Visitors engagement and social media in museums: evidence from Italy

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Abstract: Museums are increasingly using Facebook, Twitter, YouTube and the other social media to communicate their activities and exhibitions, organise projects and debates, build and sustain communities of visitors. Moreover, one of the increasing use of social media is the engagement of actual and potential visitors. However, considering the novelty of the theme, the literature seems to be scarce and this finding suggests the necessity to study more-in-depth the use of social media in museums. Hence, the research aim is to study the use of social media for visitor engagement considering the case of Italian museums. The results show that, despite the increasing use and popularity in social media, the level of engagement in Italian museums is quite absent. Consequently, while Italian museums are very popular and well-known on social media, they are not able to use them for visitor engagement.

Keywords: visitors; engagement; social media; Facebook; Twitter; museums; Italy; frequency; popularity; virality; commitment.

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1 Introduction

In recent years, museums have seen considerable innovation and change, considering the number of new institutions established and the different role played in the market and in society. Since the 1970s, Europe, especially, has seen pertinent growth in the number of museums (Burton and Scott, 2003). To date, thanks also to its history and culture, the EU boasts more than 19,000 museums and even more archaeological sites (EGMUS, 2018). Considering its cultural heritage, preservation is one of the EU's fundamental activities. As a result, it invested about 4.5 billion Euros in cultural heritage in the period 2007–2013 (Vassilakis et al., 2017).

As an EU member, Italy shows a similar trend. It has the greatest number of UNESCO World Heritage Sites in the world and, for this reason, Italy is a relevant case for studying innovation in museum management. Indeed, out of 1,092 sites worldwide, Italy tops the list with 54 locations. Moreover, according to the Italian National Institute of Statistics' latest data (Istat, 2017), out of the 55,000 museums in the world, 4,158 are in Italy (about 7.6%).

According to Zafiropoulos et al. (2015), the use of ICT, the web and social media (SM) is currently transforming museum management and modifying the traditional functions of these institutions. In this way, SM enables the implementation of educational, marketing and engagement-focused practices (Langa, 2014). Museums are increasingly using Facebook (FB), Twitter (TW), YouTube and the other social tools to communicate their activities and exhibitions, organise projects and debates, build and sustain communities of visitors, reaching actual and potential supporters (Kidd, 2011).

SM is a group of internet-based applications created via the ideological and technological idea of Web 2.0. Indeed, according to Song (2010), Web 1.0 is referred to as the 'web-as-information-source', while Web 2.0 has a dichotomy perspective because it could be interpreted as the 'we-as-participation-platform'.

SM can be described as networks of friends for social or professional interaction (Trusov et al., 2009). It is indeed a second generation of web development and its design features facilitate the sharing of information, along with users' communication and participation (Paris et al., 2010).

As a result, SM allows the creation and exchange of user generated content (Kaplan and Haenlein, 2010). SM can embody various forms – blog, microblog (TW), social network (FB) and forum (Zarrella, 2010), considering the different approaches, Trottier and Fuchs (2015) have proposed a classification based on the type of information. In this perspective, they have identified three categories: SM supporting knowledge (website), communication (e-mail) and cooperation (FB, TW, etc.). Within this study, we focus on the third category of SM.

Considering the novelty of the use of SM in museums, the literature seems to be scarce. It is necessary to study the use of SM in museums in a European and, more specifically, Italian context (Lazzeretti et al., 2015). This research analyses the concept of 'visitors' engagement'; the object being their interactive and co-creative experiences with a specific focus on online and social networking (Hollebeek et al., 2014; Imlawi and Gregg, 2014). In particular, visitors' engagement through SM can be viewed as a way to reach both actual and potential users worldwide and to disseminate information in real-time with low implementation costs.

The research aim is to study the use of SM by Italian museums to engage the visitor. First of all, the article analyses the diffusion of SM in Italian museums followed by varying approaches to engage visitors through the use of FB and TW.

The paper is organised as follows. Following the introduction, there is a discussion of the review of the literature concerning SM and users' engagement. The research method is then presented and the findings of the research regarding the Italian context are illustrated. Finally, a conclusion is drawn regarding the use of SM in Italian museums.

2 Literature review

Today, the application of information and communication technologies, web (Fotakis and Economides, 2008) and social media are transforming museum's activities and are modifying their traditional functions (Hung et al., 2013). SM, such as FB, TW and Instagram, can help museums to communicate their activities and exhibitions, to create digital communities and social interaction and to reach more global audiences and potential visitors (Srinivasan et al., 2009). In a context of an emerging 'digital culture' (Herdin and Egger, 2018), the role of ICT and digital technologies is crucial in attracting new visitors (Bakhshi and Throsby, 2012; Parry, 2007), providing interactivity, immersive experience and creative engagement (Cerquetti, 2016). In this perspective, museums facilitate visitors' accessibility to digital culture contents and have a fundamental role in spreading it (Drigas et al., 2009).

Moreover, SM is increasingly important as a tool for gathering information about services and for taking advantage of new opportunities (Verhoef and Lemon, 2013; Högberg, 2017). In this perspective, SM can be interpreted as an innovative way for visitor engagement, providing interactivity and an immersive experience in a visitor-oriented approach (Bertacchini and Morando, 2013; Cerquetti, 2016). Moreover, SM can help cultural institutions to be more competitive and sustainable, increasing the value creation for stakeholders. In this context, Camarero and Garrido (2008) find a

correlation between technological innovation and economic performance, in that the use of digital technologies could help museums to better achieve a more valuable economic performance. In the same sense, Nuccio and Bertacchini (2016) underline the opportunity for museums to more deeply understand consumer perceptions and feelings through the use of digital technologies. This information can allow cultural institutions to re-orient the value provided for visitors and the organisational and managerial practices, in a digital sense.

According to Burnett (2000), the participation of a visitor in a digital community can be passive or active. Passive visitors only browse the institutional website and use SM to discover useful information for the onsite experience, without contributing or sharing feelings with other community participants. The progressive use of SM is changing visitors' role from passive to proactive through user-generated content: visitors are turning, especially in SM, towards active participation with the online community (Fletcher and Lee, 2012). Active members are highly interested in participating in SM, realising different forms of activities, such as creating content and messages and disseminating information. Fundamentally, converting passive members to active participants is critical in creating vital online communities and is a vital constituent for the success of the digital environment (Kang et al., 2014). In this way, visitors are currently 'prosumers' (Garibaldi, 2015; Toffler, 1980) who can produce independent content and new ideas, express their experience, share memories and observations, upload photographs and videos taken during the visit (de Bernardi et al., 2018). In other words, the use of SM is transforming visitors from passive observers to active content creators and museum ambassadors (Kidd, 2011).

In recent years, organisations have been using SM to also build and strengthen their relationships with stakeholders in order to transform this process into 'real' stakeholder engagement (SE). Thanks to SE, museums can interact with stakeholders via 'two-way communication' (Manetti, 2011; Owen et al., 2001), building forms of collaboration and realising a process of knowledge co-creation (Freeman and Evan, 1990). These positive externalities can also support the management in the strategic decision process (Ayuso et al., 2006).

Visitor engagement is a strategy for a museum to increase the interaction of its visitors with the institution (Chang et al., 2014). Museums need to invest in SM to foster relationships and interact with customers urging people to talking about the organisation (de Vries et al., 2012). Scholars identified three different dimensions to measure visitors' engagement in SM: popularity, commitment and virality (Camarero et al., 2018; Su et al., 2015). Popularity can be measured through the number of 'likes' in SM such as FB and TW and it is linked to museum awareness. The dimensions of commitment are the active involvement of visitors interacting within the social network. Commitment can be measured by the number of comments provided by the visitors to a museum's fan page. Thanks to the commitment, members of the social community are not only visitors but also producers of digital content. The virality, finally, is the visitor engagement through active involvement in disseminating knowledge. The number of reports and shares in SM, according to Hoffman and Fodor (2010), is a measure of virality.

In the light of the literature review, the aim of this research is to measure the use of SM for user-engagement in the museum industry through the dimensions of popularity, commitment and virality. The study is positioned in the Italian context considering the

relevance of the country's heritage assets and the importance of cultural industry in European countries. The research question is the following:

- What is the level of popularity, commitment and virality in museums' user-engagement?

3   Research design

The research is exploratory in nature and focuses on Italian State public museums. In particular, it considers the museums included in the 'Top 30 Italian museums', an annual ranking of Italian public and private museums calculated on the basis of visitor numbers.

After the identification of the target of the research, the study uses an approach similar to the method proposed by Brainard and Edlins (2015) and Bellucci and Manetti (2017), applied namely for the American police departments and for US philanthropic foundations.

First, the research identifies the SM utilised by each museum. After that, the research concentrates on the SM for each museum classified as 'community relationships' – namely, FB and TW – leaving out the channels 'community interests', such as YouTube, Instagram and Pinterest (Ang, 2011). More specifically, FB and TW have been identified as the most consistent SM with regards to the research aim, given that they are most used globally (Statista, 2018) and by artistic-cultural organisations [Thomson et al., (2013), pp.25–26].

Therefore, for each official FB and TW profile, a descriptive analysis has been managed for the period 10 January 2017–31 December 2017 (12 weeks). The analysis considers the dimensions of visitors' engagement through a quantitative study. The data is analysed, derived from the official fan page on FB and TW and consists of a number of 'likes', posts/tweets, comments and shares.

4   Results and discussion – an overview

The first step of this research was the identification of SM used by Italian State museums. The research has encountered some difficulties because museums' official websites sometimes do not contain a direct link to social platforms. Therefore, in some cases, it was necessary to access these platforms in order to verify whether or not there were official social profiles. This means that some institutions are not fully taking advantage of the opportunity offered by their websites in facilitating interaction and relationship-building between museums and their public (Capriotti et al., 2016). In this light, museum professionals should pay more attention to the information provided within their institutional websites (Marty, 2008). Indeed, some authors (i.e., Heinze and Hu, 2006; Park and Reber, 2008; Guillory and Sundar, 2014) show that organisations are still the first step of migration from an unidirectional website to a dialogic version.

Of the 30 studied institutions, 28 museums have at least one active SM profile (Table 1). Consequently, these institutions are far more active on SM than the rest of Italy's museums, which are present on at least one platform in 40.5% of cases (Istat, 2017). This result is in contrast to previous studies, which showed Italian museums' limited presence on SM (Sibilio Parri and Manetti, 2014), while this study seems to suggest a rapid growth in their use.

Table 1   Museums and SM

List of the Top 30 to visit in 2017	Museums	Facebook	Twitter	Instagram	Pinterest	YouTube	Google+	Others
1	Parco Archeologico del Colosseo							
2	Parco Archeologico di Pompei	•	•	•		•		
3	Gli Uffizi*	•	•	•		•		
4	Galleria dell'Accademia di Firenze					•		
5	Museo Nazionale di Castel Sant'Angelo	•		•				
6	La Venaria Reale	•	•	•		•	•	•
7	Giardino di Boboli2	•	•	•		•		
8	Museo delle Antichità Egizie di Torino	•	•	•		•		
9	Reggia di Caserta	•	•	•	•	•		
10	Palazzo Pitti2	•	•	•		•		
11	Galleria Borghese	•		•				
12	Museo Archeologico Nazionale di Napoli	•	•	•				
13	Parco Archeologico di Ercolano	•	•	•				
14	Villa d'Este	•	•	•				
15	Parco Archeologico di Paestum	•	•	•		•		
16	Museo del Cenacolo Vinciano	•	•	•				
17	Pinacoteca di Brera	•	•	•	•	•		
18	Musei Reali di Torino	•	•	•	•	•	•	

Notes: *from an administrative standpoint, Uffizi, Giardino di Boboli and Palazzo Pitti constitute all together 'Gallerie degli Uffizi'. Therefore, these institutions have the same unique profile on social platforms.

Table 1   Museums and SM (continued)

List of the Top 30 to visit in 2017	Museums	Facebook	Twitter	Instagram	Pinterest	YouTube	Google+	Others
19	Museo Archeologico Nazionale di Venezia	•	•	•				
20	Cappelle Medicee	•	•	•				
21	Museo Nazionale Romano	•	•	•			•	
22	Palazzo Ducale di Mantova	•	•	•				•
23	Gallerie dell' Accademia di Venezia	•		•		•		
24	Parco Archeologico di Ostia Antica	•	•	•				
25	Castello Scaligero	•						
26	Museo Storico e Parco del Castello di Miramare	•						
27	Grotta Azzurra di Capri							
28	Museo di Capodimonte	•	•	•		•	•	
29	Castel del Monte	•		•				
30	Villa Adriana	•		•				
Total		22	17	25	3	14	4	3
Total in percentage		73.3%	56.7%	83.3%	10%	46.7%	13%	10%

Notes: *from an administrative standpoint, Uffizi, Giardino di Boboli and Palazzo Pitti constitute all together 'Gallerie degli Uffizi'. Therefore, these institutions have the same unique profile on social platforms.

Surprisingly, it is interesting to note that the most visited museum, Parco Archeologico del Colosseo, does not have an official social account, and that Galleria dell'Accademia di Firenze, although occupying fourth place in the ranking of the most visited Italian museums, is active on only one (YouTube). These relevant institutions do not exploit the dialogic potential of SM (Capriotti and Kuklinski, 2012).

Nowadays, museums usually use a mix of SM because social platforms differ significantly from one another, having their own set of advantages and drawbacks (Kaplan and Haenlein, 2010; Kietzmann et al., 2011). Also, for this reason, museums should develop a social media strategy according to their specific mission and goals (Suzić et al., 2016a), thereby using SM in a strategic way.

Considering the museums being studied, the two most used 'community relationships' tools are FB (73.3%) and TW (56.7%) while, among the 'community interests' SM, there are Instagram (83.3%) and YouTube (46.7%) (Table 1). The study reveals that museums are active, on average, on three SM sites, using two 'community relationships' tools jointly (FB and TW) and one means of communicating the 'communities' interests' (usually Instagram). The mix choice is mainly consistent with users' preferences, considering that FB, Instagram and TW are among the most used SM (first, third and fifth respectively) by Italian users (Statista, 2018). In addition, the study also points out that Italian museums show a more contained use of YouTube and, even more, Google+, which are among the most employed sites (second and fourth, respectively) by Italian users (Statista, 2018).

From now on, the analysis will focus only on FB and TW because these platforms enable not only the sharing of photos and videos, but also messages and posts, appearing to be the most suitable tools for studying visitors' engagement in the cultural sector (Camarero et al., 2018; Langa, 2014).

From an historical point of view, the 28 museums have started joining FB and TW in 2009 (Figure 1), which is respectively 5 and 3 years after these platforms were created. Non-profit entities (such as museums) have shown a substantial delay in SM adoption compared to profit-driven organisations (Waters et al., 2009); notwithstanding, this study finds a rapid growth in the adoption of these social platforms, especially in the case of FB, which was adopted before TW.

Figure 1 FB and TW adoption by Italian State museums
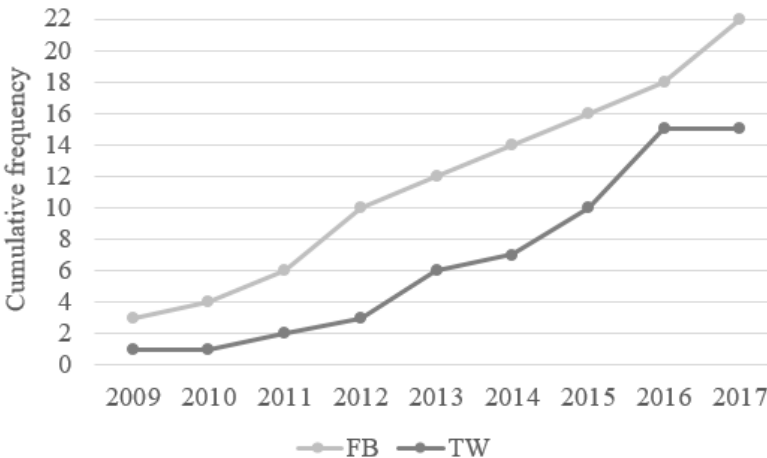
Furthermore, the analysis reveals that the pioneer institutions are La Venaria Reale (which launched both its FB and TW pages in 2009), followed by Museo delle Antichità Egizie di Torino and Museo di Capodimonte.

5   Visitors engagement and social media

Referring to our research question, the research also analyses visitors' engagement through the study of popularity, commitment and virality, to more deeply understand museums' capacity to engage visitors.

5.1   The popularity dimension

The number of 'likes' represents the popularity of the SM audience (Suzić et al., 2016b). In this sense, SM may help museums to develop and improve long-lasting relationships with the virtual community, so fulfilling their social role (Simon, 2007; Wright and Hinson, 2008).

Table 2   Museums' popularity

Museums	Annual visitors in 2017	Total posts/ tweets		Likes	
		FB	TW	FB	TW
Parco Archeologico del Colosseo	7,036,104				
Gli Uffizi	3,825,086		257		29,387
Parco Archeologico di Pompei	3,383,415	105	87	101,361	20,680
Galleria dell'Accademia di Firenze	1,623,690				
Museo Nazionale di Castel Sant'Angelo	1,155,244	65		6,290	
La Venaria Reale	1,048,857	131	60	266,583	22,907
Museo delle Antichità Egizie di Torino	850,465	96	44	183,154	26,582
Reggia di Caserta	838,654	101	97	188,229	9,142
Galleria Borghese	568,982	11		5,501	
Museo Archeologico Nazionale di Napoli	529,583	134	6	33,135	6,576
Parco Archeologico di Ercolano	470,123	53		10,323	
Villa d'Este	461,037	54		10,676	
Parco Archeologico di Paestum	441,196	98	38	61,768	3,484
Museo del Cenacolo Vinciano	416,347		8		653
Pinacoteca di Brera	364,541	90	38	33,679	93,520
Musei Reali di Torino	360,847	78	59	33,297	10,865
Museo Archeologico Nazionale di Venezia	343,582	12	2	4,765	10,380
Cappelle Medicee (Musei del Bargello)	339,870				
Museo Nazionale Romano	328,579	100	3	42,699	996
Palazzo Ducale di Mantova	323,255	30	27	6,096	812

Table 2   Museums' popularity (continued)

Museums	Annual visitors in 2017	Total posts/ tweets		Likes	
		FB	TW	FB	TW
Gallerie dell'Accademia di Venezia	316,995	50		19,559	
Parco Archeologico di Ostia Antica	311,384	34	11	6,225	939
Castello Scaligero	298,615	13		2,047	
Museo Storico e Parco del Castello di Miramare	293,911	82		2,492	
Grotta Azzurra di Capri	263,741				
Museo di Capodimonte	262,440	119	144	58.781	6,173
Castel del Monte	249,527	14		5,995	
Villa Adriana	242,772	33		12,364	
Mean		*68.3*	*58.7*	*49,344.7*	*16,206.4*
Standard deviation		*39.2*	*65.8*	*72,089.0*	*22,707.8*

Table 3   Publication frequency

Publication frequency	Museums	
	FB	TW
Fewer than 1 post/tweet per week (*quasi inactive*)	1	5
Between 1 and 4 posts/tweets per week (*very low*)	6	4
Between 4 and 7 posts/tweets per week (*low*)	6	2
Number of museums under the line	*13*	*11*
Between 7 and 10 posts/tweets per week (*adequate*)	7	2
Between 10 and 15 posts/tweets per week (*high*)	2	1
More than 15 posts/tweets per week (*very high*)	0	1
Number of museums over the line	*9*	*4*
Total	**22**	**15**

First of all, the study shows that, in general, FB profiles are more followed than those on TW; indeed, the average number of 'likes' on the FB page is equal to 49,345 while the number of those on the TW page accounts for barely 16,206 (Table 2). However, it should be noted that there is a great range and dispersion of the values (i.e., standard deviation is greater than the means). This reveals a high differentiation among the museums' accounts, meaning that some museums (actually very few) are strongly followed on SM (in particular, La Venaria Reale on FB and Pinacoteca di Brera on TW), while others have a lower number of followers.

Regarding total posts or tweets published online, the analysis points out that these institutions use, in general, FB more than TW, with an average number of posts and tweets of 68.3 and 58.7, respectively. This is consistent with the fact that FB is, in general, more employed than TW by Italian users (Statista, 2018).

The 'posting activity' refers to the level of museums' activity on SM, in terms of both publication frequency and total posts or tweets made on social platforms in the last quarter of 2017. In order to analyse the publication frequency, the study follows a similar

approach to that adopted by Capriotti and Losada Dìaz (2018). The results reveal that most museums (13 on FB and 11 on TW) have, in general, an inadequate frequency of publication (Table 3); among these institutions, there are six museums (one on FB and five on TW) which can even be considered as quasi-inactive on social platforms, as they post fewer than one post/tweet per week. Furthermore, the study shows that even museums that are in an 'over the line' position (i.e., publishing more than seven posts per week) have, at most, an 'adequate' frequency of publication; only one museum (Gallerie degli Uffizi) publishes more than 15 tweets per week. This means that, despite the increasing awareness of the important role played by SM in relationship building, museums show a low level of activity on SM in terms of publication frequency, consistent with the findings of previous studies (Capriotti and Losada-Díaz, 2018; Suzić et al., 2016a).

Moreover, in order to more thoroughly explore the museums being studied, these institutions have been grouped according to the character of their contents, as follows:

• *Museums and galleries*, which comprise *art institutions*, that is the "depository for the aesthetic products of man's creative genius, such as paintings, sculptures, architecture" [Goode, (1896), p.154], and *archaeological museums*, mainly characterised by the fact that their collections come all or partly from excavations (EGMUS, 2018).

• *Archaeological parks*, which are "land area characterised by important archaeological evidence and the presence of historical, landscape or environmental values, and the presence of a specific open-air museum" (Italian Code of Cultural Heritage and Landscape).

• *Royal palaces*, villas and castles, which comprise – on one hand – grand residences of royals or high-ranking dignitary and – on the other – fortified structures built during the middle ages.

In the light of this classification, the study reveals that the most active institutions on SM are 'museums and galleries' (on average, 59.7% of total posts and tweets), followed by 'royal palaces, villas and castles' (22.9%), and 'archaeological parks' (17.4%) (Figure 2).

Figure 2   The most active institutions

■ Museums and galleries   ■ Royal palaces, villas and castles
■ Archaeological parks
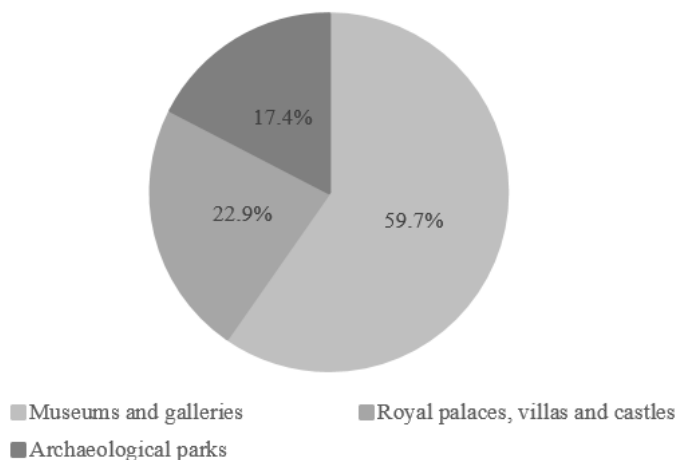
Considering the previous study by Camarero et al. (2018), the frequency results for Italian museums are higher than those in an international context. It is important to note that Camarero considers a different and larger sample of museums from Europe, North and Latin America and other countries. Nevertheless, the number of likes for the Italian museum has an average of 49,345 for FB and 16,206 for TW, versus 1,245.27 for FB in Camarero's study. The results show that the popularity of Italian museums in SM is very high compared to the approach used in other countries. Finally, we observe that the deviation standard is also lower in the Italian analysis, highlighting a more homogeneous use of SM.

5.2 The commitment and virality dimensions

Another measure for visitor engagement through the use of SM is the 'commitment'. This topic can be analysed with the evaluation of the average number of comments per post/tweet on FB and TW. Moreover, the analysis has been strengthened with the consideration of the museums' reaction to visitors' comments. This element is studied through the analysis of the museums' answers to comments on FB and TW (Table 4). Indeed, the ability to like and share represents important forms of 'participation expressions' by the public (Smørdal et al., 2014).

The analysis shows that both the 'average number of comments for post/tweet' (5.1 on FB and 0.6 on TW), indicating the 'size' of the virtual dialogue, and the 'percentage of museums' answer to comments (4.5% on FB and 3.4% on TW), measuring the feedback of institutions, are quite low, especially within TW. Indeed, considering the work of Camarero et al. (2018), the average number of the international context is 28.72, with a higher level of commitment compared to Italian museums. These results show that museums have scant interest in promoting the conversation that they themselves generated within their official profiles; in some cases, the interaction between museums and users is absent, even. It is consistent with previous studies regarding the use of SM as unidirectional tools, with a limited level of interaction (Capriotti and Losada-Díaz, 2018).

Table 4 Commitment and virality analysis of visitors' engagement

Museums	Commitment				Virality			
	Average number of comments per post/tweet		*Percentage of museums' answer to comments*		*Average number of shares per post/tweet*		*Average number of likes per post/tweet*	
	FB	*TW*	*FB*	*TW*	*FB*	*TW*	*FB*	*TW*
Museums and galleries	1.7	0.7	8.1%	6.2%	9.5	22.5	50.5	50.2
Archaeological parks	8.8	0.8	4.7%	2.2%	75.2	28.1	373.4	66.6
Royal palaces, villas and castles	4.8	0.4	0.9%	1.6%	30.4	6.3	201.4	19.3
Mean	*5.1*	*0.6*	*4.5%*	*3.4%*	*38.4*	*19.0*	*208.4*	*45.4*
Standard deviation	*2.9*	*0.2*	*2.9%*	*2.1*	*27.4*	*9.3*	*132.0*	*19.6*

The 'virality' on SM is the third dimension of visitors' engagement and it can be analysed referring to the average number of shares and likes per post/tweet (Table 4). The 'virality' in visitors' engagement is larger with FB posts (208.4 likes and 38.4 shares per post) than with tweets (45.4 likes and 19 shares per post) (Table 4). However, the results show a lower virality for Italian museums compared to what happens in the international context. Camarero et al. (2018) demonstrate an average number of shares (345.74), higher than the same result in the Italian museums.

In line with other studies (Suzić et al., 2016a), the analysis confirms that the followers of museums predominantly use the 'like' function, while the 'share' is rarely used. However, it is necessary to note that there is a wide range and dispersion of the values (see the value of SDs), suggesting that the level of appreciation towards museums' activities varies significantly.

From another perspective, it is interesting to more deeply analyse the effective level of interaction between museums and users. Indeed, SM – on one hand – allows users to express their experiences and share their observations, photos and videos (Zafiropoulos et al., 2015), transforming visitors from passive observers to active participators (Holdgaard and Klastrup, 2014), and – on the other hand – enable museums to move towards a more dialogic approach to their users/visitors (Smørdal et al., 2014).

6   Conclusions

The paper analyses the use of SM in Italian museums with particular attention to visitors' engagement. The research has firstly drawn a picture of SM adoption in Italian museums. Concerning the institutions studied, representing the most visited museums in Italy, we observe that 28 of 30 museums are active on SM and they use a mix of platforms with a prevalence of FB and TW. The results show that Italian museums nowadays are very involved in the use of SM with a rapid growth in their adoption, especially over the last ten years.

Concerning the research question, this study intends to evaluate the level of popularity, commitment and virality in the museum user engagement.

The popularity of museums in SM could be analysed through the number of likes. Considering previous studies, our results show that the popularity of Italian museums in SM is higher compared to the same topic at the international level. Indeed, the number of 'likes' for the Italian museum has an average of 49,345 for FB and 16,206 for TW, versus 1,245.27 for FB founded in other countries (Camarero et al., 2018). Therefore, the results suggest that Italian museums' rapid expansion in the use of SM has the consequence of raising the popularity of these institutions. However, the results also show that, considering the frequency of publication, Italian museums still have a low activity level in this field. Thus, they need to increase the frequency of publication in FB and TW to strengthen their relationships with visitors and to continue to increase their popularity.

Another way to measure visitor engagement in SM is commitment. This topic is analysed considering the average number of comments per post and tweet. Surprisingly, the study shows that the commitment in Italian museums is lower than has been observed in the international context. This result also suggests that the level of engagement

between museums and visitors is quite absent in Italian institutions. In other words, if Italian museums are very popular on FB and TW, they use SM only in one-way communication without developing an engagement approach. In this perspective, museums need to work harder to reach the opportunities offered by these platforms to engage visitors and to consider SM as a powerful channel, not only as a tool to communicate the 'brand' of institution in a unidirectional way.

A different measure for visitor engagement in SM is the virality: this could be evaluated through the average number of shares and likes per post/tweet. Our results show a lower level of virality in SM for Italian museums compared with the same performance in other countries. The finding is in line with the previous studies and it indicates that Italian museums are popular on SM where they are very present and well known. However, at the same time, they are not able to use SM for visitor engagement. Currently, Italian museums are considering SM only as a tool to increase the visibility of their institutions without taking advantage of the opportunity to engage customers and build a loyalty relationship with stakeholders.

This research suggests to managers the importance of the SM use in different perspectives. The first one is the possibility to reach a high level of popularity for the museum brand. This is an important issue especially for museums located in small towns far from the Italian traditional destination. Moreover, SM could be used to engage the potential visitors in an international context. The research shows that this element needs to be strengthened by managers in the future. Finally, for the Italian museums, SM could be a powerful tool to increase the number of visitors and to create a digital community by engaging people before and after the visit experience.

The research has some limitations: however, these can be considered as future developments. Firstly, the research's results have been influenced by the sample used, starting with the choice to investigate Italian museums. The results could be useful in comparison with another sample coming from European and non-European states to analyse different approaches for visitors' engagement through the use of SM.

Usually, the researches on this topic are concentrated on the biggest and most visited institutions. It could be an interesting approach to extend the study to the smallest institutions to analyse the use of SM in museums characterised by a lower level of financial and human resources.

In line with previous research on the same topic, the analysis period is rather limited (the last quarter of 2017). Therefore, it is possible that, considering a different observation time, the results could change. In this regard, indeed, it should be noted that the results could change radically, even after a short period of time, in consideration of the quick modification in SM.

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