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Social Media Use in Central and Eastern European Cities: Defining Local Government-Citizen Relationships through Phases

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Abstract

Research has shown the potential of social media to disseminate important information as well as transform citizen engagement with government. However, implementation proves difficult, especially in public sector organizations. The success, impact and performance of these new forms of networked interactions are yet to be fully explored, especially at the local level. Many municipalities are experimenting with social media use, but few actively measure their performance on these platforms and their interactions with users. Different frameworks have been proposed to describe government communication types and activity on social media. They are addressed here through three phases that refer to forms of government-citizen communication on social media. The original assessment method developed here contributes to the existing literature and provides guidance to practitioners. Empirically, our research relies on a database of cities that have between 100,000 and 500,000 inhabitants in European Union member states located in Central and Eastern Europe. It provides social media metrics for these cities (N=82) and compares various indicators on Facebook, Twitter and Instagram. This contributes to a better assessment of how social media platforms are used by local governments in the region.

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Keywords:

citizen engagement, digital public sector communication, participation, social media adoption, social media use

1. Introduction

In recent years, information and communications technologies (ICTs) have proliferated, promising efficiency, speed of information delivery, global reach and transparency. Web 2.0 applications and social media specifically represent one of the latest steps in ICT use by governments. In general, the merits of social media presence are almost unanimously accepted (Faber et al., 2020), since they provide innovative methods for immediate interaction between citizens and governments, thereby potentially improving the relationship between public organizations and the population (Mabillard et al., 2021).

In this regard, the adoption of social media tools has changed the landscape of bureaucracies. After some years of experimentation, testing and assessment, increasingly widespread social media use by governments is intended to change how bureaucracies operate internally and how they interact with the public (Criado et al., 2013). It has raised opportunities to foster two-way communicative interaction as the demand for digital dialogic and knowledge-sharing options has emerged. As a result, most European municipalities have registered on social media platforms. However, implementation is difficult, especially in governments (Meijer et al., 2012), and the success, impact and performance of these forms of networked interactions are yet to be fully explored. These observations have triggered researchers' interest in this matter, and social media use by local governments has become a central research topic.

Existing empirical research shows that government adoption of social media is mostly for purely "informational" purposes (Mergel, 2013a). In this sense, findings indicate that social media have not fundamentally affected the unilateral relationship between those who provide information and make decisions and those who receive the information and react (Falco & Kleinhans, 2018). Governments thus seem to be locked into the one-way communication and supply-side "paradigm" where citizens are not conscious producers or creators of information, data, ideas, solutions and decisions. Several frameworks have been proposed to describe the communication types and activity of governments on social media (e.g., Meijer & Thaens, 2013; Falco & Kleinhans, 2018).

Our study contributes to the Public Administration literature on the use of social media in three ways. First, it extends the current state of research from a theoretical perspective through the development of a new model of government-citizen exchanges. Second, it proposes a methodological approach to measure the phases of this model with relevant metrics. And third, it presents a unique dataset on Central

and Eastern European (CEE) cities of between 100,000 and 500,000 inhabitants (N=82), thereby contributing to a better assessment of how social media are used by local governments in the region. Our model involves evolving phases that describe the state of local government-citizen communication on social media. Consequently, it provides material enabling the phase or phases that prevail in CEE municipalities to be identified more accurately. Through these conceptual and empirical efforts, we aim at responding to two research questions (**RQs**): What are the phases that characterize municipalities' communication on social media (**RQ1**)? And where do CEE municipalities stand in terms of communication with their citizens on social media (**RQ2**)?

This article is structured as follows. Section 2 discusses social media use and communication phases in governments based on the literature. Section 3 presents the context and characteristics of the countries included in our study. Section 4 describes the metrics used to measure the phases of social media communication, whereas section 5 focuses on our chosen method of collecting and analyzing the data. The empirical results are presented and commented on in section 6. The final section sets out the conclusions and limitations.

2. Government communication on social media: engagement as an objective

Social media, defined as internet-based applications built on the ideological and technological foundations of Web 2.0, allow governments to provide real-time information to citizens, enhance service delivery and, through ease of use, encourage greater engagement and public participation (Haro-de-Rosario et al., 2018). They enable governments to enter into dialogue with the public, social media being characterized by a low entry cost and a widespread acceptance of their legitimacy as communication channels. Social media offer new opportunities for local governments to send local service-related messages to their citizens and to obtain user feedback. In this sense, incorporating social media into a municipality's communication strategy may enhance transparency and improve service delivery. Engaging with citizens can also help governments build social capital and foster a shared sense of responsibility and understanding with the citizenry (Brainard & Edlins, 2015).

However, the proliferation of web-based platforms enabling people to express their opinion, identify problems and propose solutions has not solved issues observed in other channels. Several contributions have shown that: a) social media have a limited capacity to create mutual-discourse communication (Williamson & Parolin, 2013); b) models of participatory sensing predominate over participatory decision-making through apps (Ertiö, 2015); and c) a large segment of the population still does not feel comfortable using emerging social media (Linders, 2012). Moreover, recent studies

have shown that local governments mainly use social media to deliver information and services online, but that interactivity is limited (Guillamón et al., 2016). Consequently, most local governments have adopted a "dissemination by default" approach, since they often lack a clear purpose and strategy for their social media channels (Mergel, 2013a). This is unfortunate, because both sides share the desire for more collaborative relationships between governments and their citizens as an outcome of modern governance, relying on multi-stakeholder dialogue.

Therefore, while social media provide a means to turn citizen engagement into practice, there is no clear evidence that citizens are using social media for interactive participation in the activities of local authorities (Haro-de-Rosario et al., 2018). It should also be remembered that government social media engagement starts with the staff that can create opportunities for the public to access and comment on information (Brainard & Edlins, 2015). Depending on the cultural context, people and governments in different countries tend to adopt social media in different ways. Thus, the existence of effective interactive participation by citizens through social media largely depends on the role played by public administrators, who may be either neutral or dynamic advocates of citizen participation (Bonsón et al., 2013). Although government agencies provide digital tools for participation, citizen engagement may be limited because social media cannot automatically overcome passivity. Government agencies must therefore take responsibility for encouraging interaction (Wukich, 2021).

Regarding interaction, the literature presents dissimilarities depending on the context considered. According to Bertot and al. (2010), governments in most Western countries are trying to capitalize on ICTs in general and social media specifically to restore trust in government and respond to citizens' needs and aspirations. In contrast, Zheng & Zheng (2014) explain that, in other cases, governments tend to use social media for self-promotion and political marketing, and not for promoting transparent, participatory and citizen-oriented public services. Despite the evidence that social media are being adopted to promote citizen engagement, research is rather limited; and while various frameworks and metrics have been proposed (e.g., Bonsón et al., 2015), none has provided an integrated model to quantitatively measure the phases that characterize government-citizen relationships.

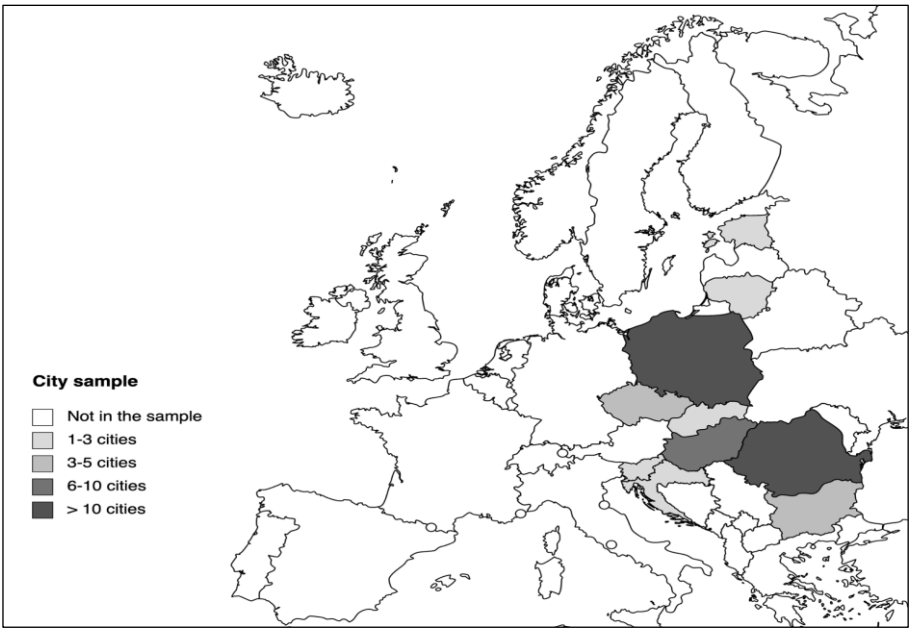
3. Social media use and role in CEE countries

This part presents the sample of countries used in our paper, together with the existing literature on the use of social media by local governments in Central and Eastern Europe. It should first be noted that drawing the borders of geographical regions can be politically sensitive. Here, we rely on the list of CEE countries established by the French National Institute of Statistics and Economic Studies (INSEE) in 2020, which

includes 11 European Union member states.[4] Since we focus on cities between 100,000 and 500,000 inhabitants, the region includes only 10 countries (Figure 1).

Figure 1:

Map highlighting the countries included in the study



Notes: N=10 countries (82 cities). Latvia is not included in our sample, since the only city over 100,000 inhabitants (Riga) had a population of 621,120 inhabitants in 2020. Source: Official Statistics of Latvia.

Sources: Bulgaria: National Statistical Institute (31 December 2018); Croatia: Croatian Bureau of Statistics (31 December 2018); Czech Republic: Czech Statistical Office (2018); Estonia: Statistics Estonia (2019); Hungary: Central Statistical Office (Jan. 1, 2019); Lithuania: Statistics Lithuania (1 July 2019); Poland: Statistics Poland (31 December 2018); Romania: National Institute of Statistics (1 January 2016); Slovakia: Statistical Office (31 December 2019); Slovenia: Statistics Slovenia (Q2, 2019).

After World War II, CEE countries became part of the Socialist Bloc. In 1989, some countries demanded political changes which, within the subsequent two years,

4 https://www.insee.fr/en/metadonnees/definition/c2055#:~:text=Bulgaria%2C%20Croatia%2C%20Estonia%2C%20Hungary,Slovenia%2C%20Slovakia%2C%20Czech%20Republic.

led to the disintegration of the "East vs. West" configuration that prevailed in Europe (Glińska & Rudolf, 2019). Demands that democratic standards be adopted, together with reforms of the economic system, became the basis for political and economic changes (Randma-Liiv & Drechsler, 2017). CEE countries have tried to implement subsequent phases of transformation on their own, a process that has occurred at varying rates, appreciably influencing the style of public administration and communication activities carried out by local governments (Bonsón et al., 2015). Social media use conforms with expectations and is associated with higher personal support for democracy. This shows that the internet's interactive capabilities are an essential factor that differentiates them from traditional media (Placek, 2017).

As social media in post-communist cities are emerging, research on this issue remains scarce. Nevertheless, we have identified studies that examined the use of social media in CEE local governments. For instance, Jukić & Merlak (2016) analyze the use of Facebook among 112 Slovenian state administrations. Špaček (2018) presents results of Facebook usage in 11 Czech regions, detecting that Facebook pages were used mainly for diffusing ex-post information, with calls for participation found sporadically. In the case of Slovakia, social media use has been investigated by Svidronova et al. (2019) from a political perspective (presidential elections), and also as a potential tool for stimulating more participation at the local level (see Svidronova et al., 2018). Jukić & Svete (2018) in Slovenia, Urs (2017) in Romania, as well as Mabić & Gašpar (2018) in the Western Balkan area have also contributed to the analysis of social media use in the region.

According to Urs (2017), CEE countries use new technologies for better government, and social media change the way citizens are consuming political information. Jukić & Merlak (2016) show that many municipalities (41%) created Facebook profiles in 2015 because of local elections, and adopting Facebook might have provided an advantage for individuals running for office. They also point out that public administrations have not capitalized on social media for improving service delivery, transparency and inclusive policy processes. Although most municipalities are active on Facebook, the majority of them neither respond to comments nor do they provide feedback, echoing the results obtained by Zheng & Zheng (2014).

4. A model for government-citizen relationships on social media

To identify the phases that characterize municipalities' communication on social media, we referred to the literature that points to strategies (Mergel, 2013a; Wukich, 2021), missions (Harrison et al., 2012; Lee & Kwak, 2012), information directions (Grunig, 2013; Linders, 2012), communication flows (Mergel, 2017; Wukich, 2022) and tactics (Meijer & Thaens, 2013; Mergel, 2013a). We also considered the literature

concerning e-participation and e-government, in particular the contributions from Wirtz et al. (2018) and Siau & Long (2005). To encompass all these various aspects, we created an integrated model of government-citizen relationships on social media to respond to **RQ1**: what phases characterize municipalities' communication on social media? The phases are described and summarized in Table 1 below.

4.1 Dissemination phase

In the dissemination phase, municipalities want to increase transparency and inclusiveness through the voluntary release of government information on channels other than the traditional ones, such as a dedicated website (Mergel, 2013a). This type of communication has often been praised, since providing information to the general public remains an important avenue for democratic governments to fulfil their accountability mandate, although in this phase social media are only regarded as an additional channel.

Mergel (2013b, p. 127) describes this phase as a representation tactic (or strategy): "The overwhelming reason to participate in social media spaces can be summarized with one main goal: Representation of the agency on all potential interaction channels." The objective, therefore, is to reach audiences that do not routinely interact with local authorities and are excluded from policy-making processes. Municipalities that prefer a representation tactic mostly repost online content and use social media to notify their audiences about policy statements or major press releases. Few resources are invested into tailoring the content for social media and encouraging bidirectional interactions (Mergel, 2013b). Meijer & Thaens (2013) and DePaula & Dincelli (2016) describe this approach as a "push strategy". Social media are used to convey basic information to users about the activities of public bodies. This approach is also described as "one-way symmetric" (Grunig, 2013), referring to the provision of information from "one-to-many" (Wukich, 2022) and a communication flow that is unidirectional. For instance, in a study by De Paula & Dincelli (2016), most content published on Facebook (71.9%) consisted of one-way information diffusion. Other researchers have found similar results (Leston-Bandeira & Bender, 2013; Mabillard & Zumofen, 2019), confirming that the dissemination phase dominates among most municipalities in Europe.

4.2 Interaction phase

Social media may also be used by municipalities to generate inputs and comments regarding government matters (DePaula & Dincelli, 2016). In this second phase, the objective pertains to dialogue and participation, which could be defined as the act of incorporating public input into decision-making (Harrison et al., 2012), as some municipalities acknowledge that their traditional websites are no longer the locus of citizens' search for information (Mergel, 2013b). While social media tools were initially used similarly to static websites (Mergel, 2013a), municipalities following this strategy

have recognized the need to interact with users in a natural conversational style instead of pushing out reports or memos without providing opportunities for interaction (Mergel, 2013b).

In the interaction phase, municipalities actively try to encourage their audiences to create and share content with them (Mergel, 2013b). This is described by some authors as a two-way phase, using a "pull tactic," since local governments are seeking information and feedback (DePaula & Dincelli, 2016). Because the municipality acquires input from the audience but does not engage in a reciprocal dialogue, this phase is considered asymmetric (Grunig, 2013) and characterized by a "one-to-one" communication flow (Wukich, 2022).

Over time, local governments in the dissemination phase tend to move from a representative and broadcasting tactic to a more interactive tactic (Meijer & Thaens, 2013), transiting toward an interaction phase. Today, it is expected that governments use social media to ask for feedback, conduct a survey or ask for opinions to foster a mutual conversation, although this goal is rarely achieved. Although certain governments engage in some form of interaction with their citizens, Leston-Bandeira & Bender (2013) mostly witnessed "bubble engagement," meaning that inputs are not further acknowledged by public authorities.

4.3 Transaction phase

In the third phase, governments may connect with their audience to coproduce plans, policies or simply content. In the past, coproduction was constrained by governments' limited ability to effectively coordinate citizen actions and the difficulty for citizens to self-organize. However, advances of the internet have gradually made a unique "many-to-many" interactivity possible and helped fulfil the promise of enabling coproduction on an unprecedented scale (Linders, 2012). Increased collaboration between government and citizens indicates a higher level of engagement in a reciprocated manner, allowing users to directly engage with government content and co-create government innovations (Mergel, 2013a).

Allowing audiences to reuse content posted by governments on social media is a first step towards this tactic and can be interpreted as an indicator of this strategy (Mergel, 2013b). In this phase, governments' relationships with citizens become highly interactive and bidirectional. This often creates reciprocated feedback cycles and a snowballing effect through citizens' own networks. This tactic allows governments to absorb comments, gain valuable insights into feelings about mission-relevant issues or topics discussed by their online audiences on social media (Mergel, 2013b). This type of dialogue is termed "two-way symmetric" and proposed as the best model for how organizations in general should interact with the public (Grunig, 2013). While social media account managers mentioned the objective of reaching this phase in prior studies, very few interviewees were able to point to concrete examples in the literature (Mergel, 2013b).

Table 1:

Social media government-citizen relationship phases model

Phases	Missions	Tactics	Information directions	Strategies	Communication flows
1. Dissemination	Transparency Inclusiveness	Push	One-way symmetric	Representation	One-to-many
2. Interaction	Participation Deliberation	Pull	Two-way asymmetric	Engagement	One-to-one
3. Transaction	Collaboration Coproduction	Networking	Two-way symmetric	Mingling	Many-to-many

Source: authors' own, 2023

5. Method

First of all, to respond to **RQ2**, this contribution needed to present an effective way to measure the phases described above based on objective criteria. Certain local governments want to engage in higher levels of interaction in order to increase participation. However, vivid challenges remain, and most municipalities seem to be stuck in the dissemination phase, as highlighted above. We investigated this issue through the analysis of the Facebook, Twitter and Instagram accounts of CEE municipalities, these being among the most frequently used social media platforms globally. Moreover, most indicators included in our model are not available for other social media in the software package used (FanPage Karma).[5]

5.1 Definition of the metrics

Metrics used to characterize the dissemination phase usually include the number of posts, followers, page views or likes (Bonsón & Ratkai, 2013; Bonsón et al., 2015; Haro-de-Rosario et al., 2018; Silva et al., 2019). Here, we consider the number of posts per day (on a defined period) as the best indicator, since it is not influenced by municipality size and accurately indicates how often information is published. This indicator has been used in recent contributions (Bonsón et al., 2017; Silva et al., 2019).

The interaction phase shows higher levels of engagement and citizen willingness to work constructively with the content provided by municipalities and to give

5 https://www.fanpagekarma.com/.

feedback (Mergel, 2013a). Metrics such as the number and rating of comments, shares or re-posts of content are often used to assess this phase (e.g., Agostino & Arnaboldi, 2016). In this study, we built on the approach used by Bonsón & Ratkai (2013), which relies on the number of likes, comments and shares by Facebook users to measure citizen engagement with published posts. The reactions added by Facebook (sad, angry, love, etc.) are included here. The division by the number of posts and fans makes such metrics independent of municipality size, allowing for comparison of all profiles. On Twitter, we included users' likes, comments and retweets; on Instagram, we included users' likes and comments. The data come from the software, except for users' comments on Twitter (retrieved manually).

In the transaction phase, citizens are actively interacting with the content published, collaborating with local authorities, and seeking opportunities to repeat these actions (Mergel, 2013a). Measurement mainly involves the level of conversation that characterizes interactions between government and users (e.g., Linders, 2012; Wukich, 2021). Here, we focused on users' comments that triggered replies from the page (the municipality). As this metric is not systematically available for all platforms, we retrieved the replies manually. As a result, we were able to isolate these replies, sometimes leading to additional comments from the users, thereby generating a true "many-to-many" communication flow.

5.2 Selection of municipalities

The metrics were applied to all CEE cities with 100,000 to 500,000 inhabitants (N=82). It is compelling to focus on a region that has received less attention than Western countries. In addition, we concentrated on large municipalities, since prior research has shown that they are very active on social media (e.g., Haro-de-Rosario et al., 2018). We fixed the 500,000 threshold because the most populous cities (e.g., Bucharest, Budapest, Prague) are extremely big compared to the others. Data were collected through four stages. First, social media logos were browsed on the cities' websites. In the absence of a logo, we searched for potential accounts on all platforms. When needed, a search with the appropriate keywords was conducted on a search engine. Finally, municipalities were contacted in case of uncertainty. The data collected online and/or through direct contacts with certain cities were then gathered in a single file.

5.3 Data collection and processing

Information about the status of the accounts were available as of 31 March 2022. We decided to focus on the period running from 1 January to 31 March 2022 to determine the phases listed in section 4. This period allows for the identification of cities' behavior on social media. We extracted the data through FanPage Karma for all accounts on the defined period. Data retrieved manually were then added to the database in early April 2022.

This empirical investigation enabled us to respond to **RQ2**. We conducted two

different analyses: in the first one, we looked at the status of all cities (registration and activity) and their position in the phases – dissemination, interaction, and transaction (Table 2). To do so, we defined the cities that belong to each status and (mutually exclusive) category through a binary variable (0–1), following these criteria:

Registration: The city has an account but is inactive.
Phases: The city has published posts in the last month of the defined period.
Dissemination: The city has only published posts.
> Interaction: There has been at least one reaction, share or comment by users on the page's posts.
> Transaction: There has been at least one reply by the page to users' comments.

Table 2:

City status and presence in the phases (as of 31 March 2022)

	Registration		***Phases***		
	Unregistered	*Inactive*	*Dissemination*	*Interaction*	*Transaction*
Facebook	2	0	0 (0%)	16 (20%)	64 (80%)
Twitter	37	16	0 (0%)	19 (66%)	10 (34%)
Instagram	17	11	0 (0%)	27 (50%)	27 (50%)

Source: authors' own, 2023

In the second analysis, we measured the intensity within each phase: because certain cities can be included in a phase with only one post, reaction or reply, we relied on the following indicators to compare the "performance" of the cities between 1 January and 31 March 2022:

> Dissemination: Number of posts per day.
> Interaction: Number of comments, reactions (likes on Twitter and Instagram) and shares (or retweets) divided by the total number of posts and the number of fans as of 31 March 2022.
> Transaction: Number of replies by the page on users' comments.

6. Findings

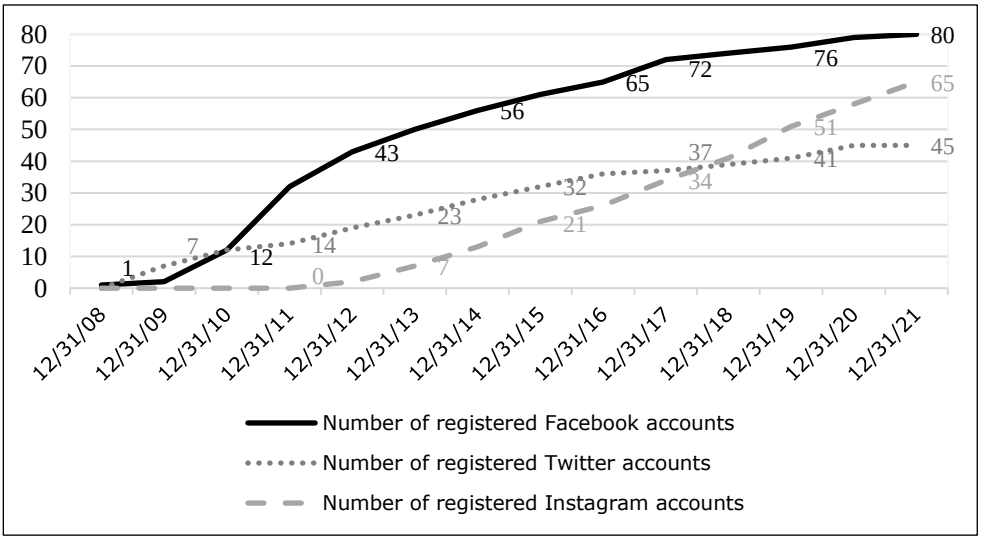
In this section, we will first describe the general situation in terms of the adoption, use and popularity of each social media platform in the CEE region. Second, we will focus on the empirical analysis of the city sample in terms of metrics and phases.

6.1 General situation

We start with the evolution of presence on Facebook, Twitter and Instagram since 2008 (Figure 2). Twitter generated much enthusiasm at the beginning, but was quickly overtaken by Facebook, which became the most widely used platform in CEE cities (80 cities out of 82). In contrast, some Twitter accounts have only been used sporadically at the start, and several accounts have never (re)tweeted. Instagram is the second most used platform, with 65 cities registered as of 31 December 2021.

Figure 2:

Number of registered accounts of cities on Facebook, Twitter and Instagram in our sample (2008–2021)



Source: authors' own, 2023

The lack of popularity of Twitter in CEE cities could be explained by the relatively low potential outreach (defined as the potential advertising audience in the population

over 13 years old).[6] One notable exception here is Poland, where low potential outreach is not associated with a low number of cities being active on Twitter. We note that this observation points to Polish cities' high level of activity on all three social media platforms.

Active adoption as defined by Zumofen et al. (2022) refers to cities that have published at least one post in the last month of a predefined period. In the CEE region, active accounts are distributed almost equally among municipalities (33% with three active accounts, 35% with two active accounts, 29% with one active account; 3% with no active account). Poland has the highest number of cities in the sample (33), and all have at least two active accounts. The sample data are presented in Table 3. Facebook gathers the highest number of active accounts. Estonia stands out as scoring 100% on all three platforms, but this is biased since Tallinn is the sole city included in the sample. Slovak and Slovenian cities are active on Facebook and Instagram, while Bulgarian cities focus more narrowly on Facebook. Activity is generally high on Facebook, lower on Instagram, and much lower or nonexistent on Twitter.

Table 3:

Detailed data of the sample as of 31 March 2022

	Number of cities	*Active Facebook accounts*	*Active Twitter accounts*	*Active Instagram accounts*
Bulgaria	5	5 (100%)	0 (0%)	0 (0%)
Croatia	3	3 (100%)	2 (67%)	2 (67%)
Czech Republic	4	4 (100%)	2 (50%)	3 (75%)
Estonia	1	1 (100%)	1 (100%)	1 (100%)
Hungary	7	5 (71%)	0 (0%)	2 (29%)
Lithuania	3	3 (100%)	0 (0%)	1 (33%)
Poland	33	33 (100%)	21 (64%)	32 (97%)
Romania	22	22 (100%)	3 (14%)	9 (41%)
Slovakia	2	2 (100%)	0 (0%)	2 (100%)
Slovenia	2	2 (100%)	0 (0%)	2 (100%)
N	**82**	**80 (98%)**	**29 (35%)**	**54 (66%)**

Source: authors' own, 2023

Moreover, we were able to assess the use and popularity of social media. In Table

6 #Digital2021 (https://datareportal.com/reports/digital-2021-global-overview-report).

4, we observe a high recurrence of posting on Facebook compared to other platforms. However, the variance between countries is high: while Slovenia and Estonia publish posts sparsely, Poland is far more active in its usage of the various platforms. Instagram is used much less compared to Twitter and Facebook. Facebook also attracts more fans than the other platforms, especially Twitter, which is the least preferred and least followed platform in CEE countries. Caution should be exercised when interpreting these results, since Slovenia and Estonia only have a few cities represented in our sample.

Table 4:

Use and popularity of Facebook, Twitter and Instagram

(January–March 2022)

	Facebook		***Twitter***		***Instagram***	
	Dissemination (Mean)	*Ratio followers/ pop*	*Dissemination (Mean)*	*Ratio followers/ pop*	*Dissemination (Mean)*	*Ratio followers/ pop*
Bulgaria	2.15	7.00%	- - -	- - -	- - -	0.36%
Croatia	1.71	17.35%	2.20	3.36%	0.44	9.87%
Czech Republic	2.14	11.26%	1.63	2.17%	0.41	3.99%
Estonia	0.67	0.42%	0.78	0.23%	0.24	0.82%
Hungary	2.80	12.52%	- - -	- - -	0.36	1.57%
Lithuania	2.37	17.76%	- - -	- - -	0.38	2.35%
Poland	3.49	24.04%	2.69	2.06%	0.72	5.56%
Romania	1.20	11.18%	1.41	0.24%	0.67	0.84%
Slovakia	2.11	11.72%	- - -	0.95%	0.49	4.59%
Slovenia	0.78	8.51%	- - -	- - -	0.35	2.84%
Mean	1.94	16.60%	1.74	1.98%	0.45	3.83%

Source: authors' own, 2023

6.2 Where do CEE municipalities stand in terms of social media use?

The analysis of the phases relied on the intensity of cities' communication on social media. Dissemination was measured through the number of posts per day; interaction represents ((total number of comments, shares and reactions)/number of fans/number of posts)*1000; the transaction phase was measured as the ratio of the number of replies from accounts to the number of comments. This allows for a comparison of

communication intensity across countries and platforms.

The situation on Facebook differs quite strongly from one country to another (Table 5). Regarding dissemination, Poland stands out from the other countries with almost four posts a day on average. In terms of interaction and transactions, the results are more homogeneous. The Czech cities are the most mature, with the highest mean for the transaction phase (7.21%). This figure must be interpreted cautiously, however, as there are only four cities in our sample. In Romania, while cities publish few posts, they trigger numerous reactions and comments, but very few replies.

Table 5:

Intensity in each phase for Facebook (January–March 2022)

	Facebook								
	Dissemination			*Interaction*			*Transaction (%)*		
	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean
Bulgaria	0.48	5.34	2.15	0.78	3.87	3.03	0.81		
Croatia	0.66	2.51	1.71	0.74	16.00	11.00	0.99	3.00	1.99
Czech Republic	1.01	4.01	2.14	2.60	6.86	6.07	0.82	7.79	7.21
Estonia	0.67			8.19			4.65		
Hungary	0.26	9.06	2.80	0.59	7.64	2.82	0.26	0.29	0.28
Lithuania	1.20	3.19	2.37	2.20	14.48	9.93	0.52	2.01	1.18
Poland	1.00	7.33	3.49	1.32	12.25	7.37	0.19	13.96	2.50
Romania	0.06	3.11	1.20	1.23	39.32	9.19	0.06	1.82	0.55
Slovakia	1.41	2.80	2.11	3.52	6.74	5.13	0.88	5.30	3.09
Slovenia	0.61	0.96	0.78	4.24	10.13	7.18	0.51	6.39	3.45

Source: authors' own, 2023

Twitter use and citizen engagement are less developed compared to Facebook and Instagram (Table 6). This is especially true when looking at the transaction phase, in which there is almost no city from our sample (replies to comments are almost nonexistent). The transaction phase is extremely high in the Czech Republic; but with only one city in the phase, this should be interpreted cautiously.

Table 6:

Intensity in each phase for Twitter (January–March 2022)

	Twitter								
	Dissemination			*Interaction*			*Transaction (%)*		
	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean
Bulgaria	- - -			- - -			- - -		
Croatia	0.48	3.91	2.20	0.24	1.22	0.73	- - -		
Czech Republic	0.32	2.94	1.63	0.82	1.96	1.39	40.28		
Estonia	0.78			11.86			- - -		
Hungary	- - -			- - -			- - -		
Lithuania	- - -			- - -			- - -		
Poland	0.01	14.17	2.69	0.34	25.17	3.38	1.52	32,14	9,91
Romania	0.26	2.56	1.41	0.28	15.63	7.95	- - -		
Slovakia	- - -			- - -			- - -		
Slovenia	- - -			- - -			- - -		

Source: authors' own, 2023

In contrast, Instagram metrics show a real propensity to stimulate interaction, and cities engage more intensively in transactions compared to Facebook and Twitter (Table 7). However, several countries limit themselves to dense interactions but do not engage in transactions. Hungary is a typical example, with a mean interaction coefficient of 27.22 and no cities in the transaction phase. The transaction level is quite low in Croatia and quite high in Slovakia; but with only one city in the phase, this should again be interpreted cautiously.

Table 7:

Intensity in each phase for Instagram (January–March 2022)

	Instagram								
	Dissemination			*Interaction*			*Transaction (%)*		
	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean
Bulgaria	- - -			- - -			- - -		
Croatia	0.37	0.51	0.44	18.07	79.16	48.62	1.11		
Czech Republic	0.17	0.70	0.41	18.68	31.57	23.33	3.85	14.80	9.32
Estonia	0.24			55.70			31.58		
Hungary	0.02	0.68	0.36	4.63	49.82	27.22	- - -		
Lithuania	0.38	0.38	0.38	25.82	25.82	25.82	- - -		
Poland	0.07	3.93	0.72	17.08	91.04	42.54	0.58	28.75	6.32
Romania	0.03	2.86	0.67	11.36	83.39	37.83	- - -		
Slovakia	0.28	0.70	0.49	11.07	35.79	23.43	7.03		
Slovenia	0.10	0.59	0.35	12.24	47.16	29.70	6.67	10.40	8.54

Source: authors' own, 2023

7. Discussion and conclusion

The main contribution of this article is conceptual, since it proposes a new framework that includes the strategies, missions, information directions, communication flows and tactics related to public organizations' communication and citizen participation on social media. It builds on various literature streams to offer an integrated model that categorizes social media use by governments and their interactions with citizens through the definition of three phases.

This contribution is enriched by the empirical analysis of these phases in CEE cities. Previous contributions have focused on case studies (e.g., Jukić & Merlak, 2016; Urs, 2017; Špaček, 2018; Jukić & Svete, 2018); we have adopted a more encompassing approach, collecting data for three platforms (Facebook, Twitter and Instagram) in 10 CEE countries (N=82 municipalities). While many municipalities are inactive on Twitter and Instagram, Facebook use and popularity is quite high. Such disparity has already been observed in different European contexts (see Haro-de-Rosario et al., 2018; Mabillard & Zumofen, 2022).

These findings call for additional studies in the region and in other contexts as well as more systematic transnational comparisons. We assume that various socio-demographic and political characteristics of the cities and their mayors may play a role in defining what kind of behavior the city will adopt, as observed elsewhere (Silva et al., 2019; Faber et al., 2020). The community manager (if there is one) may also explain certain potential differences. This certainly opens promising avenues for future research, including further studies on the determinants of active adoption (Zumofen et al., 2022) of social media, as well as factors that may explain online participation. In the same vein, our model calls for further research on the engagement dimensions of social media platforms in local governments, especially in a comparative perspective. Currently, this remains theoretically underexplored, and systematic comparisons across countries are still lacking despite certain notable contributions (e.g., Bonsón et al., 2015; Guillamón et al., 2016).

This paper meets has limitations. First, it does not include all social media platforms used in public organizations. Indeed, cities in this sample have started communicating on Snapchat, TikTok and YouTube. Second, because of data collection difficulties, most of our measures are based on a three-month span (1 January–31 March 2022). Extending the timeframe would probably enable more robust analyses. Certain cities may have been in another phase earlier; however, we argue that the presence in a phase should be sustained, especially due to the nature of social media (immediate communication, the need to react quickly). Third, the selection of cities between 100,000 and 500,000 inhabitants is restrictive and the structure of municipalities in the selected countries is not described extensively. Details about such structures might be provided in the future, as we focused here on the municipalities' official account. Analyzing less or more populated cities would have enriched the sample and given a more reliable picture of the situation in certain countries, particularly Estonia, Lithuania, Slovenia, and Slovakia. In many cases, the results for the whole sample (and especially the mean) are significantly influenced by Romanian (22) and Polish (33) cities. This issue may be overcome with a larger sample, including less or more populated municipalities, which may also reveal compelling findings in terms of social media communication at the local level. Finally, our study did not address the content of the posts; this also open avenues for further research, as content and sentiment analysis, for instance, may enrich the results presented in this paper.

References

Agostino, D., & Arnaboldi, M. (2016). A measurement framework for assessing the contribution of social media to public engagement: An empirical analysis on Facebook. *Public Management Review*, *18*(9), 1289–1307.

Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2010). Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government information quarterly, 27*(3), 264-271.

Bonsón, E., & Ratkai, M. (2013). A set of metrics to assess stakeholder engagement and social legitimacy on a corporate Facebook page. *Online Information Review, 37*(5), 787–803.

Bonsón, E., Royo, S., & Ratkai, M. (2015). Citizens' engagement on local governments' Facebook sites. An empirical analysis: the impact of different media and content types in Western Europe. *Government Information Quarterly*, *32*(1), 52–62.

Bonsón, E., Royo, S., & Ratkai, M. (2017). Facebook practices in Western European municipalities: An empirical analysis of activity and citizens' engagement. *Administration & Society*, *49*(3), 320–347.

Brainard, L., & Edlins, M. (2015). Top 10 US municipal police departments and their social media usage. *The American Review of Public Administration*, *45*(6), 728–745.

Criado, J. I., Sandoval-Almazán, R., & Gil-Garcia, J. R. (2013). Government innovation through social media. *Government Information Quarterly*, *30*(4), 319–326.

DePaula, N., & Dincelli, E. (2016). An empirical analysis of local government social media communication: Models of e-government interactivity and public relations. In Y. Kim, & M. Liu (Eds.), *Proceedings of the 17th international digital government research conference on digital government research* (pp. 348–356). Association for Computing Machinery.

Ertiö, T. P. (2015). Participatory apps for urban planning: Space for improvement. *Planning Practice & Research*, *30*(3), 303–321.

Faber, B., Budding, T., & Gradus, R. (2020). Assessing social media use in Dutch municipalities: Political, institutional, and socio-economic determinants. *Government Information Quarterly*, *37*(3), 101484.

Falco, E., & Kleinhans, R. (2018). Beyond technology: Identifying local government challenges for using digital platforms for citizen engagement. *International Journal of Information Management*, *40*, 17–20.

Glińska, E., & Rudolf, W. (2019). City brand personality projected by municipalities from central and eastern Europe Countries: A comparison of Facebook usage. *Sustainability*, *11*(19), 1–22.

Grunig, J. E. (2013). *Excellence in public relations and communication management.* Routledge.

Guillamón, M. D., Ríos, A. M., Gesuele, B., & Metallo, C. (2016). Factors influencing social media use in local governments: The case of Italy and Spain. *Government Information Quarterly*, *33*(3), 460–471.

Haro-de-Rosario, A., Sáez-Martín, A., & del Carmen Caba-Pérez, M. (2018). Using social media to enhance citizen engagement with local government: Twitter or Facebook?. *New Media & Society*, *20*(1), 29–49.

Harrison, T. M., Guerrero, S., Burke, G. B., Cook, M., Cresswell, A., Helbig, N., Hrdinova, J., & Pardo, T. (2012). Open government and e-government: Democratic challenges from a public value perspective. *Information Polity*, *17*(2), 83–97.

Jukić, T., & Merlak M. (2016). Social media usage in Slovenian local self-government: first results. In *E-Proceedings of the NISPAcee 2016 Conference*. Zagreb. 19–21 May, 2016. NISPAcee.

Jukić, T., & Svete, B. (2018). The use of Facebook in the Slovenian local self-government: empirical evidence. *Central European Public Administration Review*, *16*(2), 7–22.

Lee, G., & Kwak, Y. H. (2012). An open government maturity model for social media-based public engagement. *Government Information Quarterly*, *29*(4), 492–503.

Leston-Bandeira, C., & Bender, D. (2013). How deeply are parliaments engaging on social media? *Information Polity*, *18*(4), 281–297.

Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly*, *29*(4), 446–454.

Mabić, M., & Gašpar, D. (2018). Open government, social media and Western Balkan countries. *Central European Public Administration Review*, *16*(2), 23–44.

Mabillard, V., & Zumofen, R. (2019). *The use of social media in the Swiss towns and cities*. Swiss Graduate School of Public Administration (IDHEAP), University of Lausanne, Switzerland.

Mabillard, V., Zumofen, R., & Keuffer, N. (2021). Digital communication in Swiss cities: A closer look at the low adoption and usage of social media platforms in a technologically advanced and innovative country. *Information Polity*, *26*(4), 341–354.

Mabillard, V., & Zumofen, R. (2022). Local governments' communication in Belgium: A focus on social media adoption. *CEVIPOL Working Papers*, *1*(1), 2–43.

Meijer, A., Koops, B. J., Pieterson, W., Overman, S., & Ten Tije, S. (2012). Government 2.0: key challenges to its realization. *Electronic Journal of e-Government, 10,* 59–69.

Meijer, A., & Thaens, M. (2013). Social media strategies: Understanding the differences between North American police departments. *Government Information Quarterly*, *30*(4), 343–350.

Mergel, I. (2013a). A framework for interpreting social media interactions in the public sector. *Government Information Quarterly*, *30*(4), 327–334.

Mergel, I. (2013b). Social media institutionalization in the US federal government. *Government Information Quarterly*, *33*(1), 142–148.

Mergel, I. (2017). Building holistic evidence for social media impact. *Public Administration Review*, *77*(4), 489–495.

Placek, M. A. (2017). #Democracy: social media use and democratic legitimacy in Central and Eastern Europe. *Democratization*, *24*(4), 632–650.

Randma-Liiv, T., & Drechsler, W. (2017). Three decades, four phases: public administration development in Central and Eastern Europe, 1989–2017. *International Journal of Public Sector Management*, *30*(6–7), 595–605.

Siau, K., & Long, Y. (2005). Synthesizing e-government stage models: A meta-synthesis based on meta-ethnography approach. *Industrial Management & Data Systems*, *105*(4), 443–458.

Silva, P., Tavares, A. F., Silva, T., & Lameiras, M. (2019). The good, the bad and the ugly: three faces of social media usage by local governments. *Government Information Quarterly*, *36*(3), 469–479.

Špaček, D. (2018). Social media use in public administration: the case of Facebook use by Czech regions. *NISPAcee Journal of Public Administration and Policy*, *11*(2), 199–218.

Svidronova, M., Kascakova, A., & Bambusekova, G. (2019). Social media in the presidential election campaign: Slovakia 2019. *Administratie si Management Public*, *33*, 181–194.

Svidronova, M., Kascakova, A., & Vrbicanova, V. (2018). Can social media be a tool for participatory governance in Slovak municipalities? *NISPAcee Journal of Public Administration and Policy*, *11*(2), 81–101.

Urs, N. (2017). Is Communication through Social Networks Influenced by Election Campaigns? Case Study: Romanian Cities, National Elections. *Proceedings of the NISPAcee 2017 Annual Conference.* Kazan, 18–20 May.

Williamson, W., & Parolin, B. (2013). Web 2.0 and social media growth in planning practice: A longitudinal study. *Planning Practice and Research*, *28*(5), 544–562.

Wirtz, B. W., Daiser, P., & Binkowska, B. (2018). E-participation: A strategic framework. *International Journal of Public Administration*, *41*(1), 1–12.

Wukich, C. (2021). Government social media engagement strategies and public roles. *Public Performance & Management Review*, *44*(1), 187–215.

Wukich, C. (2022). Social media engagement forms in government: A structure-content framework. *Government Information Quarterly*, *2022*(April), 101684.

Zheng, L., & Zheng, T. (2014). Innovation through social media in the public sector: Information and interactions. *Government Information Quarterly*, *31*, 106–117.

Zumofen, R., Mabillard, V., & Pasquier, M. (2022). From registration to 'active adoption': Presenting and testing a new measurement model to assess local governments' adoption of social media. Paper presented at *the EURAM 2022 Conference,* Winterthur, 15–17 June 2022.