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Local governments' communication in Belgium: A focus on social media adoption

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LOCAL GOVERNMENTS' COMMUNICATION IN BELGIUM: A FOCUS ON SOCIAL MEDIA ADOPTION

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Abstract

This article relies on the literature on public sector communication to analyse the activity of local governments on social media. We aim to describe the adoption patterns of Facebook, Twitter and Instagram in Belgian municipalities over 10,000 inhabitants. To achieve this objective, we gathered information manually and through a data retrieving software specialised on social media adoption and usage. Our findings point to a large heterogeneity of practices depending on location, size, and existing presence on social media accounts. While almost all Belgian municipalities are registered on Facebook, only a few are present on Twitter, and Instagram generally attracts more populous municipalities. In addition, patterns of social media adoption differ from province to province. We also note that while most municipalities post content quite regularly on Facebook, many are less active or publish very few posts on Twitter and Instagram.

Résumé

Inspiré par la littérature sur la communication publique, cet article étudie l'activité des municipalités sur les médias sociaux. L'analyse porte sur l'adoption de Facebook, Twitter et Instagram dans les communes belges de plus de 10 000 habitants. Les données ont été collectées manuellement et à l'aide d'un logiciel, ce qui nous a permis d'étudier l'usage et les modalités d'adoption de ces médias. Les résultats indiquent une forte hétérogénéité des pratiques, en fonction de facteurs géographiques, démographiques et propres à l'usage des médias sociaux, l'adoption d'une plateforme semblant influencer l'adoption d'autres. Tandis que la quasi-totalité des communes belges sont inscrites sur Facebook, Twitter attire moins, alors qu'Instagram est plus populaire dans les communes les plus peuplées. Les données relatives à l'adoption des médias sociaux diffèrent également par province. Nous notons encore que la plupart des communes sont peu actives sur Twitter et Instagram, alors qu'elles publient régulièrement du contenu sur Facebook.

INTRODUCTION

Recently, there has been a growing interest in social media platforms in all sectors. Although more frequently addressed in the private sector, social media communication is also regarded in the public sector as driving technological innovation and providing new avenues for government interactions with the population (Mergel, 2013). The enthusiasm for these channels can be explained by the opportunities offered, including the immediate diffusion and redistribution by users among their own networks, the establishment of a more open dialogue allowing citizens to communicate their point of view on material shared by public organisations (Bonsón et al., 2012). Social media can also reinforce transparency and accountability processes within public bodies through a more "dynamic" kind of transparency (Permadi and Putri, 2022). Moreover, they can be a driving force and a central tool for social movements and political participation, as observed in the cases of the Arab Spring in the early 2010s and the Sunflower social movement in Taiwan for example (Chen et al., 2015).

The increased uptake of social media in the public sector has led researchers to investigate the aims, effects and use of social networks as a communication tool. Many contributions emphasise the interactive potential of the new communication technologies (DePaula et al., 2018), the creation of collective action between citizens and the state and, more generally, the "re-emergence of citizen co-production" in the implementation of public policies (Linders, 2012). More than simply making one's voice heard (Mossberger et al., 2013), or relaying information or disseminating content to users, social media provide the possibility for governments to better interact with the population (Feeney and Porumbescu, 2021). These platforms also enable quick and direct communication, for instance in the event of a natural disaster or an epidemic, while also providing more sustained monitoring through feedback (Kavanaugh et al., 2012). Therefore, governments have tried to encourage other behavioural changes in the population through these platforms, especially in the cases of urban cleanliness and public health (Picazo-Vela et al., 2016).

Local governments tend to use social media because of their potential to create a real "public space" by gathering contents on the same channel, providing opportunities for citizens to raise their own

topics of interest, and by better interacting to posts published by users (Krzatala-Jaworska, 2013). Moreover, social media are an essential tool to promote cities by reinforcing their attractiveness and thus improving their image and reputation. In this regard, social media communication for touristic places and destinations has been well documented in both cities and regions' reports and the academic literature (e.g., Sevin, 2016; Pasquinelli et al., 2021). In addition, Mabillard et al. (2021) demonstrate that, in the Swiss case, the local governments are using these platforms for several purposes mainly to put up awareness campaigns, to inform about government decisions or to diffuse information about crises. The local governments also tend to use different platforms for these diverse types of communication. Other authors have emphasized the potential of social media to foster collaborative planning, through a more active and sustained engagement of citizens in urban governance (Lin, 2022).

As a result, many local governments, partially driven by technological determinism and the increase of exchanges on social media in citizens' daily life (Kavanaugh et al., 2012), are now using social media for their external communication. However, we argue that adoption differs from simple registration, as it is sometimes implicitly assumed in the literature. In this paper, we will present existing approaches and propose a more accurate way of measuring social media adoption and use, applied to local governments in Belgium. The Belgium case is compelling as it is characterised by a great diversity of profiles, including significant size, language, economic and socio-political differences. Moreover, this case has gone largely unexplored in the current literature, which focuses mostly on the U.S., Canadian, French, Swiss, Portuguese, and Spanish local governments.

Therefore, this paper enriches the current literature on public sector digital communication through the assessment of adoption patterns of social media platforms in Belgian municipalities. To do so, we prefer a descriptive analysis of all Facebook, Twitter and Instagram accounts of all municipalities over 10,000 inhabitants. While Facebook allows people to connect with friends, family members, and acquaintances and gives people the opportunity to post and share content such as photos and status updates (Stec, 2015), Twitter has been categorized as a microblogging site, where users interact in "real time" using 280 characters tweets to their followers. Users can converse using

mentions, replies, and hashtags (Alhabash and Ma, 2017). Instagram is a photo-sharing mobile application that allows users to take pictures, apply filters to them, and share them on the platform itself. From a theoretical point of view, we distinguish between registration and "active adoption" since the creation of a social media account does not automatically lead to its adoption in certain cases (Mabillard et al., 2022). Active adoption will be presented in more detail in the method section. From an empirical perspective, we rely on a unique dataset of social media metrics to better analyse the adoption of the three abovementioned platforms in the period 2020-2022.

The remainder of the paper is structured as follows. Section 2 covers the most recent and relevant contributions related to social media adoption in municipalities. Section 3 describes the most essential features of the Belgian context regarding government communication on social media. Section 4 focuses on the method used, and more specifically the development of a new framework to assess social media active adoption. Section 5 builds on this framework to provide data about the current situation in Belgium. Finally, section 6 discusses the results and the limitations of the study and presents ideas for future research.

1. SELECTED CONTRIBUTIONS ON SOCIAL MEDIA COMMUNICATION IN THE PUBLIC SECTOR

From a citizen standpoint, social media have enabled individuals to have a greater voice in public affairs, and they have sometimes served as catalysts for social change (see Bennett & Manoharan, 2017). The possibility for citizens to get involved in decision-making more actively may also encourage local governments to use social media, as it can lead to an increased level of proximity with citizens. In this sense, public authorities could then provide users with timely information, thereby contributing to the creation of a more responsive administration. In view of the increased presence of citizens on social media, it is even regarded by certain consulting companies and government experts as a necessity. Indeed, recent figures show that many people are now using social media to get information, especially on Facebook (41% in Belgium) but much less on Twitter (Newman et al., 2020).

Regarding the benefits presented above, one could easily think that social media would be embraced by almost all municipalities around the world. However, empirical evidence shows a wide heterogeneity of practices, depending on various factors. Governments have tried, incrementally, to disseminate information on online platforms. The adoption process has not always been successful and has not systematically led to the transformations needed to develop a structured and optimal communication (Picazo-Vela et al., 2016; Zumofen and Mabillard, 2021). The acquisition of new skills, and the risk of losing control over the information disseminated, particularly in the case of inappropriate content (e.g., reactions, comments, reposting of messages) have refrained certain municipalities from registering on social media. This relates to the difficulty of ensuring a continuous and consistent flow of information, regular updates, and balancing this with information objectivity, which is a rule of public sector communication (see Pasquier and Mabillard, 2017). Moreover, the potential lack of control over information flows still represents one of the most significant factors that inhibit the desire to uptake social media.

Organisational issues have also prevented local governments to subscribe on social media in certain instances, based on concerns regarding privacy, security, and increased openness in the public sector (Fyfe and Crookall, 2010). The often very hierarchical structure in public organisations is not conducive to active communication on social media (Bughin et al., 2012), as these channels require a certain degree of freedom to take initiatives (Picazo-Vela et al., 2012). Other concerns refer to the lack of resources, especially to implement and evaluate a strategy regarding social media training and communication. These organisational issues have deterred certain governments from adopting social media, as highlighted by Criado et al. (2013): “the traditional culture of bureaucratic agencies does not fit well with the flatness and collaborative nature of social media technologies” (p. 23). Certain public authorities have thus postponed their decision to uptake these new channels or took more time to design relevant policies (Sharif et al., 2015).

In municipalities that have adopted social media, such issues are typically addressed in practice through training sessions, culture-building and charters/guidelines, etc. This includes the capacity to make an appropriate usage of social media and to respond to requests in real time. As a result,

public sector organisations have generally introduced innovations reactively and have waited for available evidence to justify their decisions (Sharif et al., 2015). Indeed, social media adoption tends to be impacted by institutional and organisational mechanisms that influence the degree and extent of adoption (Mergel, 2016). Thus, social media tools face problems of adaptation to the existing organisational culture and institutional structure of public sector administrations (Criado et al., 2013).

Faced with the various points presented above and the multitude of approaches, Medaglia and Zheng (2017) propose a roadmap that highlights the various themes to be investigated. The categories that emerge from their study include management, context, effects on citizens, user characteristics and behaviour, effects on behaviour, and platform properties. In this contribution, we are particularly interested in the issue of presence and adoption on social media. This first step is essential as most approaches to city adoption of social media rely either on incomplete assessments of the situation or on subjective criteria (Zumofen et al., 2022). In this regard, website reviews and interviews with public officials involved in communication do not allow for a comprehensive evaluation of social media adoption within public sector organisations. Moreover, surveys have led to the subjective appreciation of such adoption, and variations that depend on the response rate (Reddick and Norris, 2013; Ellison and Hardey 2014). Similar limitations apply to the identification of social media logos/icons and partial web searches (Jukić and Merlak, 2017; Torres et al., 2020).

From a methodological perspective, social media adoption in the public sector has never been formally defined, and its measurement has never been accurately and quantitatively assessed. Social media are often regarded as adopted when municipalities add logos to their website and/or when they have created an account on a platform. Therefore, adoption, registration, presence, and activity on these platforms are often used as interchangeable terms. However, conceptual clarity is needed as some public bodies maintain a presence without being active on social media. Here, in addition to the abovementioned issues, Mabillard et al. (2021) have shown that tasks achieved by interns during their time spent in a public body, the completion of a “tick the box” exercise in certain cases, or the lack of interest expressed by a municipality can explain the heterogeneous situation observed in

different jurisdictions. For this reason, and as we will detail in the method section, we provide in this paper a quantitative assessment of active adoption of social media platforms. This assessment is essential to better understand social media activity and usage.

In Belgium, research is scarce, and almost no contributions have tackled the issue of social media communication at the local level. In the next part, we present the most recent articles addressing social media use in Belgium. They focus mostly on individual use and political considerations, and they are based on international publications, press articles and reports from consulting companies. More detailed figures about the Belgian municipalities will be provided in section 5.

2. CONTEXT: THE BELGIAN CASE

As mentioned above, few contributions have addressed social media communication in the public sector in Belgium. While the topic gets coverage in the media, it is limited in terms of content, and revolves mostly around the registration of certain municipalities on the most popular social media, highlighting the political motivations behind such registration (Anneet, 2019; Sinte, 2019). In the case of Instagram, the promotion of tourism seems to drive the uptake of that platform (Chapelle, 2021). The Dutch-speaking media have also given some visibility to a study published by the Socialemediaburo.be and the Association of Flemish Cities and Municipalities (Vereniging van Vlaamse Steden en Gemeenten – VVSG). The study includes 142 large and small municipalities in Flanders (Dutch-speaking region of Belgium, located in the northern part of the country). It focuses on the following aspects: are social media used as a communication, service provision and participation channel? What barriers do local authorities face? And what are the next steps towards a conversational government? (Desmet and De Clercq, 2019). It relies on a survey composed of 44 questions, including open questions. We can establish a direct link with the gaps identified in the

literature mentioned above. Indeed, the study does not cover the entire country, it is based on perceptions, and the survey does not target all types of municipalities.

The main results show that social media are mostly managed by a team working in the communication department of the municipality, with 0.92 full-time equivalent positions freed up for social media (mean for the 142 municipalities). There is a structural budget for tool, training and projects in 29% of all municipalities, and only 23% of them have enough budget and time for a pilot project. 67% have internal guidelines for employees and/or councillors, and 44% have a proper social media strategy. In this regard, Belgium belongs to the 64% of European Union member states that invest in training for civil servants regarding social media and website design (OECD, 2019). However, in only 26% of the municipalities is participation regarded as part of the designed strategy. This result matches the survey findings presented by Simonofski et al. (2019), which show that while 30% of citizens would prefer to participate in the development of e-government services via social media, only 7% of civil servants would prefer to use this channel (compared to 50% for group discussion and 44% for workshops). Here, we can make the assumption that social media adoption also depends on individual characteristics of the people in charge of the municipality's communication. Risks are assessed differently from one case to the other (Mabillard et al., 2021; Picazo-Vela et al., 2012).

97% of the survey respondents said they were active on social media, with 44% of the respondents indicating that their municipality had at least 5 accounts. Facebook is still the most used platform (by 99% of the municipalities included in the survey). Instagram experiences an increasing success, with 66% of all municipalities registered on this platform, as young people are targeted via this channel. In terms of content, 93% of the respondents said that factual information was shared on their accounts, a proportion that also applies to crisis communication and links with other communication tools such as websites, newsletters, etc. Municipalities also like to share posts around events and messages regarding the organisation and structure of the municipality, the departments, and the projects. Advertising on social media is not often done by municipalities (18%). Finally, respondents indicated that 18% of the population (mean) is a fan on Facebook, scoring much better

than Twitter and Instagram (both around 5%). Linked to this assessment, 48% of the respondents said that they rarely / never use social media to connect with citizens, to raise discussions between residents, or to attract stakeholders.

There is also interest for social media communication in local governments in Wallonia, as shown by a question asked at the regional Parliament in January 2021. The response from the Minister for Housing, Local Government and Urban Affairs (Ministre du Logement, des Pouvoirs locaux et de la Ville) was quite vague, as he referred to the complementarity of the diverse communication tools, and said that emerging regulations applied in certain municipalities, but did not provide a complete answer on what was (and should be) done to avoid social media usage for the publicity purposes (for members of the municipal executive).

More recently, a webinar was organised by the Union of Cities and Municipalities in Wallonia (Union des Villes et Communes de Wallonie – UVCW) and the Region of Wallonia on June 23, 2021. It shed light on the risks inherent to social media platforms, the bad buzz phenomenon, and other managerial and communication issues. The invited speakers provided advice on how to anticipate these risks, how to react to negative or offensive comments, and on the existing legislation. Finally, good practices regarding charters and training were shared by the invited experts (UVCW and Region of Wallonia, 2021).

To the extent of our knowledge, the most recent study on social media communication in local governments in Wallonia dates back to 2017, when a survey was sent to all municipalities (FuturoCité, 2017). The survey addresses multiple issues, ranging from communication types to the existence of a strategy and the people managing the social media accounts. In total, 53% of all municipalities responded (n=138), the largest municipalities being overrepresented in the final sample. However, all types of municipalities responded to the survey, including very small ones (less than 5,000 inhabitants). Respondents included a large variety of profiles, as communication managers, municipal directors, IT managers and members of the executive were all targeted. The first result presented in the report shows that 92 municipalities (67%) were active on social media

in 2017. In comparison with Flemish municipalities, there is less activity in Wallonia, but this can be partly explained by the inclusion of small municipalities in the sample. Indeed, large municipalities are more active on social media platforms, a finding that echoes several results presented in the scientific literature (e.g., Guillamón et al., 2016; Reddick and Norris, 2013).

In terms of platforms, Facebook is the most widely used channel, as already observed in Flanders and many other regions/countries (Larsson, 2013; Zumofen et al., 2022). Among the active municipalities, 99% has registered on Facebook, compared to 26% on Twitter and 9% only on Instagram, although we should add that the latter platform was launched after the two others. The study also indicates that municipalities in Wallonia communicate in the same way as Flemish municipalities do, giving much importance to factual information, projects, and crisis communication, while social media posts to trigger citizen participation are limited. Indeed, only 18% of the respondents indicated that they used such posts to invite users to participate in policymaking. And although social media belong to a more global communication strategy, interactions between local authorities and the population remain limited according to most respondents. Finally, the respondents highlight the lack of competence, budget constraints, and the absence of clear guidelines as the main barriers to social media adoption and active use. As a result, the main requests expressed by the respondents revolve around specific training sessions, awareness of the members of the executive and their teams, and more sustained exchanges around best practices and opportunities for improvement.

Although these two studies provide many compelling elements, they do not solve the issues mentioned above: they are incomplete (all municipalities did not respond to the surveys, and these surveys do not cover the whole country), outdated, subjective sometimes, and not precise enough on adoption patterns. For these reasons, we will present a new approach to social media adoption in the next section. In doing so, we both fill a gap in the literature and provide detailed figures for Belgium, which has not received much attention in the existing contributions on social media communication at the local level.

3. METHOD

In this section, we propose a new model to assess social media adoption by municipalities, distinguishing between such adoption and registration. Then, we propose a set of metrics that enable readers and interested researchers to use both the model and the metrics in different contexts. We also explain how we built the dataset, how we collected the data, and what kind of analysis we perform with the data at our disposal.

As underlined above, approaches to social media adoption in local governments rely mostly on incomplete information or focus on the organisational dynamics of social media adoption. For instance, Mergel and Bretschneider (2013) have presented a 3-stage model that ranges from high levels of experimentation to the full institutionalisation of social media use in public organisations. This model concentrates on organisational dynamics, while many contributions on technology adoption focus specifically on the many factors that influence such adoption or explain the situations that have led to failures. However, to the extent of our knowledge, no precise definition / assessment of social media adoption exists in the public sector. We add to the literature through the provision of a more accurate approach that includes the recurrence of social media use, the use of the platforms' potentialities, and communication outreach.

Therefore, we propose a model that includes the following indicators: 1) recurrence, 2) use of potentiality, and 3) diffusion. Recurrence of use refers to the activity of an account on social media. Given the interactive nature of these platforms, and their capacity to increase the speed of information flows, organisations must be ready to communicate more proactively, more frequently, and to react more quickly to comments posted on their accounts. However, while certain municipalities have registered on a platform, they are not using these channels to communicate with citizens (e.g., for the Swiss and Austrian cases, see Bhatia and Mabillard, 2022). Taking advantage

of the platforms' potentialities relates to the use of the various technical features provided by a technology, i.e., social media platforms in this case. Finally, our model includes diffusion, as conveying information to the population is central to the efficiency of the communication efforts deployed by municipalities. Consequently, we use the metrics presented in Table 1 to develop a quantitative assessment of what we call "active adoption" (see also Mabillard et al., 2022). The theoretical basis of "active adoption" lies in dimensions developed in the Technology-organization-environment framework (TOE) (Tornatzky et al., 1990) and adapted in a research model developed by Lin and Lin (2008).

Table 1 | Quantitative assessment of active adoption of social media platforms

Social media	**Recurrence of use**	**Use of potentialities**	**Diffusion (ratio)**
Facebook	Posts per month	Picture-posts Video-posts	Number of fans to the municipal population
Twitter	Tweets per month	Picture-tweets Video-tweets	Number of followers to the municipal population
Instagram	Posts per month	Video-posts	Number of followers to the municipal population

In early 2020, we started collecting data on Statbel, the Belgian statistical office, to establish the list of all municipalities with more than 10,000 inhabitants. The decision to focus on large municipalities was made based on the literature. Previous research has indeed shown the prevalence of informal communication channels in small entities (Keuffer and Mabillard, 2020), and the more intense

activity of large municipalities on social media (Haro-de-Rosario et al., 2018). Regarding social media, we searched for logos on all municipalities' websites. When such logos were absent, we conducted further research on Google, and if we could still not find any social media, we looked for potential accounts on the platforms directly. This 3-step process follows prior similar approaches preferred by Ellison and Hardey (2014). In certain countries, studies have shown that a few cities do not have a logo on their website, yet they have registered on social media platforms. In Belgium, a logo was clearly visible on the website of 265 municipalities of over 10,000 inhabitants that had at least one account on social media (out of 364; 72.8%) in early 2020.

Then, we transferred the information gathered to FanPage Karma, an online software already used in prior research (e.g., Mori et al., 2021). This enabled us to retrieve all data related to the adoption of Facebook, Twitter, and Instagram by all Belgian municipalities. Such data were used to address the three dimensions of active adoption, in line with the metrics listed in Table 1. As FanPage Karma allows for time selection, we selected a two-year period (31.01.2020-31.01.2022), in which all municipalities were affected by the Covid-19 pandemic. Only municipalities that registered on Facebook, Twitter, and Instagram before January 31, 2020, were taken into account.

These data will be mostly presented in a descriptive way. As presented in Table 1 above, the recurrence of use is addressed through the mean number of posts per month on each platform; the use of potentialities refers to the publication of posts using the features proposed by each platform (mainly videos and pictures); and the metrics used to assess outreach (diffusion) rely on the ratio of fans / followers to the total population of the municipality. Since we want to capture the different dimensions of active adoption, and not gather them into an aggregated index that would have led to losses of information and lack of coherence, these dimensions are presented separately. Table 6 provides all details regarding measurement of these variables in the next section.

To refine these descriptive statistics, we add data related to other communication channels and population characteristics to the analysis. These data include apps, newsletters, municipal journals, and municipality size (see Table 7). Authors have shown a frequent usage of these channels (Rivas,

2017), and positive associations between some of them (more particularly newsletters) and social media platforms (Bhatia and Mabillard, 2022). Certain contributions have shown that social media use and population size are positively associated (e.g., Bonsón et al., 2012). Age is also associated with social media use (Faber et al., 2020), as older people seem less likely in general to be involved digitally. As municipalities still use other communication channels, and may integrate them in a global communication strategy, it makes sense to investigate how these channels relate to each other. We also add the period of existence variable in our study since we assume that municipalities that have registered on a platform for a long time may have adopted this platform more actively. In this regard, Faber et al. (2020) have shown an intensive use toward interaction when municipalities had adopted Twitter for a long time.

4. FINDINGS

In this section, we start with a presentation of the activity of Belgian municipalities on each platform. The findings provided here contribute to our better understanding of social media presence, activity and usage in European cities, as we do not have precise figures in most countries. Notable exceptions are Austria and Switzerland, for which we have detailed data (as of January 2020). For this reason, we include in this section a comparison with Austria and Switzerland, two other small federal states located in Europe (5.1). Then, we provide an overview of the situation in Belgium based on the distribution of cities in the different provinces and the Brussels-Capital Region (5.2). We continue with the descriptive statistics for the metrics included in our model (5.3). We also provide all details related to the other variables used here in Table 7, and further commented in the sub-section 5.4. Finally, we conduct an analysis of the relations between these variables and the social media variables mobilised in our study (5.5).

4.1 Presence on Facebook, Twitter and Instagram

We note that 92.3% of Belgian municipalities over 10,000 inhabitants had a registered account on Facebook as of January 2020 (336 out of 364). This is fairly high compared to other countries, especially among less populous municipalities (Table 2). As of January 2022, the number of municipalities on Facebook had increased, reaching a total of 355 (out of 364: 97.5%). During the data collection process, we have observed that except for one municipality, the 354 remaining ones had at least posted one message in the month prior to the starting date of data collection (i.e., the month of January 2020).

Table 2 | Registered accounts on Facebook (in %), by population size (as of 31 January 2020)

Population	Belgium	Austria	Switzerland
> 100.000 inh.	100%	100%	83%
50.000-99.999 inh.	100%	100%	50%
30.000-49.999 inh.	92%	75%	87%
20.000-39.999 inh.	91%	62%	58%
10.000-19.999 inh.	90%	67%	47%

Belgian municipalities seem to be less familiar with Twitter as only 80% of municipalities over 100,000 inhabitants had a registered account on this platform as of 31 January 2020, less than what is observed in other countries such as Austria and Switzerland. However, the use of Twitter is higher in Belgian municipalities under 50,000 inhabitants than elsewhere. As of January 31, 2022, the

number of Belgian cities with a registered account on Twitter had slightly increased (from 222 to 226 cities). The activity on Twitter is low as 42.8% of the city with a registered account (95 out of 222) had not published any post in January 2020. The proportion is even higher in January 2022 with 61.1% of inactivity (138 out of 226 cities). These data show a significant difference with the situation described just above regarding Facebook. As a result, we see that many more accounts are inactive on Twitter compared to Facebook.

Table 3 | Registered accounts on Twitter (in %), by population size (as of 31 January 2020)

Population	Belgium	Austria	Switzerland
> 100.000 inh.	80%	100%	100%
50.000-99.999 inh.	85%	67%	100%
30.000-49.999 inh.	75%	25%	53%
20.000-39.999 inh.	67%	23%	42%
10.000-19.999 inh.	58%	18%	23%

On Instagram, we note that Belgium has the lowest percentage (60%) of cities above 100,000 inhabitants with a registered account in 2020. Under 100,000 inhabitants, the percentages are quite similar to Switzerland and Austria. The total number of registered accounts has sharply increased between 2020 and 2022 (172 to 223 municipalities). This increase from 47.2% to 61.3% is quite impressive since a vast majority of these municipalities had posted at least one message in the last month prior to data collection (80.2% in January 2020 and 82.1% in January 2022). In this regard, Instagram stands between Facebook and Twitter, with still around 20% of inactive accounts. We can therefore conclude that while activity is sustained on Facebook and quite high on Instagram, the

situation looks completely different on Twitter, where lots of municipalities do not use their account or left out this channel from their communication toolbox. All figures related to "active accounts" (at least one post in January 2020 and 2022) are presented in Table 5 below.

Nevertheless, a closer look at the numbers illustrates that municipalities under 30,000 inhabitants struggle to integrate Instagram in their external communication compared to Facebook and Twitter. Indeed, only 44% of all municipalities between 20,000 and 39,999 inhabitants and 25% between 10,000 and 19,999 inhabitants had a registered account in 2020, much less than Facebook (91% and 90%) and Twitter (67% and 58%). However, the figures presented in Table 4 show that the number of registered accounts on Instagram is quite high in Belgium in international comparison.

Table 4 | Registered accounts on Instagram (in %), by population size (as of 31 January 2020)

Population	Belgium	Austria	Switzerland
> 100.000 inh.	60%	100%	100%
50.000-99.999 inh.	50%	100%	50%
30.000-49.999 inh.	57%	50%	60%
20.000-39.999 inh.	44%	38%	46%
10.000-19.999 inh.	25%	17%	20%

Table 5 | Number of active accounts (at least one post in January 2020 and January 2022)

Platform	Accounts	January 2020	January 2022	Evolution (%), 2020-2022	Number of municipalities
Facebook	Registered accounts	336 (92.3%)	355 (97.5%)	+5.7%	364
	Active accounts	329 (90.4%)	354 (97.3%)	+7.6%	364
	Active accounts (% of registered accounts)	97.6%	99.7%		364
Twitter	Registered accounts	222 (61.0%)	226 (62.1%)	+1.8%	364
	Active accounts	127 (34.9%)	88 (24.2%)	-30.7%	364
	Active accounts (% of registered accounts)	57.2%	38.9%		364
Instagram	Registered accounts	172 (47.3%)	223 (61.3%)	+29.7%	364
	Active accounts	138 (37.9%)	183 (50.3%)	+32.6%	364
	Active accounts (% of registered accounts)	80.2%	82.1%		364

4.2 Overview of the situation (provinces and Brussels-Capital Region)

In terms of geographical distribution, the mean number of accounts per municipality is the highest in the province of West Flanders, followed by the province of Antwerp in January 2020. This trend

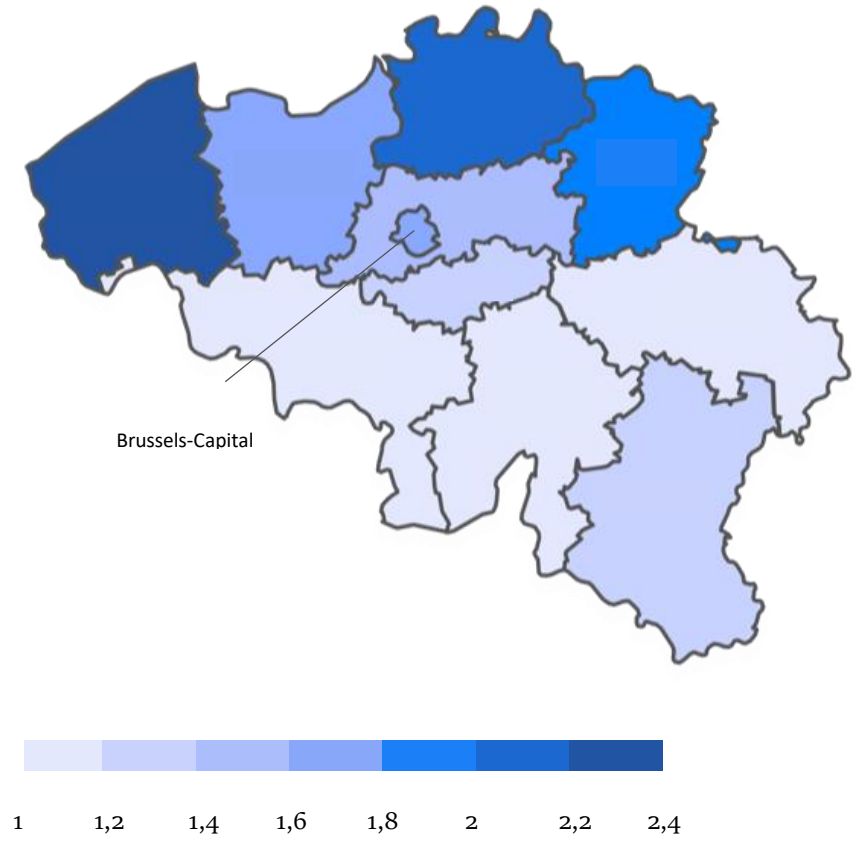
remains stable over time as the same order can be observed in 2022 (Table 6). In contrast, figures are lower in the French-speaking part of the country. We do not induce here that social media adoption is related to cultural factors. Such an assumption would need to be tested empirically, and a strong focus on these factors always runs the risk of simplifying complex traits of different cultures. Rather, we will refine our analysis with other variables, especially municipality size. Another representation of the situation in 2020-2022 is provided on Map 1 and Map 2.

Table 6 | Number of active* social media accounts (total of accounts and means; 2020-2022)

	As of January 31, 2020		**As of January 31, 2022**		**Evolution (%)**
Provinces (total number of cities per province)	*All accounts*	*Mean number of accounts*	*All accounts*	*Mean number of accounts*	*All accounts*
Antwerp (60)	121	2.02	120	2.00	-0.8%
Flemish Brabant (47)	68	1.45	74	1.57	+8.8%
Walloon Brabant (16)	20	1.25	21	1.31	+5%
Brussels-Capital Region (19)	33	1.74	34	1.79	+3%
West Flanders (44)	103	2.34	97	2.21	-5.8%
East Flanders (49)	83	1.70	90	1.84	+8.4%
Hainaut (42)	45	1.07	55	1.31	+22.2%
Liège (33)	34	1.03	46	1.39	+35.3%
Limburg (31)	60	1.94	59	1.90	-1.7%
Luxembourg (7)	9	1.29	8	1.14	-11%
Namur (16)	19	1.19	22	1.38	+15.8%

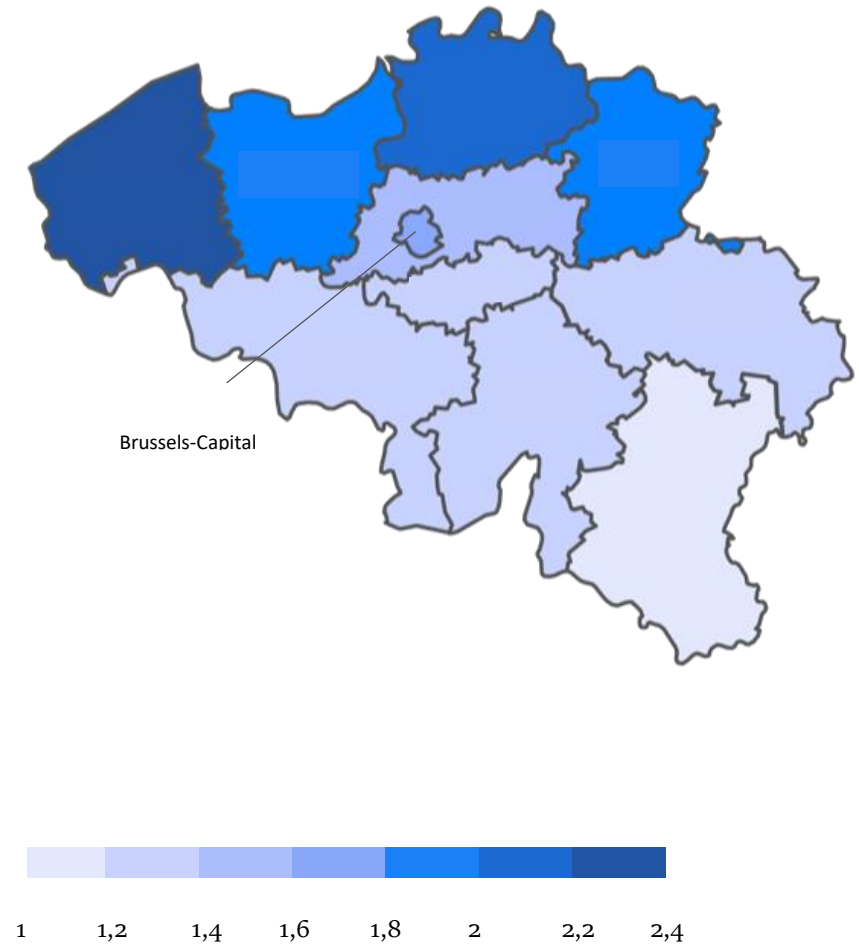
Note. N = 364 Belgian cities over 10,000 inhabitants as of January 31, 2019; * Accounts that have published at least one message in the month prior to data collection.

Map 1. Number of active social media accounts (as of Jan. 31, 2020)



Min.	Max.	Mean	N
1.07	2.34	1.63	364

Map 2. Number of active social media accounts (as of Jan. 31, 2022)



Min.	Max.	Mean	N
1.14	2.21	1.72	364

4.3 Descriptive statistics regarding social media adoption

The quantitative assessment of social media adoption in Belgian municipalities shows the large heterogeneity of practices. Among municipalities that have at least published one post in the given period, the minimum and maximum values range from very low to high figures, and standard deviation is often quite high. However, this remark applies less to Facebook, the most used platform in Belgium (and in many other countries, Belgium is no exception to this phenomenon). Municipalities are generally less actively tweeting and posting on Instagram, although one city in particular is using Twitter very extensively. The low number of tweets per month (median value = 3.65) can be partly explained by the overall low use and interest for this platform in Belgium. It can also be explained by the fact that Twitter is more used among younger and wealthier people, and is less "universal" in terms of outreach (for the cases of the United Kingdom and the United States, see Blank, 2017). The more recent character of Instagram may explain that municipalities are still experimenting with this channel (median value = 4.71), in line with the arguments presented by Mergel (2013). Therefore, Facebook still dominates in terms of information dissemination, with a median value of 33.08 posts per month, or around one post per day.

Regarding the use of potentialities, almost all municipalities (99% of them) have posted both pictures and videos on Facebook, taking full advantage of these two possibilities offered by the platform. In a similar way, a large majority of municipalities have posted pictures and videos on Twitter, and videos on Instagram as of January 2022. However, potentialities are more used on Facebook; we assume here that the better knowledge of this network, resulting from both intensive use and longevity of the platform, may explain this finding. The lower figures on Instagram, especially compared to Twitter, may result from the restricted approach preferred here, since we included videos only as a possibility offered by Instagram (in addition to the picture-posts). The ephemeral character of other features, such as stories, makes it extremely difficult to retrieve them. We will give more detailed explanations about this point in the limitations presented below. Overall,

municipalities use Facebook more extensively (in terms of potentialities) compared to the other platforms, as it is already highlighted in case of the recurrence of use.

Regarding outreach, certain municipalities manage to gather many followers, exceeding their own population, with a maximum of 136.40% on Facebook in one specific case (Table 7). The median value is quite high for Facebook (22.97%) and much lower for Twitter and Instagram (3.68% and 6.53%, respectively). The minimum fan base is also higher on Facebook. A closer look at the data shows that out of the 353 municipalities that have published at least one post in the defined period, the ratio between the number of posts and the population exceeds 20% in almost two-thirds of the municipalities. In contrast, only 17 municipalities (4.82%) gather less than 10% of followers compared to their population. The situation differs strongly on Twitter, where the ratio exceeds 20% in only 3 municipalities (1.68%), and 10% in 10 of them (5.59%). Figures are a bit higher for Instagram but remain much lower than those observed for Facebook: the ratio exceeds 20% in 6 municipalities (2.83%), and 10% in 31 of them (14.62%). The total number of municipalities included in Table 7 shows that figures differ from registration, since many accounts remain inactive, or do not publish any posts, even in a two-year period. This includes accounts that became inactive before January 2020, probably due to a lack of political willingness, the lack of continuity in communication practices, or the fact that the person who launched the account(s) left the municipality's staff.

Table 7 | Social media active adoption on the three platforms (Jan. 2020 – Jan. 2022)

Variable	Platform	Measurement	Min.	Max.	Median	Mean	St. dev.	N*
Posts per month	Facebook	Number of Facebook posts per month	3.29	146.33	33.08	37.83	19.31	353
Use of potentialities	Facebook	Use of picture-posts and video-posts (no=0; yes=1)	0	1	- - -	0.99	0.09	353

Outreach (efficacy)	Facebook	Number of fans on the municipal population (%)	3.90	136.40	22.97	26.96	13.91	353
Posts per month	Twitter	Number of Twitter posts per month	0.04	173.17	3.65	86.60	122.42	179
Use of potentialities	Twitter	Use of picture-tweets and video-tweets (no=0; yes=1)	0	1	- - -	0.80	0.40	179
Outreach (efficacy)	Twitter	Number of followers on the municipal population (%)	0.01	41.62	3.68	4.24	4.42	179
Posts per month	Instagram	Number of Instagram posts per month	0.04	69.50	4.71	34.77	49.11	212
Use of potentialities	Instagram	Use of video-posts (no=0; yes=1)	0	1	- - -	0.74	0.44	212
Outreach (efficacy)	Instagram	Number of followers on the municipal population (%)	0.26	64.85	6.53	7.51	6.72	212

Notes: St. dev. = standard deviation. Main source: *FanPage Karma* ; *N excludes municipalities that did not publish any posts during the whole period of analysis (January 2020 – January 2022).

4.4 Descriptive statistics regarding potential explanatory variables

The other variables that will be used in our study are presented in Table 8. Regarding social media specifically, we see that while most municipalities registered early on Facebook, mainly due to the

fact that this platform was created first, longevity is higher on average on Twitter. Most municipalities also still communicate via a journal (printed with PDF sometimes available online), pointing to a possible complementarity between online and offline channels. Data stemming from Austria and Switzerland (see Bhatia and Mabillard, 2022) allow for a refined analysis of the use of different communication channels. Figure 1 shows that a large number of Belgian municipalities use a variety of channels compared to the two other countries.

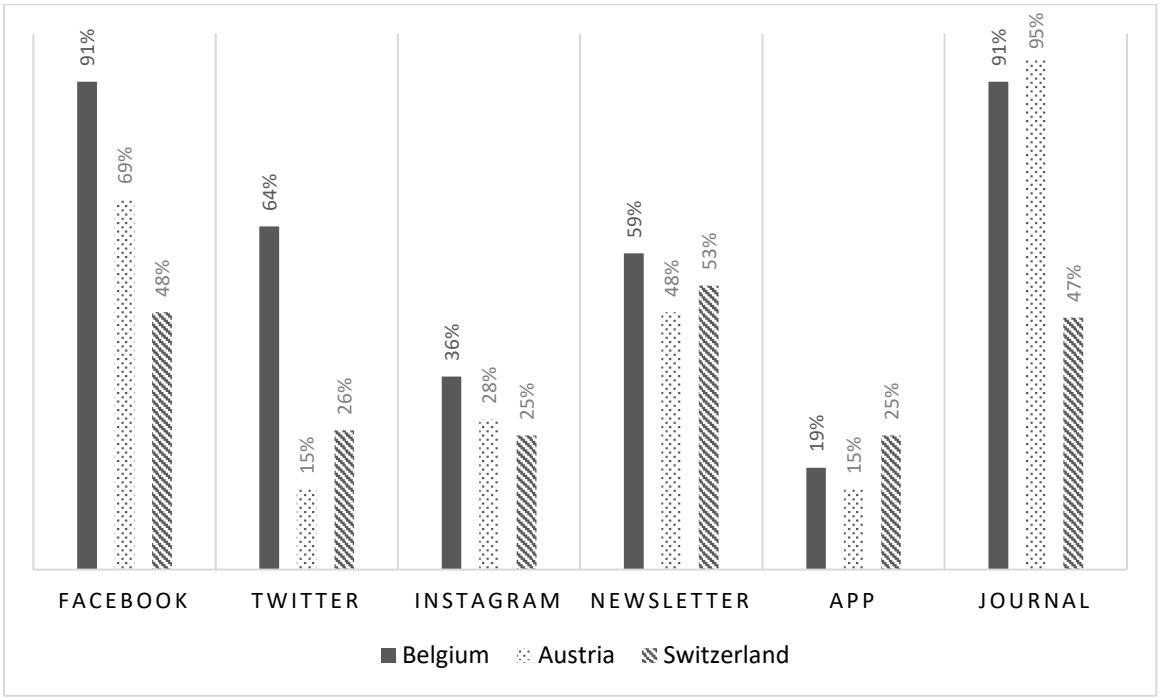
Table 8 | Variables description (min., max., mean, standard deviation)

Variables	*Measurement*	*Min.*	*Max.*	*Mean*	*St. dev.*	*Source*
Municipality size (ln)	Number of inhabitants (natural logarithm)	9.21	13.17	9.97	0.63	Statbel
Age	Median age of the municipal population	33	60	42.88	3.32	
Newsletter	Existence of a newsletter on the municipality website	0	1	0.59	0.49	Own elaboration
App	Existence of an app on the municipality website	0	1	0.19	0.39	
Municipal journal	Publication of an official municipal journal	0	1	0.91	0.29	
Longevity on Facebook	Period between registration and 31 January 2022 (includes only	1	158	92.40	36.68	
Longevity on Twitter		19	154	103.27	31.60	

Longevity on Instagram	registered accounts), in months	1	120	47.43	27.40	

Notes. St. dev. = standard deviation. Reference date for municipality size and median age: December 31, 2019. Data about the newsletter, app and municipal journal were obtained on the cities' websites, on the App Store / Google Play platform or through contacts with the municipalities. Data about the longevity of the municipal accounts on social media were retrieved manually based on the registration date.

Figure 1 | Use of different communication channels in selected countries (as of Jan. 2020)



4.5 Correlation analysis between social media adoption and other variables

As mentioned above, many variables have been used in the literature as determinants of social media adoption, use, or institutionalisation. Most of these variables relate to municipalities' characteristics (e.g., size and age), other communication channels, or social media-related factors (Bhatia and Mabillard, 2022). Here, these variables will be used to enrich our analysis, i.e., to check whether there are positive, negative, or no relations between them and the dimensions of social media adoption. To do so, we prefer a correlation analysis, which results are presented just below. In line with Table 7 above, such analysis includes only municipalities that have at least posted once on the three platforms between January, 31 2020 and January 31, 2022 (N=140).

First, the correlation analyses focusing on the number of posts per month shows a significant ($p < 0.01$) and positive association between municipality size (in terms of population) and the recurrence of use on all platforms. The coefficient is the highest in the case of Twitter (.467), indicating that large municipalities tend to use this platform more regularly. In contrast, we do not find any significant relation between the recurrence of use and median age, newsletters, apps and the publication of municipal journals. Regarding the time period between registration and January 31, 2022, we find a significant and positive correlation between longevity and the number of posts per month in the case of Instagram (.261). Finally, we note that recurrence of use on Facebook correlates positively and significantly with Twitter (.316) and even more so with Instagram (.411). This observation suggests that municipalities quite active on one platform tend to communicate on the other platforms more frequently, as confirmed by the significant relation between recurrence of use on Twitter and Instagram (.268). These results echo the findings presented by Bhatia and Mabillard (2021).

Second, the analysis of the potentialities is tricky since we could not retrieve, for feasibility reasons, data about the intensity of the usage of potentialities on each platform. However, a closer look at the data indicates a strong influence of municipality size, since small cities tend to post less visual and

video content on Twitter, and even less video content on Instagram. This may be explained by the recency of the latter platform, and the fact that most Belgian municipalities are still experimenting with this channel. Another explanation may be related to the resources and skills needed to produce video content, which are usually less available in small municipalities. It should be reminded here that our observations apply to Twitter and Instagram exclusively, since almost all Belgian municipalities are using the features of Facebook. This indicates a high level of digital maturity on this network, which is less the case on the other two platforms.

Third, population size is also positively and significantly correlated with outreach for Twitter (.272). However, we do not find any similar evidence for Facebook and Instagram, indicating that small municipalities also manage to attract a large number of fans or followers. This may also be explained by the relatively low number of citizens that actively follow official Facebook and Instagram accounts, which may in turn have an impact on the followers/population ratio in large municipalities. Moreover, since less municipalities actively communicate on Twitter, these few active accounts may attract more followers. In addition, the ratio of followers on the population on the three platforms are positively and significantly correlated with each other, and the coefficient is especially high for Facebook and Instagram (.680). This result points to a strong relation between the two, and the mutual reinforcement of each platforms' attractiveness. While median age and the other communication channels do not seem to have any influence, the longevity on Twitter and Instagram are quite strongly associated with the ratio followers / population. The coefficient is quite high in the case of Twitter (.353) and high in the case of Instagram (.560).

5. DISCUSSION

The fragmented or normative existing research on social media use by local governments in Belgium led us to adopt a more comprehensive and systematic approach to this issue. As a result, this paper

presents an innovative way to address social media in local governments, and the creation of a new assessment model. This conceptual effort is supplemented by an empirical analysis, since we provide the most recent figures regarding social media adoption and activity in all Belgian municipalities over 10,000 inhabitants (N=364). It includes the three most popular platforms – Facebook, Twitter and Instagram – in a two-year period (January 2020 to January 2022). It prefers a quantitative, descriptive approach, focusing on the main dimensions of social media adoption: the recurrence of use (number of posts per month), the use of the potentialities (possibilities offered by the platforms), and outreach (ratio of the number of fans or followers to the municipal population).

Our findings point to a large heterogeneity of practices between municipalities, depending on their location and size. In accordance with previous research (see Bhatia and Mabillard, 2021), social media-related variables also influence the dimensions of adoption. Almost all Belgian municipalities have registered on Facebook, and 100% of the largest cities have an account; the most populous municipalities are also more present on Twitter, but the platform attracts less cities; and Instagram gathers municipalities of diverse sizes, except for the smallest ones (under 20,000 inhabitants), which are much less present on this platform. The difference observed may be explained, for Instagram, by the potential lack of resources in smaller cities to produce high-quality video content on a regular basis. Regarding Twitter, the results may be interpreted in the light of the lack of popularity of the platform, and its slightly different demographics (Blank, 2017).

Moreover, patterns of social media adoption differ according to the provinces: while the uptake of social media is very high in certain provinces, the situation looks different in others. For instance, in the provinces of Antwerp and Limburg, municipalities have registered around two accounts on average. In contrast, in Wallonia, the mean number of accounts used by municipalities does not exceed 1.5 as of January 2022. While these findings remain difficult to interpret without additional research, they point to differences that may refer to wider regional trends. Such trends may be further explored through a qualitative approach, e.g., focusing on how cities in the different regions address the issue of local government's social media communication.

Most municipalities post content quite regularly on Facebook, and less so on Twitter and Instagram, where certain cities publish very few posts. The median values of the number of posts per month for Facebook, Twitter and Instagram are 33.08, 3.65, and 4.71, respectively. Regarding the use of the platforms' potentialities, the means are high for Twitter (80%) and Instagram (74%), and extremely high for Facebook (99%). Finally, regarding the ratio of fans or followers to the municipal population, municipal accounts gather many fans on Facebook (median value = 22.97%), while the number of followers is much lower on Twitter (3.68%) and Instagram (6.53%). It is important to note here that these data were collected in a time period strongly impacted by the Covid 19 pandemic. It would be interesting to conduct a similar study in a non-crisis situation to check whether we obtain the same results.

A brief look at the other variables mobilised here indicates that most Belgian municipalities still use other communication channels to a large extent, with 91% of them publishing an official city journal and 59% of them using a newsletter to share information with their population. These figures confirm what has already been observed in other countries (e.g., Switzerland and Austria), where newsletters are widely used, and municipal journals widely distributed to households. This may reflect the cities' attachment to communication tools and channels used before the emergence of social media, as well as the awareness about the limited outreach of social media. This interpretation also calls for further research.

Finally, the correlation analyses conducted between the dimensions of social media adoption and the other variables (size, age, longevity on social media, and other communication channels) show strong associations between population size and the recurrence of use as well as the use of potentialities. It is also interesting to note that such use of the possibilities offered by the platforms seems to have no relation with the longevity of the accounts on all platforms. Finally, recurrence of use on Facebook correlates with the two other platforms, and a similar result is observed in the case of outreach. These results indicate that a more frequent use of one platform tends to stimulate the recurrence of use on the others, and the attractiveness of one platform tends, in turn, to attract more followers on the two other platforms.

This paper has certain limitations. The first limitation relates to the approximate measurement of the potentialities, for feasibility reasons. As the software did not provide data about the number of picture- and video-posts on all channels, it would have been impossible to manually retrieve all information related to the intensity of the use of these potentialities during a two-year period. However, the analysis of the intensity would be useful for further research, using alternative software or a shorter time span. Moreover, the analysis (if feasible) of other potentialities would enrich this analysis.

Moreover, our approach does not account in detail for registration that occurred before the 31st of January 2020. This represents a second limitations since potentialities, for example, may have been used by high-skilled employees and then abandoned. Here, we did not check whether the use of potentialities is part of a long-term effort of the municipalities to inform their population, or whether they have been used in the past. The identification of personal pages, or the personal ownership of certain accounts tends to show that certain cities have certainly relied on individuals with specific interest and/or skills in the uptake and initial use of the platforms. In such cases, the choice of some of these individuals to leave their job may explain the less frequent recurrence of use (in terms of both posts and potentialities).

A third limitation regards the particular status of certain municipalities, which was not considered in our analysis. Indeed, touristic cities may attract more followers, many of them being residents of other municipalities and countries. This is especially the case for large cities such as Paris, which gathers more followers on Facebook than its population, or holiday destinations such as Santorini in Greece (the Facebook page has attracted more than 275 000 followers as of August 2022, compared to a municipal population of around 15 000 as of 2011). The ratio used here does not account for this problem, and calls for a cautious interpretation. However, it would be quasi-impossible to track the origin of every single follower; and this ratio also allows for cross-municipality comparisons since the potential effect of size is eliminated. Nevertheless, we can easily see in the Belgian case that several coastal cities, such as Nieuwpoort, manage to attract many followers. This calls for a more detailed analysis of each municipality, based on their respective characteristics, in future research.

CONCLUSION

The fragmented or normative existing research on social media use by local governments in Belgium led us to adopt a more comprehensive and systematic approach to this issue. As a result, this paper presents an innovative way to address social media in local governments, and the creation of a new assessment model. This conceptual effort is supplemented by an empirical analysis of the Belgian case, as we provide the most recent figures regarding social media adoption and activity in all municipalities over 10,000 inhabitants (N=364). It includes the three most popular platforms – Facebook, Twitter and Instagram – in a two-year period (January 2020 to January 2022). It prefers a quantitative, descriptive approach, focusing on the main dimensions of social media adoption: the recurrence of use (number of posts per month), the use of the potentialities (possibilities offered by the platforms), and outreach (ratio of the number of fans or followers to the municipal population).

The theoretical implication of our study relates to the necessity of addressing social media adoption through a more accurate and comprehensive approach, since active adoption totally differs from simple registration. Therefore, we encourage researchers to use and/or refine our model when they collect descriptive data in other states and when they investigate the determinants and/or the effects of social media adoption in public sector organisations. Another implication refers to the need to better articulate the dimensions of social media adoption with the global institutionalisation of their usage (Picazo-Vela et al., 2012). We have presented evidence that municipality size, and the resources available to communicate with the public influence the recurrent use of the platforms (in line with the findings from Mergel, 2013). However, the institutionalisation also includes the development of normative standards, policies, and the formulation of strategies regarding social media communication. These standards may develop independently from municipality size, and this would possibly represent an inspiring path for future research.

In addition, practitioners could also take advantage of the new model proposed here to better monitor and evaluate their capacity to use social media accounts. However, efforts should also concentrate on the better measurement of the audience, since the penetration and success of certain posts make it possible to guarantee that the targeted audience has been reached. This additional effort would require a complementary qualitative approach, which could be based on direct contacts between the municipalities and users, for instance through surveys and feedbacks.

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Appendix