



Online Communication of Local Governments During COVID-19 Pandemic in Hungary

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Local governments had key and prominent roles in tackling the COVID-19 pandemic. Their task was to take short-term measures quickly and to organize protection and care for those in need. The main objective of our paper is to present how local governments communicated with their inhabitants on various online interfaces in this crisis situation. Our analysis covers 54 settlements representing all the different levels of the settlement network from large cities to small villages. We examined the webpages and Facebook pages of local governments and mayors, first during the first wave and then during the second and third waves of the pandemic. Recognizing their responsibility, local governments clearly tried to provide information to the inhabitants as quickly as possible. They considered the online interfaces the most effective, but the online communication had typically been complemented by information published on more traditional channels as well. There were no significant differences in terms of the way and characteristics of communication among the different types of settlements, although local governments of different sizes obviously had to face different challenges in terms of the amount of tasks they had to tackle. The communication process was a very difficult task because of the lack of information and the not-transparent data provision. Even on the Facebook pages especially suitable for this purpose, interactivity rumbled, and in many cases the questions and suggestions of the inhabitants remained unanswered. It is instructive that, with few exceptions, settlements do not place emphasis on surveying local needs and opinions.

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BACKGROUND: LOCAL GOVERNMENTAL COMMUNICATION IN HUNGARY

Communication, transfer of information, is always important, not just in case of pandemic. However, in crisis situations, its role is clearly becoming more dominant. In case of crisis the public expects immediate responses, spectacular actions, ready-made scenarios, namely operational measures, professionalism, and social solidarity at the same time (Kriszák 2012). Local governments are the official administrative actors closest to citizens, which makes them particularly prominent for communication tasks. The concept of good governance primarily encompasses the values and institutions of democracy, such as participation, the rule of law, and transparency. Related researches have also shown that decentralization has a positive effect on aspects of civic proximity, participation and information, and political socialization (Pálné Kovács, 2013).

The number of Internet users showed a rapid expansion at the turn of the millennium. As a result, the thinking about the role, function, and use of the Internet and the attitude towards the Internet have changed. Internet is increasingly seen as a platform in which not only centrums but also smaller actors play an important role, and it is much more open to user activities, communication, and needs than before (Web 2.0). Some sites specifically offer platforms where the content itself is the result of user activity (e.g. social media). Other providers retain their role as content providers but allow active participation and interaction on their pages. This era of the Internet already allows for a much higher proportion of interactive tools on traditional websites, although these do not allow for a real, substantive involvement of citizens in the operation of policy (Bene 2019). Even though these technologies were first discovered by the private sector, social media have also attracted the attention of political actors and administrative institutions that inform citizens as a prerequisite of open and transparent administration, deliver public services, and contact stakeholders (Sobaci 2016).

Previous research reveals governments are adopting social media for many different purposes, including recruiting activities; reaching out to citizens and other publics; disseminating information to the public and sharing information across government agencies; enhancing and promoting community participation; and achieving transparency (Graham et al., 2015). Research also shows that the proliferation of social sites has not changed in this area either, and political actors also use these tools of communication primarily to convey information (Bene 2019). Government agencies slowly but increasingly adopt social technologies to better serve their mission. These technologies can gradually reengineer the old model of public sector as they offer numerous opportunities to increase government transparency and trust, create new forms of citizens' participation and engagement in public issues, and enhance inter- and intra-organizational collaboration (Karakiza 2015, 385). With its enormous mobilization capability, social media offers a new and broader perspective for institutional communication in local contexts, but it also offers new risks and challenges. For instance, any demand, event, or complaint against the local government on social media can be amplified into viral content and spread quickly to a large number of people, causing a reputational crisis (Medina and Diaz 2016, 322).

Lack of information leads to mistrust, legitimacy deficit, and disinterest, and it increases the distance between the local government and the residents (Bajnok 2014). In the case of institutional trust, the autonomy of local governments plays a particularly important role, but objective conditions, the quality of local public services, the built environment, the development of the economy, and the composition and characteristics of local society also matter. In addition to the local economic and social context, the quality of local governance and the effectiveness of local confidence-building efforts are not incidental (Pálné Kovács, 2019). It is a common problem that the communication of important data or information about public services is not considered important by local governments. This behaviour impairs operational efficiency. The task of the communication

of the local governments is the acceptance of the institutional goals, the provision of data, the transparency of their operation, and the clear and comprehensible explanation of the information and the regulation. With this credibility, the office strengthens civic trust. The aim is also to give citizens the opportunity to express their opinions and thoughts (Rákóczi 2006). Adequate information is also important because it can encourage the population to take an active part in the development of the settlement and in solving its problems (Belényesi 2011). Local governments' input legitimacy is based on citizens, the extent to which they can and are willing to participate in decision-making processes, and the extent to which they can influence and control them (Pálné Kovács, 2019).

The residents of a settlement rightly expect the local government to provide the appropriate and adequate level of information on all public affairs, as its priority tasks include the continuous information of the citizens and the implementation of a two-way, interactive dialogue. The quality and quantity of this communication determines the cohesion, identity, and attachment of the residents to the settlement. The image of local governments is determined by their external and internal communication style, actions, behavior, philosophy, culture, and structure, as well as the quality of public services (Rákóczi 2009). In this context, one can mention the innovative approach of local governmental communication, which does not focus on the message or the sender of the message but on the recipient and the characteristics, needs, competencies, and expectations of the recipient. In this approach, one-way communication is not sufficient because the final meaning of the message is not in the message itself; the recipient—the citizen, the resident—gives it a meaning, so there is a need for dialogue, two-way communication (Jenei 2010). It is frustrating to have one-sided information from a remote office that refrains from questions. Therefore, it is important to strive for two-way communication with the environment, which is becoming easier today with the help of various interactive techniques. At the same time, the results show that in Hungary, people mostly obtain information about the work of the local government from local newspapers, television, and friends. While in the case of traditional media (print, TV, radio), the information is one-way, the Internet allows two-way communication. Local governments need to be more willing to receive feedback and more open to citizens' questions (Belényesi 2011). Related to this, civic communication on social media is also becoming increasingly valuable as it can reach layers that are difficult to deal with for other communicators, those with a strong political standpoint, and those who are not interested in politics (Bene 2019). As the usage of ICT, web-based communication, and social media become more and more prominent among public agencies, local governments put more emphasis on using social media in crises communication (Neely and Collins 2018). Studies showed that webpages and social media platforms are increasingly used by local governments generally and in crisis situations as well (Merchant et al., 2011; Mergel 2012; Bernier 2013; Conrado et al., 2016). The open, dialogic nature of social media eliminates many of the barriers in citizen communication that governments have historically experienced (Graham et al.,

2015). Recent research has suggested that citizens frequently seek out real-time information on social media sites during emergencies, including updates pertaining to weather, traffic, damage, and safety instructions (American Red Cross 2012). These trends have led to increased expectations for emergency managers to engage with citizens through social media (Jin et al., 2014; Mergel 2012; Neely and Collins 2018, 3). Hughes and Tapia (2015) note that because of social media, “Members of the public can now participate more broadly in times of crisis as they collect, create, share, and seek online information through social media” (p. 679).

A number of analyses related to COVID-19, (local) government engagement, and communication have been published since the outbreak of the epidemic. Information technologies and social media attracted the attention of researchers in different countries, as they seem to be the most suitable channels for public outreach, crisis management of governments, and local governments’ rapid and effective communication of crisis information. Some studies deal with the comprehensive role and tasks of local governments during the pandemic (Franzke 2020; Finta et al., 2020b; Gore et al., 2021), crisis or risk communication management (Moreno et al., 2020; Park et al., 2020), and others made explicit COVID-19-related governance recommendations from a practical point of view for the renewal of local (provincial) crisis strategies (Torneo and Berse 2020). Some research, similar to our analysis, examined the flow of communication between local governments and the community in some major cities in the United States via Twitter (Zeemering 2021) and in Wuhan through Sina Weibo (Yang et al., 2021). In Hungary, research on online crisis communication of a narrower segment of tourism, hotels in Budapest (Ásványi et al., 2020), was also conducted.

THE COVID-19 PANDEMIC IN HUNGARY

The first confirmed infections caused by a new coronavirus (SARS-CoV-2) were identified in Wuhan, China, at the end of 2019. The virus had spread rapidly to all continents; therefore the World Health Organization had declared the COVID-19 pandemic in March 2020. As of July 8, 185,125,237 cases have been confirmed worldwide and 4,002,924 deaths (<https://coronavirus.jhu.edu/map.html>, Johns Hopkins University) have been linked to the infection or its complications. In Hungary, 808,393 infected people have been identified, of whom 30,004 had died by the above date.

All over the world, social distancing has become the general rule of protection against the virus. Governmental measures have concerned entry and domestic travel restrictions, closures of educational, social, and other institutions, promotion of home office work, etc. Over the past year, stricter and milder periods have followed one another, according to the fluctuations of the epidemic in each country. Researchers all around the world have begun to develop medicines and vaccines effective against the virus. By the end of 2020 vaccination could have started with some improvements (vaccines of Pfizer-BioNTech, Moderna,

Oxford-AstraZeneca, Sputnik V). Since then even more vaccines have been available for public use (vaccines of Sinopharm, Janssen in Hungary).

The first wave of the pandemic started in Hungary on March 4, 2020, with the first (two) detected cases in the country. Based on the experiences of West-European countries (mainly Italy), despite of the relative low infection rate, the government decided to declare the state of emergency¹ on March 11. The first provisions included the prohibition of indoor events with more than 100 people, the obligation of behind-closed-door organization of sporting events attracting more than 500 people. Universities were ordered to switch to online courses. Although kindergartens, elementary, and high schools were initially excluded from closure, on March 13 it was announced that all educational institutions should be closed. Later further restrictions were ordered, including the cancellation of all events (March 16), abbreviated opening hours, later closure of restaurants, cafes, and pubs, 2 week (later extended) curfew, and shopping hours for the elderly (March 27). The Parliament passed the Act on Protection against Coronavirus (No. XII of 2020) on March 30 that made the state of emergency indefinite² and allowed the government to rule by decree. The restrictions were partially lifted in “rural Hungary” on May 4, while in the capital and the surrounding Pest County the easing was introduced 2 weeks later.

After a relatively calm summer, the epidemic intensified in autumn. Nonetheless, the government did not take any major restrictive measures for a long time: mandatory temperature check for students and teachers in schools (October 1) and mandatory mask wearing in outdoor and sport events (October 23). On November 3, the government decided to reintroduce the extraordinary legal order, and on November 11, the Parliament passed a law extending the state of emergency for a 90-day period again. A curfew (with several reasonable exceptions) re-entered into force, first from midnight to 5 A.M., later between 8 P.M. and 5 A.M. Gatherings were centrally banned, and restaurants, cafes, and pubs had to close completely, while shops and services had to close at 7 P.M. Hotels were allowed to receive only business travelers. Universities and secondary schools above the eighth grade turned back to digital education. These measures have been continuously extended, but their dissolution was already being considered by the government—even a so-called national consultation was launched on this subject—when the third wave of epidemic began with the advent of SARS-CoV-2 variants. Consequently, instead of opening, stricter restrictions have been put in place since March 8, 2021: all non-essential shops and services closed originally for 2 weeks, kindergartens and primary schools were closed, mandatory and universal mask-wearing came into force, and employers were asked to ensure home office work, if possible. Explained by good vaccination rate, reliefs began by opening shops and services, and relaxation of the curfew (April 7, 2.5

¹These periods usually last for 15 days, after which the state of emergency must be renewed by Parliament

²The state of emergency was eliminated by the Parliament on June 16, 2020

million vaccinated), followed by opening terraces, kindergartens, and lower grades of primary schools (April 24–26, 3.5 million vaccinated). Interior of restaurants, hotels, leisure facilities, zoos, museums, cinemas, theaters, gyms, and sporting events can be visited by holders of a security certificate (April 30, 4 million vaccinated), while attendance education was fully restored on May 10. Vaccination sentiment has apparently slowed down in the society, but relief continued: from May 23 curfew, wearing of masks in public spaces, and social distancing—with exceptions—ended (5 million vaccinated), and from July 3 it was possible to enter almost everywhere without a security certificate, and it is not mandatory to wear a mask indoors (5.5 million vaccinated).

In early March 2020 the government set up a website (<https://koronavirus.gov.hu>) in order to inform the public especially about the news and information related to COVID-19. This platform is designed to display the daily online communication of the Operational Staff Responsible for Coronavirus Epidemic Control formed at the end of January 2020. Notwithstanding the above-mentioned objectives, in fact, besides governmental measures only a modest data set specifically for the epidemic is available on the website. The range of daily reported data is the following: new confirmed cases, deaths, recoveries, people hospitalized, people on ventilators, active cases, vaccinated (since 2021), total number of people infected with the coronavirus, total deaths, total recoveries, total quarantined officially, and total tested. In the beginning only the total numbers were provided, since April 2, 2020, total confirmed cases at county level are visible on a map updated daily. Other data—deaths, recoveries, active cases—are reported in the Budapest and countryside division (since May 5, 2020). This data set is too poor compared to other countries, does not provide current real information, and does not meet the needs of the population, the press, or local governments. The explanations provided by the national chief medical officer are also strange, claiming that this method protects security of the management of the epidemic, or that they do not have any more detailed data. The latter was refuted by an NGO this year, when it obtained settlement-level infection data (albeit not the database, only aggregated data) after months of tug-of-war.³ It may not be necessary to prove that this governmental attitude does not strengthen public trust; on the contrary, it significantly destroys it.

The tasks and powers of local governments determined at the time of the regime change gradually decreased, but especially from 2011 (Oláh 2020). The Act on Local Governments (No. CLXXXIX of 2011) has replaced the former (introduced in 1990) local-dominated territorial government by a centralized (deconcentrated), “local state” model. Local governments are no longer the primary and broadly responsible bodies for local public affairs, as they have lost the right to dispose of extremely important local public affairs (education, hospital and health care, social care, etc.). With task reduction the very important arena of communication with citizens and local society has been severely

narrowed, with all its negative consequences such as lack of information and trust (Pálné Kovács, 2016). In addition, the epidemic and the ensuing economic crisis are a situation that clearly points in the direction of a strengthening of centralization trends, as in crisis situations, centralization efforts have traditionally taken precedence over decentralization (Balázs et al., 2021).

A state of emergency may be declared in cases which are specified in the Constitution. According to the Emergency Management Act (No. CXXVIII of 2011), during the state of emergency the tasks and powers of the representative bodies of local governments are exercised by the mayor. However, the mayor may not take measures regarding the reorganization, elimination, supply, or service areas of local government institutions (Bubori and Fekete 2020). Due to regulations, in spring 2020, mayors were responsible for the care of those in official domestic quarantine and could order an extraordinary break in the case of institutions providing nursery and kindergarten care. In April, mayors could order stricter curfew on weekends than was centrally regulated, and the opening hours of markets and visits by persons over the age of 65 could also be regulated individually. In November 2020, mask-wearing became mandatory in settlements over 10,000 inhabitants, and mayors could determine public spaces where they must be worn. Mayors were also authorized to close the dog runners, if they deemed it necessary. The provisional discretionary powers listed above can be seen as decentralization tools, but in practice they can be interpreted rather as transfer of responsibility. However, during the second wave, the mayors could no longer decide to close kindergartens and schools. On the other hand, centralization efforts have also emerged in the context of epidemic, as crises and their management necessarily involve an intensification of centralization trends, especially in terms of budgetary resources. In case of an investment of at least HUF 100 billion serving economic development and job creation, special economic zones can be created by regulation, which means that the ownership of local government can be transferred to the respective county, as well as business tax revenues. Local governments’ revenues were narrowed when the government decided to exempt the taxpayers concerned from paying tourist tax, and car tax was determined as a part of the central budget in spring 2020 (Balázs and Hoffman 2020). The announced economic protection action plan cut further the revenues of local governments by halving the business tax of sole proprietors.

MATERIALS AND METHODS

Local governments had key and prominent roles in tackling the COVID-19 pandemic. Their task was to take short-term measures quickly, to organize protection and care for those in need. The main objective of our analysis is to present how local governments communicated with their inhabitants on various online interfaces in this crisis situation: type of information provided to the public, regularity of information, appearance of local problems or conflicts related to the epidemic, possibility

³<https://www.facebook.com/Kmonitor/posts/4022020954485411>

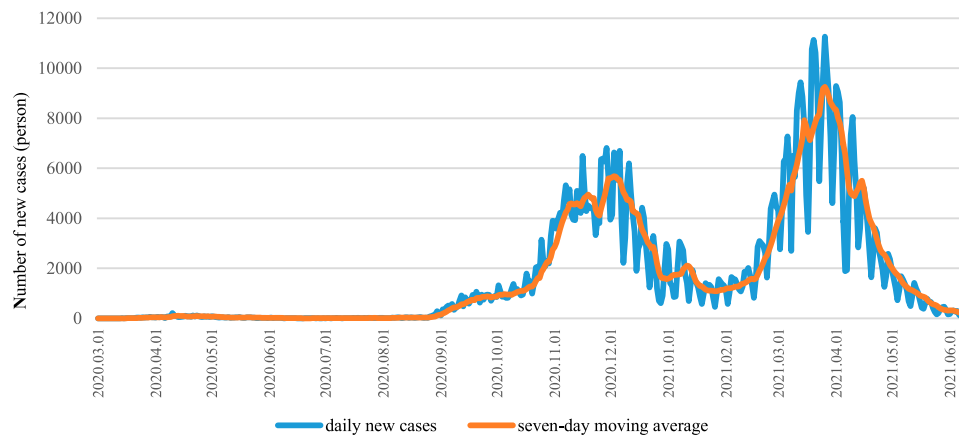


FIGURE 1 | Infections in Hungary between March 1, 2020, and June 11, 2021*. From June 11, 2021, the weekend data are aggregated and not communicated daily. Source: <https://koronavirus.gov.hu>

of feedback, and recruitment of donation and volunteers. As a general rule, we examined the websites and official Facebook pages of the settlements, but in many cases we also extended this with the official or private community page of the mayors as a complementary (cities) or a substitute (villages) solution.

In order to be able to assess both changes and developments of communication over time, our analysis covers three periods. The first covers the period from March 4 to April 30, 2020 (“first wave”⁴), while the second one November 2020 (“second wave”), and the third one March 2021 (“third wave”)⁵. In fact, the waves themselves were longer than these time intervals.

When designing our research we specified the following research questions:

- In what ways did/do the local governments communicate in crisis situation to their inhabitants on different online platforms?
- What information did they provide?
- Did they allow the appearance of other local actors?
- Did they use the websites for gathering donations and recruiting volunteers?
- What feedbacks, two-way communication with the inhabitants did they allow?
- How often did pandemic-related problems and conflicts concerning the local governments appear (concerning either the local or the central government)?

The survey method was actually content analysis, with the **Figure 1** objective of getting to know and exploring the open access communication contents. Content analysis for scientific purposes is now used by several disciplines from sociology through psychology and political sciences right to literature and history sciences (Kérdő 2008). Content analysis is an

important non-intervention research method of social sciences, used for the objective and systematic description of the manifest contents of communication, using quantitative tools (Berelson 1952, 18). However, during its development a qualitative trend has also appeared, placing the emphasis not on numerical and quantitative aspects but the exploration of the latent semantic content of communications and texts, focusing on the conclusions that can be drawn from them (Kérdő 2008, 54). Content analysis is now frequently used for the examination of online communication: the survey of research done on the professional literature published from 2007 to 2013 revealed that in this research, content analysis was the second most frequently applied research method (Snelson 2016). Researchers primarily use Facebook posts, tweets (Twitter posts), YouTube videos, or other social media content as data sources, focusing on the most diverse areas (see e.g. Snelson 2016, 2). Open internet contents created by the users offer opportunities never seen before for the access to and analysis of information available, making this technique much faster, simpler, and more economical than traditional data collection methods (e.g. interviews, focus groups, questionnaires) (Kim and Kuljis 2010), suitable for the procession of large amounts of data as well, and also allowing the analysis of events occurring for a long time (Kérdő 2008). Researchers have access to textual, visual, or audiovisual contents of different types (Csordás and Markos-Kujbus 2018). Also, data can be collected without having to contact the content creators, no ethical consent/authorization is needed, and the examination itself is also free from influences, has no risk, as it does not intervene into the phenomenon, which may impact the results (Kérdő 2008; Kim and Kuljis 2010; Csordás and Markos-Kujbus 2018). The researchers can have access to the natural exchange of information without being present in this process, not influencing thereby the communication; furthermore, the online anonymity allows the examination of reactions rich in emotions that can only be experienced, created after the lengthy foundation of trust, getting inside the personal sphere of the conversation partners during traditional research (Csordás és Markos-Kujbus 2018).

⁴By the first wave we mean the period from the first confirmed cases in Hungary until the easing in “rural” Hungary (outside Budapest and Pest County).

⁵The start (November 2020) and the tightening (March 2021) of new restrictions

Content analyses of web-based contents, however, also have technical and other limitations (Kim and Kuljis 2010). A possible disadvantage is the change of the websites, resulting in the loss of processed information, their disappearance from the online space, and so a concomitant shortcoming can be the difficulty or even impossibility of the retrieving and finding of previous information (Thomas and Tunney 2019): according to an article by Krippendorf (2013) it is only approximately 30% of downloaded information that can later be retrieved. Another limitation during the analysis of online contents is the unequal access to the websites (Thomas and Tunney 2019), as there are social groups that do not have or only have limited access to online information and web surfaces, due to the lack of ICT tools or the skills and knowledge necessary for using them, and so these groups are excluded from online communication.

During the content analyses we partly followed the nine-phase process recommended by Neuendorf (2002), the first step of which is the statement of research questions and/or hypotheses, while the last one is the analysis and interpretation of data and the phrasing of statements.

The main aspects and phases of the content analysis that we made were as follows:

- Definition of the location and way of the communication of information: identification of online platforms used for communication by the local governments or the mayors of the selected settlements—municipal webpages, Facebook pages of settlements, Facebook pages of mayors. Among the social media platforms it is primarily Facebook that is used by municipal self-governments, which seems to be a rational choice, given the broad penetration of Facebook and the fact that it is defined as a dominant social media platform of adult users (Duggan et al., 2015).
- Sampling: a full-range analysis of news and information appearing on the three types of platforms mentioned above was done, using a temporal limitation, though, as our examination did not cover the whole period of the pandemic: only the online content communicated in the (typically one- or 2-month) upward periods of the coronavirus epidemic waves in Hungary (first, second, and third waves) were collected and analysed. The three periods in question are as follows: March–April 2020; November 2020; March 2021.
- Collection of contents, information, news communicated about the coronavirus pandemic: gathering all coronavirus-related information, news, actions, etc. at all three platforms in the three periods mentioned above. The collection of information took place by “manual control”; no software assistance was applied for the data collection.
- The way coronavirus-related information is communicated: does such information exist at all on the municipalities’ websites; what is the “visibility” of the information like; how it is displayed: treated separately, systematically, in separate menus or in sub-pages, searchable in a flow of news, hidden/non-observably? In cases where no reference was made on the opening page of the website of a municipality to the COVID-19 pandemic, we applied a search by keywords like coronavirus, pandemic/pandemic situation, COVID-19, human pandemic, getting this way to the information related to coronavirus, measures taken in order to handle the situation resulting from the pandemic, or communiqués made.
- Frequency analysis: frequency of sharing information—quantity of information and the regularity of sharing, communication.
- Description of the characteristics of information: themes of information communicated, identification of topics—what information is communicated and shared. Typical categories are as follows: basic information concerning the pandemic (e.g. symptoms of coronavirus infection, rules of correct hand-washing), local data of the pandemic situation; local information and measures; national information and measures; volunteers and donations; connection to other types of media tools (featuring and demonstration of e.g. videos, TV appearances, and presentations).
- Style, tone of communication, and the value elements featured: how objective, formal or colloquial is the tone; is the content communicated filled with emotions or politically biased; what values does it mediate (e.g. solidarity, discipline).
- Effects of messages: in this field it was primarily possibility for interactivity (feedback), and also the reaction to comments by the inhabitants that were analysed.

Our study covers a total of 54 settlements, of which 10 are cities with county rights, 19 cities (13 with district rights, 6 other cities), and 25 villages, representing all the different levels of the Hungarian settlement network. The range of settlements included in our analysis was given by two previous studies carried out with roughly the same sample. The selection was made on a basis of a complex system of criteria, taking into account the characteristics arising from the network of settlements, the geographical location, and accessibility of the settlements according to the following aspects: the legal status, the size and the geographical location of the settlement, its position in the settlement network, and the status of a joint municipal office. Due to the structure of the Hungarian settlement network, stratified two-stage sampling was used for the previous researches. At the first level of stratification, settlements were grouped according to their legal status, while at the second level they were classified by number of population. The two sampling principles pull the composition of the sample in different directions. Between the two options, the “middle ground” had to be defined according to the specifics of the projects, so, in order for the sample to reflect the territorial distribution of the population to a certain extent, a sufficient number of small settlements had to be included. Additional aspects were considered in parallel in the selection of settlements: location of the settlement in the functional urban areas, accessibility of the settlement, nature of the settlement, and level of development. Based on the above method, a sample of 50 settlements was formed, in which the top three (urban) size categories were very strongly over-represented. The selection rate was about 1.6%, which is acceptable, however, as studies were mainly based on

TABLE 1 | Means of communication used by local governments to inform the public (%) (N = 44).

	All settlements	Cities	Villages
Internet	88.6	91.3	85.7
local newspaper, local media flyer, poster, letter	54.5	82.6	23.8
	77.3	78.3	76.2

Finta et al., 2020a:193

qualitative information and do not require the use of formal statistical methods.⁶ In the present study, we were forced to make some exchanges, but in these cases we always tried to introduce settlements with similar characteristics into the sample.

RESULTS

Our analysis was conducted as part of a broader research⁷, in which we also approached local governments to explore the local characteristics, measures, and difficulties of the epidemic. More than half of those surveyed said that implementation of prescribed tasks was hampered by a lack of information. Several considered the central control to be downright chaotic (Pálné Kovács, 2020). Lack of information and lack of trust were also felt more strongly in cities (Finta et al., 2020a), although the lack of money proved to be the main limiting factor in both types of settlements (Pálné Kovács, 2020). It was also mentioned by local leaders that the government had repeatedly transferred the responsibility to the local governments (weekend curfew, public space restrictions), but they were not given enough preparation time for the actual measures (Pálné 2020).

Although almost all local governments used online interfaces in order to inform and to communicate with the residents during the epidemic, traditional, mainly paper-based channels were also needed, mainly to reach the older population (Table 1).

Thus, during the epidemiological communication almost all local governments involved in our analysis used their website or the Facebook page of the settlement or the mayor. However, there were small settlements that had neither a website nor a community interface, so there were only traditional channels used to provide information. The use of the two web interfaces was not the same, but it was mainly the smaller municipalities that placed more emphasis on either the website or Facebook.

Regardless of the size of the settlement, many local governments have dedicated separate tabs or subpages for information about the epidemic on their website, making it easy to find and review. The public need and the local

governmental intention to inform are well indicated by the fact that there was a mayor who registered for Facebook specifically for this reason, and there was a settlement that launched its website under construction earlier than planned.

With the exception of a few (some local governments already published and shared information about the coronavirus in the last days of February), first information was published everywhere in the first half of March. At the beginning of the epidemic, information was mostly more frequent, with more news and information being shared daily or within a day in most settlements. In general, however, as the epidemic progressed, the dynamism for information was broken (this was already true by April 2020 in smaller settlements; see Table 2), and Facebook has clearly become the main field of communication in more and more places. Some news still appeared in the cities, but in the second wave of the epidemic there were five, while in the third wave there were already 12 villages in complete silence, as far as internet interfaces are concerned. In most cities, communication activity declined significantly in the second wave, with daily news generally lagging behind even where information was very active in the first period.

Overall, the amount and range of materials and information available varied widely, ranging from a very small/narrow range to almost information dumping. In the case of most settlements, the very first information was either about the changed rules of visiting certain institutions or about the non-occurrence of different events. In parallel, information about the coronavirus (e.g. proper hand washing, symptoms of coronavirus infection, what to do, possible precautions, and behavior) usually appeared in the initial local online communication about the epidemic. These first news items usually included the contact details of the national information surfaces (e.g. green numbers, websites: www.koronavirus.gov.hu; www.nnk.gov.hu) and also the local contact details (telephone numbers, e-mail addresses). At first, local governments published usually national news and regulations (e.g. a government decree announcing an emergency, a measure restricting access), and later local information became dominant in some places.

Especially in cities, not only the written publication of information and measures were typical, but also the production of mayoral video messages, or the production and transmission of mayoral briefings and reports involving the local media. There have also been cases where a special epidemiological information program has been launched, which, in addition to regular reports, have provided interactivity in some cities (Pécs). These recordings were also either broadcast live or shared on the online interfaces of the local government or the mayor. This good practice was adopted by several cities during the second (and then the third) wave, but in smaller settlements we rarely find an example of this form of information. In some cases websites as well (Gyöngyös, Cegléd), but Facebook certainly provides the opportunity for interactivity. However, regardless of the level of interest, only in a few cases were substantive answers received from city leaders or the local government to questions and concerns raised by the residents, so they mostly discussed the news with each other. In small settlements, where residents most

⁶For more detailed method and list of settlements see pages 30–37 of the research report available at <https://bm-oki.hu/News/ViewFile?fileID=1133> (only Hungarian).

⁷The research was based on a semi-structured interview method. In addition, we used content analysis as the main research method to evaluate local governmental communication

TABLE 2 | Aggregated posts on Facebook by settlement types and epidemic waves (No.) (N = 54).

	Cities with county rights		Other cities		Villages	
	Local government	Mayor	Local government	Mayor	Local government	Mayor
March 2020	198	362	479	360	281	61
April 2020	205	380	357	225	120	29
November 2020	135	145	163	92	73	17
March 2021	100	105	83	47	33	8

Collection of authors

often know each other personally, and thus also the mayor, epidemiological communication was less formal, more direct, and it was more likely for the local government or leaders to respond to public comments.

Our findings confirm the findings of international literature that those public agencies which have adopted social media are underutilizing its technological capabilities (Graham and Avery 2013; Lin et al., 2016), in part by limiting themselves to one-way communications, rather than actively engaging citizens in collaborative, bi-directional communication efforts (Mergel 2012; Graham and Avery 2013; Karakiza 2015). This may be a consequence of the digital skills deficit highlighted by Mearns, Richardson, and Robson (2015) (Neely and Collins 2018). These hurdles may be further exacerbated by the organizational challenge of incorporating these ever-evolving technologies into the traditional “command-and control reporting structure” of emergency response agencies (Hughes and Tapia 2015, 686).

As we already mentioned above, even local governments in charge of epidemiological measures and tasks were not officially informed of the local data. In the first period, when even county data were not public, mayors groped especially in the dark. Although they were informed by the law enforcement agencies about those in official quarantine, they only became aware of the infected if residents themselves reported this to the local government. So it is no wonder that at the time of the first wave, almost no local epidemiological data appeared on either the local governments’ websites or Facebook pages, although the mayors of many local governments informed the population on the basis of the information available to them, such as the number of people in official and/or voluntary quarantine, or that they had no knowledge of the infected person in the settlement. During the second and third waves, thanks to informal channels and social capital, local epidemiological data would appear from time to time in very few settlements, but their communication is not regular. The phenomenon is independent of the size of the settlement; rather, it depends on the mayor’s network of contacts and commitment, as to whether he/she had access to local data. What was evident from the epidemic at the level of local institutions (e.g. results of central testing in educational or social institutions, institutional closures due to infections or suspected infections) was published by a significant number of local governments on online interfaces.

Local governments informed the population about the measures affecting the settlement that differed from the national one. The content of these measures varied greatly and

depended to a large extent on the habit of the leaders. In general, they had to make decisions without the necessary information, such as data on the epidemiological situation in the settlement. During the first wave, there were local governments that did not take into account any restrictions other than determining the order of market access (mostly by providing a narrower shopping time limit for residents over 65), not even the closure of playgrounds. Most settlements, on the other hand, closed their playgrounds and outdoor sports fields. Other restrictions were introduced over the weekend; in (especially small) settlements of tourist or natural importance, the closure of all or part of the area was reported in order to protect the inhabitants. The city of Kecskemét was the strictest with the introduction of a night curfew.

In accordance with central regulations, the use of masks in public areas was introduced in cities with more than 10,000 inhabitants during the second wave. The settlements could decide for themselves where to wear a mask; there was a city where mask needed to be worn only in the area of markets and fairs, as well as at bus stops (Dunaújváros), while in Győr when another person came into view. However, most cities did not differentiate but required mandatory mask use in all public areas of the city. Among the smaller towns (e.g. Mezőberény, Sárvár, Siófok, Komló) it was characteristic that a part of the settlement was delimited (e.g. downtown, inner streets) where the mask had to be worn in the public area, in other areas of the settlement near public institutions, offices, shops (possibly condominiums) (usually within 50 m), in car parks, bus stops, on railway platforms. During the third wave, local governments did not have such discretion, as the use of the mask became mandatory in all public areas in all the settlements under a government decree.

Although local governments could only partially decide to close local institutions, news about them is usually part of the public information. In the communication of small settlements—as there are fewer institutions, but often they serve the whole community—the extraordinary breaks ordered by the mayor, the closure of institutions due to infections or suspicion of infection are more pronounced. In the provision of information, the changed order of the reception of the mayor’s office is common, and this is relatively often supplemented by the sharing of information published by other institutions and service providers. Surprisingly, not all major cities have indicated the contact details of the municipality, general practitioners, and other important offices, but most of the smaller settlements published them online at the beginning of the epidemic.

As the number of tasks of local governments suddenly increased at the beginning of the epidemic, many services—shopping or replacement of medicines for the elderly, communal feeding, etc.—had to be organized or reorganized, in many settlements volunteers were recruited on online surfaces to provide them. In villages, volunteers, employees of local institutions, and members of non-governmental organizations were also needed in the epidemiological defence: they sewed face masks, which were still in short supply at the time, and disinfected institutions and public areas. In the second and third waves, there were hardly any settlements where volunteers were sought on social media, in some places the municipalities/mayors encouraged blood donation and plasma donation.

Several local governments have started collecting donations to make up for the above-mentioned tax deductions and other lost revenue. Although online interfaces were not used to promote this in most settlements, in relatively many cities (e.g. Győr, Kaposvár, Veszprém, Pécs, Gyöngyös, Komárom, Sárvár, Siófok, and Tata) help was sought from the public and other actors on webpages and Facebook sites. In a village, Fülöpjakab, the amount of money accumulated in the donation account was also reported.

Local measures included actions and support programs for businesses and residents (e.g. those who lost their jobs) in difficult situations due to the epidemic. Among the measures announced online, we should mention Veszprém, where, in consultation with the catering industry, a tender was issued for them, also in the form of refundable and non-refundable support. In Győr, the rent of state and municipally owned real estates for businesses that had to close was canceled. Kaposvár will give up the terrace fee until the end of the year. Szolnok helped the taxi drivers with local measures. In smaller towns, we find an example of a municipality posting food delivery information for local restaurants on its website and/or Facebook page. There are places where during the first wave, after the closure of the market, the municipality supported the organization of an online market by sharing information and provided a free opportunity to present local businesses on its online interfaces.

Some of the small settlements have also introduced economic support and social measures. In Jászládány, for example, permanent residents received a one-time small allowance in November 2020, while Gyenesdiás provided assistance in promoting the services of the businesses affected by the restrictions online. We can find such an example among the towns as well, in the second wave the municipality of Cegléd introduced financial support for residents who lost their jobs due to the epidemic situation and were not entitled to unemployment benefits. During the first wave, in order to alleviate the problems of the community, some small local governments decided to change the process and deadline for paying local taxes and in several places contributed financially or by other means to improve the conditions for digital education.

During the third wave, when vaccination was already available, some local governments offered help to those for whom registration was a problem. As far as vaccinations are

concerned, in many settlements—and especially in cities—there has been an increasing emphasis on the need for vaccination and calls for registration.

In the first period of the pandemic, solidarity, cooperation, assistance, and the emphasis of discipline, compliance with rules, responsible behavior of citizens, and in the third wave, patience and perseverance were important elements of information in many places. In almost all of the mayoral briefings, from the beginning of the epidemic, thanks and calls to stay at home (primarily during the first wave) and to wear masks (more typically during the second and third waves) have also been decisive. There is also a strong emotional charge in the communication of a smaller proportion of mayors, but briefings are usually official, as are mayors' Facebook pages. Only a negligible part of the news had a political charge in very few places, for the second and third period it practically disappeared there as well, and cooperation at the local level is essential everywhere.

CONCLUSION

In the COVID-19 epidemic, local governments came under enormous pressure. In addition to performing the expanded tasks, they also had to prevent the spread of the new coronavirus in their settlement. The changing epidemic situation and the need for a rapid response drew attention to the importance of communication between local governments and residents, as well as the use of new communication channels. Of course, the full range of measures and contact with the public cannot be evaluated from local governmental online communication, but it can be said that the publication of information has changed thematically and has significantly declined in volume and frequency since the first month of the epidemic in March 2020. There were local governments that performed excellently in online communication, i.e. they published regular and relevant information, but there were also some (mainly small settlements) that did not use these channels at all or after a while. The latter may be explained by the fact that the population of the settlement—due to its age composition or the characteristics of Internet use—can be effectively informed mainly through other, traditional channels. The “elimination” of online communication can also be explained by the fact that other channels have proven to be more effective, and the local government has adapted to this. However, the trend is clear and practically general. There is little doubt that the lack of information available to local governments, declining local empowerment, and growing central management in epidemic management may also have resulted in less and less communication at the local level. In addition, like the population, the majority of local governments are tired of the epidemic that has lasted for more than a year, which may also contribute to the decline in online activity. Despite a lack of information, withdrawals, and limited room for manoeuvre, there is relatively little outraged voice and criticism about government and epidemic management in local governmental communications, apart from a few opposition cities. Lack of

information has put local governments in an impossible position; measures can only be taken on the basis of credible information, accepted and complied with by the public, and in this case it is not an easy task. Overcentralized epidemic management and communication in Hungary has weakened rather than strengthened trust, which is essential in crisis situations.

DATA AVAILABILITY STATEMENT

Publicly available datasets were analyzed in this study. This data can be found here: <https://koronavirus.gov.hu>

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AUTHOR CONTRIBUTIONS

NB wrote the first draft of the manuscript. BB and MN wrote sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

SUPPLEMENTARY MATERIAL

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