United States and Great Britain produced the highest number of posts on Facebook. The community of users from Brazil generated the highest volume of conversation by generating the largest number of comments per post, which could be associated to its geographical proximity and interest in the event. The International Federations which most engagement produced within Facebook were Basketball (FIBA), Equestrian (FEI) and Athletics (IAAF). The detachment between football and the Olympism represented by its null activity on Facebook could be another of the International Olympic Committee's pending tasks in the future regarding the digital world. The NBC was without doubt, the most successful television channel on Facebook during Rio 2016, followed by the British channel BBC. The Olympic sponsors which maximised user response as a result of their encouragement were McDonald's, Coca-Cola and Samsung.

Regarding interaction systems, the Olympic actor with higher degree of network centrality is the International Olympic Committee, unquestionable leader and main pillar of the system. International Swimming Federation and International Equestrian Federation also undertook relevant roles among the framework of connections which comprise the Olympic ecosystem. United

States is labelled as the most important country on Facebook, thanks to its connections with other Olympic actors. The website of the television channel NBC Olympics and the United States Olympic Committee have a relevant role as main characters due to their local relationships with federations, sponsors and national athletes. Great Britain's Olympic Committee is positioned around international and national federations, as well as it is part of public institutions which aim for the wellbeing and development of British sports.

Facebook content: format and nature based on the engagement

The audiovisual content such as the photos and videos obtained the most attention among users. The photo was without question the format Olympic actors on Facebook most used, whilst video was not only the most viral format, but also generated a larger volume of conversation between Olympic actors on Facebook during Rio 2016. The International Olympic Committee is an example of a social media institution regarding its capabilities of adapting itself to different languages and particularities of Internet's social media. On their behalf, National Olympic Committees and International Federations expressed favouritism for the use of the photo format. The television channels break the tendency from the rest of categories by choosing the link as their most popular format. The Olympic sponsors also chose the photo format for general use over the rest, although video format still occupied a prominent role.

Native contents produced up to three times more shares and comments per post than the non-native content, which included those posts hosted in servers unrelated and external to Facebook. The nature of the content is related to the type of format. The link is a synonym for non-native content.

Influencers and content on Twitter

Twitter responds to a more direct, close and open type of communication. Despite the lower volume of users compared to Facebook, the platform's character grants itself a superior level of independence if compared to traditional communication mediums. This social platform revolves around different and specific conversation topics (hashtags) which spark the interest of the public. Unlike Facebook, which is designed to post elaborated content for massive audiences in a unidirectional way, Twitter functions like a thermometer of the conversation in

real time about the live event, the television show or the current issue in question.

In retrospect to Facebook where we analysed the content posted by the Olympic actors, the analysis on Twitter is mostly based on the activity developed by the most influential Olympic athletes. In this investigation, the most influential athletes were Simone Biles, Usain Bolt, Michael Phelps, Neymar Jr., Rafa Nadal, Mireia Belmonte, Alexandra Raisman, Katie Ledecky and Puarla Sindhu. The most popular Olympic actors were the Olympic Committees of United States and Great Britain, the International Olympic Committee, the Organising Committee and the television channels NBC and BBC.

The moments which raised the most interest on Twitter correspond to the moments of maximum media expectation such as the victory of Brazil in football, Usain Bolt's and Michael Phelps' Olympic gold medals and the Opening Ceremony. However, the funny story between Simone Biles and Zac Efron, breaks this linearity and allocates a social media post amongst the most shared, which success was so meaningful it also made an appearance on television. Other content with a comedic or anecdotic background during Rio 2016 stood out on Twitter (See Table 2). It is questionable if humorous content works better on Twitter, as much as emotive content does on Facebook.

Overall, these conclusions attempt to shed some light over the main issues which refer to the strategy management on Facebook and Twitter by sports organizations and global brands linked to the Olympic Movement. To take objective decisions, the implicated actors should evaluate their *track record*, analyse their strengths and weaknesses and find inspiration from successful strategies of other actors.

Despite finding ourselves at the start of the social media era on internet, the principal Olympic actors are experimenting with their strategies taking in account their resources and goals. The strategy planning on social media together with its associate sponsors, broadcasting rights holders, National Olympic Committees, Federations, athletes and other linked actors could also help and support in the diffusion of the Olympic values. The recent creation of the Olympic Channel should be seen as a reorganization of the joint strategy of the International Olympic Committee in the digital territory, under one same banner: *socialympics*.

The main objective of the Olympic Movement in the social media era is the younger generations. They should be the focal point in the construction of a new message based on traditional Olympism values, but adapted to the internet's narratives. The International Olympic Committee's challenge should not just consist on developing their own strategy, leader amongst global sports organizations, but to build a social media route which implicates all the interested Olympic actors. The IOC should facilitate resources and knowledge which allow the Olympic community to develop and improve their strategies in an attempt to transmit the Olympic values among their audience. The Olympic world should make use of their privileged position to set up new ways of sport consumption and encouraging physical activity. The International Olympic Committee has an unprecedented opportunity to connect the native digital generation with the Olympism philosophy fostered by Pierre de Coubertin as a universal pedagogical tool. The challenge is to build a better world educating the youth in Olympic values such as personal effort, tolerance and respect.

References

- Ben-David, A., Matamoros Fernández, A. (2016). Hate Speech and Covert Discrimination on Social Media: Monitoring the Facebook Pages of Extreme-Right Political Parties in Spain. *International Journal of Communication*, 10, 1167–1193.
- Borra, E., Rieder, B. (2014). Programmed Method: Developing a Toolset for Capturing and Analyzing Tweets. *Aslib Journal of Information Management*, 66(3).
- boyd, d., Crawford, K. (2012) ‘Six provocations for big data’, paper presented at the symposium *A Decade in Internet Time: Symposium on the Dynamics of the Internet and Society*, Oxford Internet Institute, 1–17.
- Coromina, Ò. (2016). *La mediación en Twitter de los contenciosos políticos: el caso del proceso participativo del 9N en Cataluña* (Doctoral thesis). Barcelona: Universitat Autònoma de Barcelona.
- Dey P., Roy S. (2016). A Comparative Analysis of Different Social Network Parameters Derived from Facebook Profiles. In Satapathy S., Raju K., Mandal J., Bhateja V. (Eds.). *Proceedings of the Second International Conference on Computer and Communication Technologies. Advances in Intelligent Systems and Computing*, 379. New Delhi: Springer.
- Fernández Peña, E. (2009). Olympic Summer Games and Broadcast Rights. Evolution and Challenges in the New Media Environment. *Revista Latina de Comunicación Social*, 64, 1.000–1.010. doi:10.4185/RLCS-64-2009-876-1.000-1.010
- Fernández Peña, E. (2016). *Juegos Olímpicos, televisión y redes sociales*. Barcelona: Editorial UOC.
- Fernández Peña, E. (Coord.). (2011). *Social networking and the Olympic Movement: Social media analysis, opportunities and trends*. Barcelona: Centre d’Estudis Olímpics de la Universitat Autònoma de Barcelona (CEO-UAB).
- Fernández Peña, E., Coromina, Ò., Pardo Gila, J. M. (2017). The nature of engagement on Facebook during the London 2012 Olympic Games: An insight into the public’s participation in terms of language and gender. *South African Journal for Research in Sport, Physical Education and Recreation*, 39(1:2), 135– 151.
- Fernández Peña, E., Ramajo, N., Arauz, M. (2014). Social Media in the Olympic Games: Actors, Management and Participation. Sport and New Media. In A. C. Billings y M. Hardin (Eds.), *Routledge Handbook of Sport and New Media* (pp. 153–164). London: Routledge.
- Filadelfo, E. (2016, August 22). “The #Rio2016 Twitter data recap”. *twitter.com*. Retrieved from: <https://blog.twitter.com/2016/the-rio2016-twitter-data-recap>

Hutchins, B., Mikosza, J. (2010). The Web 2.0 Olympics: Athlete Blogging, Social Networking and Policy Contradictions at the 2008 Beijing Games. *Convergence: The International Journal of Research into New Media Technologies*, 16, 279–297. doi:10.1177/1354856510367618

IOC (2016). Global broadcast and audience report: Olympic Games Rio 2016. Lausanne: International Olympic Committee.

Kapko, M. (2016). “Rio 2016 Olympics on Facebook, twitter, instagram and snapchat”. *cmo.com*. Retrieved from: <http://www.cmo.com.au/article/604693/>

Marres, N. (2012). The redistribution of methods: on intervention in digital social research, broadly conceived. *The Sociological Review*, 60, 139–165. doi: 10.1111/j.1467-954X.2012.02121.x

Mathur, N. (2016, August 24). “Rio Olympics data recap: 187 million tweets, 1.5 billion Facebook interactions”, *livemint.com*. Retrieved from: <http://www.livemint.com/Consumer/qHdTo2HGG8TFFo5CL14kRL/Rio-Olympics-data-recap-187-million-tweets-15-billion-Fac.html>

Mayer-Schönberger, V., Cukier, K. (2013). *Big data: la revolución de los datos masivos*. Madrid: Turner.

Miah, A. (2017). *Sport 2.0: transforming sports for a digital world*. Cambridge: The MIT Press.

Miah, A., García, B. (2012). *The Olympics: The Basics*. Nueva York: Routledge.

Morin, E. (1981). *El método I: la naturaleza de la naturaleza*. Madrid: Cátedra.

Rieder, B. (2013). Studying Facebook via Data Extraction: The Netvizz Application. *Proceedings of WebSci '13, the 5th Annual ACM Web Science Conference*, 346–55. doi:10.1145/2464464.2464475

Rieder, B., Abdulla, R., Poell, T., Woltering, R., Zack, L. (2015). Data critique and analytical opportunities for very large Facebook Pages: Lessons learned from exploring “We are all Khaled Said.” *Big Data & Society*, 2(2). doi:10.1177/2053951715614980

Rogers, R. (2013). *Digital Methods*. Cambridge, Massachusetts: MIT Press.

Rooney, B. (2012, August 16). “Social Media Proves Gold for Promoting Athletes”. *Wall Street Journal*. Retrieved from: <http://blogs.wsj.com/tech-europe/2012/08/16/social-media-proves-gold-for-promoting-athletes/>

Silver, N. (2014). *La señal y el ruido: cómo navegar por la maraña de datos que nos inunda, localizar los que son relevantes y utilizarlos para elaborar predicciones infalibles*. Barcelona: Península.

Steen-Johnsen, K., Enjolras, B. (2015). Social research and Big Data – the tension between opportunities and realities. In H. Fossheim y H. Ingierd (Eds.), *Internet research ethics* (pp. 122–140). Oslo: Cappelen Damm Akademisk.

Tang T., Cooper, R. (2017). The most social games: predictors of social media uses during the 2016 Rio Olympics. *Communication & Sport*, 1–23. doi:10.1177/2167479516688438

Wu, X., Zhu, X., Wu, G.-Q., Ding, W. (2014). Data mining with big data. *IEEE Transactions on Knowledge and Data Engineering*, 26(1), 97–107. doi: 10.1109/TKDE.2013.10

Acknowledgement

This research has been possible thanks to the IOC Olympic Studies Centre (OSC) through the PhD Research Grant Programme 2017.

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