

**SOCIAL MEDIA INTERACTION AS AN ACCOUNTABILITY MECHANISM IN LATIN
AMERICAN LOCAL GOVERNMENTS: THE CASE OF COVID-19 ON TWITTER**

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Social media interaction as an accountability mechanism in Latin American local governments: The case of Covid-19 on Twitter

Abstract

The aim of this study is to analyse the accountability from the evolution interactions on Twitter in Latin American municipalities during the first wave of the COVID 19 pandemic. We selected the Latin America zone. For this study, we analysed each country's main local governments into different phases according to the stages of the pandemic. The results show that the severe restrictions generated higher levels of interaction linked to open government, with special attention paid to participation and collaboration. Therefore, we conclude that the COVID 19 crisis increased interaction in the municipalities and the government entities using SM bidirectionally.

Keywords: accountability; COVID-19; interaction; Latin America; local governments

1. INTRODUCTION

In the last two decades, communication channels have undergone a substantial transformation in the interaction between people, organizations, and the public sector. These changes have generated the interest of academics and researchers who have studied the impact of digital media on citizen engagement (Skoric et al., 2016) because of the incorporation of the Internet and information and communication technologies (ICT) in the public sector related to open government, digital government, and E-government. The aim of these tools is the digitalization and transformation of public administration, to promote the government–citizen interactions and the impact on public policy and development (Hubert et al., 2018; Sivarajah et al., 2015) and engagement through 'interactivity, transparency and openness and promote new forms of accountability' (Bonsón et al., 2012).

In the governments' case, citizen participation through social media (SM) provides benefits, such as greater public participation, which enhances government legitimacy, trust, acceptance, and enables a more efficient response (Stone & Can, 2020). In addition, it allows communication, collaboration, and interaction in the citizen–government relationship (Gandía et al., 2016). The analysis of this topic has been made from different theoretical

approaches such as Legitimacy, Stakeholders and Dialogical theories, to analyse why the governments use SM for communicating and generating a relationship with their citizens.

Since the end of 2019, the worldwide health emergency caused by COVID-19 gave national and local governments an essential role in managing the crisis and making decisions that affected the entire community in social, economic, and health management aspects because they are responsible for safeguarding the general interest of the population (Bonsón et al., 2015). This emergency has also increased the linking of SM with citizen–public agencies' collaboration and engagement. It has allowed the generating of information to manage the emergency, prevent the spread of the disease, make recommendations to citizens, expand knowledge of the crisis, and combat misinformation (Landi et al., 2021).

According to the previous context, we propose the research question: What has been the evolution interactions on Twitter of local governments in Latin America during the first wave of the pandemic? To answer the above question, we analyse the scope of the tweets of 103 local governments, which are present on Twitter with verified accounts, of the 18 Latin American countries during the first half of 2020. A total of 106,925 tweets identified, on the one hand, the level of engagement and, on the other, in a complementary way, the interaction levels of these countries during the different phases of the coronavirus pandemic.

Our results show that the interactions of citizens–government relationships highlight the collaboration level's emphasis. The findings are robust because our analysis includes the total number of tweets published by each sample local government during the period considered. Furthermore, this research contributes to understanding how local governments report information through Twitter during an unprecedented health crisis in a region with socio-economic difficulties that deepened during the pandemic.

The rest of the paper is structured as follows. After this brief introduction, we present the literature review regarding SM in local government and the theoretical framework. In the third section, we describe the methodology, which includes detailed tweets collection procedures, the analysis techniques used, and the sample selection. In the fourth section we present the results, and these are discussed in the fifth section. Finally, the sixth section concludes the paper and presents the limitations, implications, and future lines of research.

2. LITERATURE REVIEW

2.1 Cities, Open Government, and Web 2.0

The fast diffusion and exponential growth of the use of the Internet and ICT and the collaborative Web (Web 2.0) have brought changes in the processes of online communication between citizens and government (Haro-de-Rosario et al., 2018; Sivarajah et al., 2015). In recent years, these tools have been mechanisms for improving transparency practices (Gesuele et al., 2018; Halachmi & Greiling, 2013), related with the initiative of the former United States President Barack Obama to encourage accountability through transparency in the open government context (Obama, 2009).

Transparency, participation, and collaboration are the pillars of open government that expands access to information from public entities in open formats supported by ICT to facilitate information availability (Matheus & Janssen, 2020), and share information via SM with its followers about activities (Zavattaro et al., 2015). Furthermore, open government invites the increased participation and innovation of the citizens (Zuiderwijk et al., 2019) with new forms of dialogue and interaction in different matters (Da Cruz et al., 2016; Karakiza, 2015; Pina et al., 2010), fostering e-governance and facilitating e-democracy (Halachmi & Greiling, 2013).

In this context, Web 2.0 and SM have taken a prominent place in the public sector in the last decade in terms of improving the availability of public information (Criado et al., 2013; Matheus & Janssen, 2020) to improve policymaking and public services (Bonsón et al., 2012) through the availability of public information (Matheus & Janssen, 2020). Additionally, these are known as tools to increase participation, collaboration, accountability (Bonsón et al., 2012), engagement (Bertot et al., 2012; Bonsón et al., 2019; Haro-De-Rosario et al., 2017; Karakiza, 2015) with new forms of dialogue and interaction of citizens in different matters (Da Cruz et al., 2016; Hubert et al., 2018; Karakiza, 2015; Mergel, 2013; Pina et al., 2010; Zavattaro et al., 2015).

However, regarding the use of Web 2.0 and the use of ICT in public administration, some authors have shown that digital tools do not necessarily generate engagement and collaboration with the citizens because government entities use these 'to push information in a one-way information-provision manner' (Zavattaro et al., 2015, p. 335). Hence, these tools have become 'mini-government websites' or 'mini-government newspapers' that reduce interaction and communication with citizens and have reverted to a form of a rigid, monotonous, and formal promotional channel (Zheng & Zheng, 2014).

2.2 Interaction levels in public sector social media

The Open Government Initiative in 2012 and other initiatives have emphasized using websites and other digital tools to encourage, enhance and facilitate government dialogue and policymaking (Grimmelikhuijsen & Feeney, 2017), and in addition to promote transparency, participation, and collaboration (Mergel, 2013). Thus, SM become a tool to achieve these objectives (Grimmelikhuijsen & Feeney, 2017) and open government.

To guarantee the benefits of SM in the government–citizen relationships it is necessary to incentivize the interaction through various mechanisms, such as likes, comments, replies and retweets. For Pérez-Escoda et al. (2020), the analysis of engagement should be at two levels. In the first case, there is passive participation where the public entities use SM as a communication channel to provide a unidirectional information flow without generating a dialogue between participants (Transparency), which results in the lowest engagement level (Agostino & Arnaboldi, 2016). In the second case, there is a cognitive or participatory engagement, exchanging ideas and comments to generate high levels of public participation, collaboration, and commitment. Additionally, it includes close communication between public entities and citizens in a two-way flow (Agostino, 2013) that involves a higher level of engagement, thoughtful dialogue, and citizens' active role in feedback interaction with the public entities.

Mergel (2013) identified and defined the three ways in which the federal U.S. government entities and citizens interact through SM: **1) Transparency**, SM is used to achieve the representation of the agencies in the available online channels, because 'they want to be where the citizens are and release government information into the news feeds that citizens are frequently checking' (Mergel, 2013, p.330), seeking the provision of information to the public on websites, which in recent years have been the most widely used media; **2) Participation**, the entities seek to transcend the unidirectional use of information to involve citizens in communications, allowing external users to interact with them and receive feedback through SM. This dimension is an essential democratic feature because it improves the legitimacy of decisions (Grimmelikhuijsen & Feeney, 2017); and **3) Collaboration** is the highest level of engagement because it establishes a reciprocal relationship between the public entities and citizens to interact and co-create government innovations. In addition, it contributes to generating an active role for public entities regarding the users' content, responding to their concerns and collaborating in public affairs. At this level, the SM can increase the exchange, collaborative work, and co-production of political and social affairs (Zavattaro et al., 2015).

However, previous studies have identified the one-way use of SM communication by local governments, limiting the relationship's potential to create two-way interaction on Twitter or Facebook channels (Stone & Can, 2020). A few of the research have focused on the different levels of engagement via Twitter -low, medium, and high- related with having followers, promoting retweeting and offline interactions (Bhattacharya et al., 2014).

2.3 Theoretical approach

From a theoretical perspective, explaining the engagement and interactions from different approaches helps to understand the relationship between public organizations and users through ICT (Criado et al., 2017). The authors highlight the Dialogic, Stakeholder and Legitimacy theories (Bonsón et al., 2019; Haro-De-Rosario et al., 2017; Haro-de-Rosario et al., 2018), depending on characteristics and objectives of the use of SM by the governments.

The dialogic theory stands out as one of the most important theoretical approaches to explaining creation of social relations online (Haro-de-Rosario et al., 2018). Kent and Taylor (1998, 2002) developed this approach to explain strategies to increase interaction and build positive engagement with stakeholders, and different studies have analysed the communication of SM in local governments with this approach (Haro-De-Rosario et al., 2017; Gálvez-Rodríguez et al., 2019) as a tool to create dialogic communication (Bonsón et al., 2019).

2.4 Social media and COVID-19

In recent years, SM has played an essential role in emergency and disaster management to respond to situations that require a quick and effective response (Mori et al., 2020). Regarding the use of SM in emergencies and disasters, Lindsay (2011) highlights two categories. The first is the passive use that aims to disseminate information and receive comments through incoming messages without generating interaction among participants (related to a low engagement level or participation). The second is related to the systematic use of the channels, with the issuance of emergency messages and warnings, and the channels are also used to receive requests for assistance, monitor activities, know the situation, and use images for damage estimates, among others (related with a high level of engagement, interaction, and collaboration).

In this case, the relationship between local government and COVID-19 has highlighted the role of SM and engagement with citizens. On the one hand, SM can promote mutual responsibility and help accountability for decisions taken (Landi et al., 2021); it helps to meet

citizens' demands to be more informed. On the other, it allows municipalities to generate more helpful information on related issues every day at a low cost (Bonsón et al., 2015) and facilitate communication and interaction with the citizens. Lastly, it helps to increase trust in government activities and provides online information frequently and transparently (Mergel, 2016).

About Twitter, this tool has interesting characteristics to analyse regarding the management of COVID-19 in the government context and response to citizens. First, it is a popular microblogging service in real time where users can express ideas and opinions (Bonsón et al., 2012; Joshi & Deshpande, 2014; Kumar & Jaiswal, 2020; Zimbra et al., 2018), share short messages and activities information, and generate content of interest (Chen et al., 2016). Second, it allows building relations with a broader network of potential contacts than other SM, such as Facebook, because Twitter and Instagram present a high bridging social capital (Phua et al., 2017). Third, Twitter has a non-reciprocal following; users can follow other people with whom they do not have a relationship, such as organizations (Jin & Phua, 2014), without the need for approval or reciprocity (Waterloo et al., 2018). Furthermore, Twitter has a role in the aim of governments to increase openness, transparency, and confidence (Yaqub et al., 2017).

2.5 COVID-19 pandemic: the Latin American case

COVID-19 brought multiple problems to the world; the Latin American region had several unique characteristics that make it interesting to analyse and are significantly different from developed countries. Latin America has a large population (652.276,32 in 2020, including the Caribbean, according to the World Bank), making it very difficult to manage the pandemic in terms of health and social attention, principally in the big cities and urban zones, and there was a high growth in the number of positive cases during the first months of the emergency.

Latin America, as well as other developing zones, had economic and social difficulties related to domestic restrictions on economic activity imposed by social distancing that affected large informal sectors with low possibilities of home working (Hevia & Neumeyer, 2020) that had adverse effects on the life quality of a high proportion of the impoverished population. In addition, COVID-19 has generated negative economic shocks on commodity prices, capital flows and world trade collapsed, along with domestic demand and tourism (Djankov & Panizza, 2020). In terms of communication, the restrictions brought about by the health emergency, in various countries, obligated people to stay at home and to work and

carry out personal activities in virtual form, using different technological tools, with an important growth in the number of Internet users.

3. METHODOLOGY

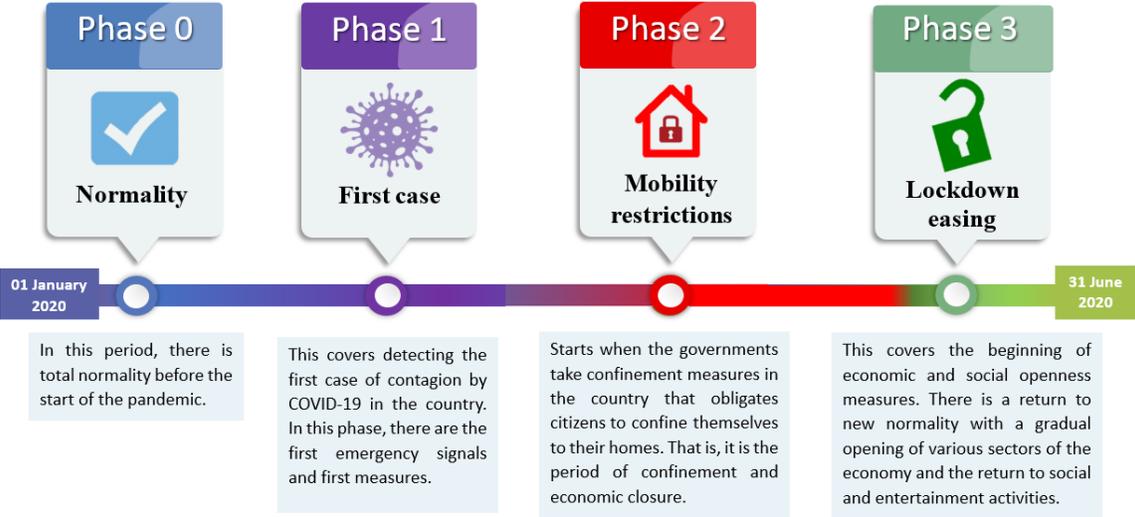
3.1. Sample

The sample studied in this research comprises the seven principal municipalities (capitals or most populated) of each Hispanic American country for 18 of 20 countries analysed that conform to the Latin American zone. We excluded two Latin American countries from our analysis. The first is Puerto Rico, which is an unincorporated territory of the United States, where the U.S. Constitution applies partially (Torruella, 2007). The second is Brazil for two reasons: its official language is different to other Latin American countries (it is Portuguese, not Spanish), and this country is considered an outlier country in terms of the number of infections and response to the coronavirus with respect to the rest of the Latin American zone (Bandeira & Carranza, 2020; Nacher et al., 2021).

We selected the Latin American zone because it is a region with socio-economic characteristics that differ from those analysed in previous studies. In this case, the government has an essential role in meeting the needs of the inhabitants, especially in the COVID-19 emergency that requires governmental support for communication to resolve different difficulties. In addition, this region has high user numbers on SM and there is a low number of studies related to developing countries (Bonsón et al., 2019; Haro-de-Rosario et al., 2018).

To answer the research question, we retrieved the Twitter accounts verified by local governments. The account information was collected by following the Twitter icon link on the official municipality website or the Twitter platform; we identified 103 verified Twitter accounts of the 126 municipalities considered in the sample. The analysis period was the first six months of 2020, from January 1 to June 31, 2020, which represents different stages of the pandemic, and we have divided these into the following phases, as shown in Figure 1:

Figure 1. COVID-19 phases of the first wave in Latin America



Although the period analysed is the first half of 2020, the duration of the phases is different in each country. In Table 1 shows the countries that have not taken precise confinement measures and, therefore, neither underwent a de-escalation. For this reason, it was not possible to divide the analysed period into phases. Thus, we have two groups of countries: on the one hand, countries with phases, which have applied confinement and de-escalation phases, and countries without phases, which have not taken these measures.

Table 1. Countries according to restrictions taken

Countries			
WITHOUT phases		WITH phases	
Chile	Nicaragua	Argentina	Honduras
Costa Rica	República Dominicana	Bolivia	México
Cuba	Uruguay	Colombia	Panamá
		Ecuador	Paraguay
		El Salvador	Perú
		Guatemala	Venezuela

3.2. Data extraction

The data were collected in August 2020, using the OSINT tool, Twint. This is an advanced Twitter scraping tool written in Python that allows you to scrape tweets from Twitter profiles without using the Twitter API (Zacharias & Poldi, 2018). Applying these techniques of social media intelligence (SOCMINT), 100% of the original tweets of each account are obtained, with their corresponding metadata. In this way, we obtained 106,925 tweets. These are the tweets of the main Latin American municipalities and the reactions to these publications of their 12,504,358 followers will be analysed.

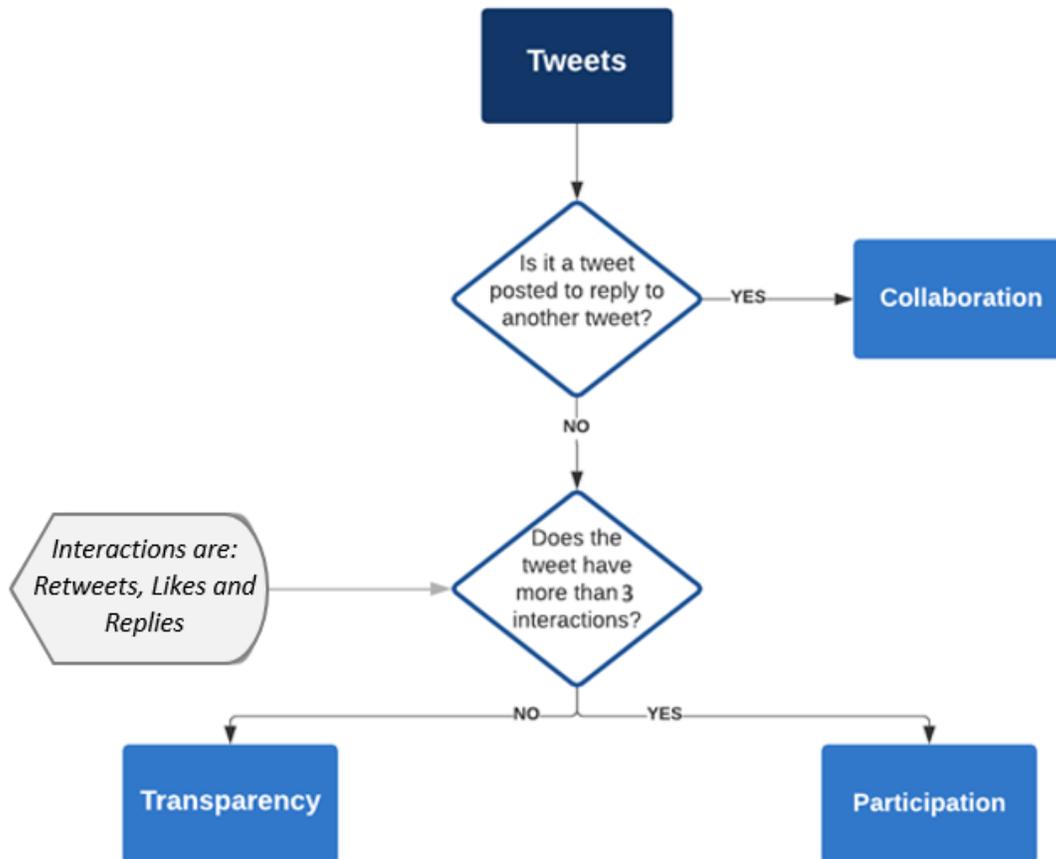
Six countries that did not apply confinement measures, which represent 33 local governments Twitter accounts that have posted 14,717 tweets, to which their 552,262 followers should react. On the other hand, 12 countries with well-differentiated phases that correspond to 70 local governments with verified Twitter accounts were analysed, extracting their 92,208 tweets to identify how their 11,952,096 followers interacted.

3.3. Interaction analyses

Once the tweets had been scraped, the data were analysed using the free R software (R Core Team, 2018) to understand how citizens interact with what their municipalities disclose on Twitter.

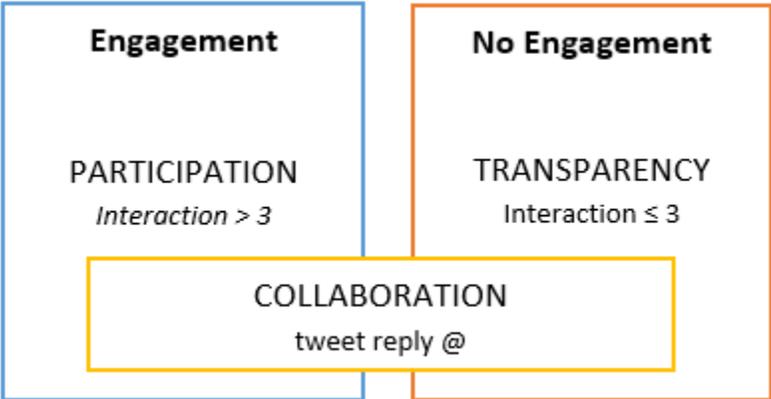
The different interaction levels are measured by the number of interactions that tweets receive. Figure 2 explains the process followed to classify a tweet into the three levels of interaction. The process begins by identifying whether a tweet is posted to generate Collaboration. In this case, this will be when the tweet in question is a tweet that responds to a previous tweet. On the other hand, if it is an original initial tweet, it will be included in the levels of Participation or Transparency, according to its interaction number. If the tweet in question receives more than three retweets, likes, or replies, a tweet will be treated as generating' Participation; if it receives fewer interactions, it has been tweeted to simply grant Transparency. In this way, tweets can be classified into the three levels of interaction: (1) Transparency, the most basic level of interaction; (2) Participation, the medium level; and (3) Collaboration, the highest level of engagement.

Figure 2. The process to classify tweets in interaction levels



As indicated in Figure 3, depending on the levels of interaction, it is implied whether it generates engagement or not. Transparent tweets do not generate engagement, since they barely have interactions, on the other hand, participatory tweets are those that generate engagement by having a considerable number of interactions. The case of collaborative tweets is peculiar because they may or not generate engagement: it is not possible to know this clearly since to reach this level the interactions are not considered, if not their purpose of publication: if it has been tweeted to respond to a previous tweet or if it is an original tweet.

Figure 3. Implicit citizens engagement in the interaction levels



4. RESULTS

Before presenting the study results, we comment on some general aspects of the municipality's sample (Table 2) related to population characteristics, followers, index penetration and Tweets that identify the differences between these countries' groups.

Table 2. Average general aspects by municipalities

	Phases	
	WITHOUT	WITH
Population	769.973,48	1.157.419,53
Followers	16.735,21	170.744,23
Index penetration	2,17%	14,75%
Tweets	445,96	1317,25

4.2. Twitter interactions in the local governments

The measures of Twitter interactions are through transparency, participation, and collaboration. Table 3 indicates the interactions that occur both in the countries' local

governments, where they did take confinement measures (with phases), and in those that did not implement them (without phases).

Table 3. Twitter interactions in the local governments

Interactions	Phases	
	WITHOUT	WITH
Transparency	31,79%	20,85%
Participation	56,05%	68,17%
Collaboration	12,16%	10,98%

Transparency was greater in the municipalities of the countries without phases. Of these, 31.79% of tweets were simply to generate transparency. On the other hand, the countries' municipalities with phases generated the most participation, whereby 68.17% of their tweets encouraged the participation of their citizens. Although the collaboration was somewhat higher in countries without phases, it is not far from countries with phases. Both groups of countries are involved at a very similar level by collaborating with the tweets that their citizens have mentioned to them. Around 11%–12% are tweets that have been published to respond to their citizens.

To better understand the degree of involvement of the local governments of the countries that have taken confinement measures with their citizens on Twitter, the interactions in the different phases studied are analysed, as shown in Table 4.

Table 4. Twitter interactions in the local governments by phases

Interactions	Ph0	Ph1	Ph2	Ph3
Transparency	26,06%	21,87%	15,57%	20,45%
Participation	64,85%	68,78%	72,25%	67,34%
Collaboration	9,09%	9,35%	12,18%	12,20%

The level of transparency has decreased from Phase 0 to Phase 3, where there was a slight increase in transparency compared to Phase 2. However, while the level of transparency decreased, the levels of participation and collaboration increased, except in Phase 3, where

participation decreased slightly compared to the previous phase. On the other hand, collaboration increased smoothly without decreasing in any of the phases.

At the difficult time of the first wave of the pandemic, in Phase 2, the least level of transparency is achieved, but instead, the highest level of participation is obtained. The collaboration will increase slightly more in Phase 3.

This reduces the difference between the levels of transparency and collaboration considerably. The level of collaboration approaches that of transparency in this phase. This difference before the appearance of the first case of a patient with COVID, Phase 0, was quite marked.

Before the start of the pandemic (Phase 0) the local governments hardly collaborated and were especially dedicated to generating participation and transparency; however, with the beginning of the confinement (Phase 2) and subsequent lockdown easing (Phase 3), the local governments reached a greater collaboration by having to respond to their citizens, abandoning tweeting with the aim of generating transparency.

5. DISCUSSION OF RESULTS

In this study, we analyse the communication interaction (transparency, collaboration, and interaction) to identify the role and objective of governments in the use of SM during health emergencies. According to the results in Table 3, local governments in Latin America are moving towards improving interaction with citizens and establishing a two-way communication, highlighting 68.17% (with phases) and 56.05% (without phases) of participation through likes, comments, and responses to messages, establishing a closer relationship between citizens. Some progress in interaction also evidences the commitment of local governments to improve a two-way relationship on Twitter by identifying that 10.98% and 12.16% of messages had a direct response from local governments with phases and without phases, respectively, representing higher levels of engagement (Agostino & Arnaboldi, 2016). These results differ from studies conducted in other regions that have concluded that the main objective of public entities in SM is a one-way communication focused on transparency (Mergel, 2013; Zavattaro et al., 2015) with low engagement, with 31.79 % and 20.85% of the interactions that governments have had with phases and without phases, respectively.

Regarding the evolution of local government communications during the phases adopted for the management of COVID-19 is like general analysis (Table 4). The results highlight the commitment of local governments to establish participation and collaboration with citizens in the different stages of the pandemic, showing a positive trend in the increase in participation and collaboration. This tendency is related to the need to explain the different measures adopted by the local government after the confinement, which generated concerns among citizens and increased the capacity for response. Participation slightly decreased from Phase 2 to Phase 3 (72.25% to 67.34%) due to the authorities' decisions to open the economy and the gradual return to normal activities, which reduced citizens' uncertainty about managing the pandemic. Therefore, the behaviour of the virus and the management of local authorities did impact the levels of engagement and interaction on Twitter and the commitment of local governments in Latin America to take advantage of the benefits of SM to strengthen their relationship with citizens during the first wave of the pandemic.

In brief, the results allow different characteristics of the interaction in SM on local government in Latin America to be identified, especially in pandemic times. First, the results show that the citizens communicate with the governments through SM about issues related to the health situation and socio-economic difficulties that require the most attention from the public authorities to attend to their citizens' needs. Second, there was an increase in interaction during the phases of the COVID-19 health emergency due to uncertainty regarding the pandemic evolution and the constant measures associated with their management. Lastly, there was a compromise of the local government of communication interaction with the citizens through Twitter, with more participation and interaction, which highlights the use of the tools of Web 2.0.

6. CONCLUSIONS

In the region and period analysed, an evolution and a transition to the true purpose of the use of SM governments can be observed. This study reflects that there was a greater interaction of communication between local governments and citizens by increasing both participation and collaboration on Twitter during the hardest moments of the first wave of the pandemic. In this way, municipalities achieved the purpose of SM and the highest levels of interaction associated with Open Government.

This study highlights the differences in the use of SM in Latin America compared to other regions that have been analysed previously and that conclude that the principal aim of SM is to transmit information in a unidirectional way for local governments (Haro-de-Rosario et al., 2018; Stone & Can, 2020; Zavattaro et al., 2015). Additionally, this research provides evidence of the advances of local government in the use of SM for interaction with citizens and in generating a two-way relationship, creating spaces for participation and collaboration in a situation of an unprecedented health crisis.

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