Supplementary Material

Table S1. Comparison of Population Structure: All Czech Municipalities vs. Survey Sample

Population Category	Population (Czech Rep.)	Population Share (%)	Sample (Survey Respondents)	Sample Share (%)
<200	1,350	21.6	50	15.2
200-499	1,998	31.9	103	31.2
500-999	1,374	22.0	63	19.1
1,000-1,999	806	12.9	63	19.1
2,000-4,999	448	7.2	24	7.3
5,000-9,999	146	2.3	12	3.6
10,000+	132	2.1	15	4.5
Total	6,254	100	330	100

As Table S1 shows, the distribution of survey respondents across size categories differs from the overall distribution of municipalities in the Czech Republic. A chi-square goodness-of-fit test confirms that this difference is statistically significant ($\chi^2(6, N=330) = 29.15$; $p < 0.001$). Specifically, smaller municipalities (e.g., up to 200 inhabitants) are underrepresented in the sample, while larger municipalities are overrepresented. This suggests the presence of sample bias due to low return rates (non-response bias), which is a common phenomenon in questionnaire surveys of local governments, as larger municipalities often have higher administrative capacity and more interest in the research topic. This limitation needs to be taken into account when interpreting questionnaire-based findings (relating to RQ2 and RQ3), as they may more accurately reflect the perspectives of larger and more administratively active municipalities.

S1.1 Facebook Presence Detection Method and Accuracy of Proxy

For each municipality, the URLs of official websites were first obtained, primarily through the Wikidata database and Wikipedia, whose reliability and comprehensiveness for identifying and baseline characteristics of Czech politics has been previously verified in other research (Haman et al., 2021). Subsequently, individual municipal websites were downloaded and searched for the presence of any URL links containing the string "facebook.com".

To increase accuracy, we then filtered out non-compliant Facebook URLs. We implemented basic filters to remove apparently unrelated links, such as links to social plugins or pages unrelated to municipal government and information, such as firefighters' associations, links to restaurants or museums. The presence of at least one valid link pointing to a specific Facebook page (not just the facebook.com domain) was recorded as a binary variable (1 = present, 0 = absent) for each municipality.

For each municipality with extended power, the existence of an official Facebook page was manually verified through a combination of methods: a search of the municipality's official website, a Google search (e.g., ”Facebook City XY”) and a search directly on the Facebook platform. This process revealed that 198 out of 206 municipalities with extended powers (i.e., 96.1%) were actively using the official Facebook page at the time of verification (March 2025). Subsequently, these 198 active pages were checked for the presence of a link on the homepage of the official municipal website (typically in the header, footer or contact section). It turned out that 186 of these 198 municipalities (i.e., 93.9%) had such a link easily traceable. This result suggests that our proxy method, based on web link detection, has a high degree of accuracy in identifying municipalities that use Facebook while actively linking it to their main web channel. The method probably slightly underestimates overall adoption, as it does not capture municipalities that use Facebook but do not have a link to it on the web (in our sample of municipalities with extended powers this was about 6%).

S2. Questionnaire Design and Implementation

The questionnaire section on social media began with the entry question: "Does your municipality use social media?". If the answer was yes, respondents were asked to specify the platforms used in closed-ended questions and to answer the open-ended question, "Why does your municipality use social media?" If the answer was negative, they were asked the open-ended question, "Why doesn't your municipality use social media?".

These questions were designed to directly capture motivations and barriers from the perspective of the municipal representatives. The questionnaire structure allowed for branching logic to ensure respondents only answered relevant follow-up questions based on their initial response about social media usage.

While we do not provide the entire questionnaire to maintain focus on the relevant section, these specific questions are directly aligned with our research objectives and form the basis for the analysis presented in Tables 3 and 4 in the main manuscript. The broader survey context helped establish rapport with respondents and may have contributed to the overall response rate by demonstrating the academic partnership's comprehensive approach to municipal research.

S3. Case Selection and Justification

The Czech Republic serves as an exceptional and model case for this research. Its local government structure is not only fragmented but is statistically the most fragmented of all developed countries and has the lowest average and median municipal size in the OECD (OECD, 2025). This extreme structural characteristic allows for studying the impact of huge differences in size, resources and administrative capacity on the adoption of digital communications within a single country.

Moreover, this structural context is not static but is the subject of a lively national policy debate concerning the possible merging of smaller municipalities to increase their efficiency and sustainability (Kaprál, 2024). Studying these dynamics is therefore particularly timely, as this research provides a crucial starting point for assessing the potential impact of any future administrative reforms. Recent research highlights persistent hesitancy among local governments regarding social media adoption for civic engagement (Ahn & Jong, 2024). A key contribution of this paper also lies in its methodological comprehensiveness. By mapping all 6,254 Czech municipalities, our research goes beyond sample-based estimates and provides a detailed national view of digital disparities across the local government system, a scope rarely found in the international literature.

Finally, our findings have direct implications for the ongoing political debate in the Czech Republic about the future of its highly fragmented municipal structure. The documented resource constraints and communication challenges faced by smaller municipalities provide empirical evidence that enters into discussions about their sustainability and the potential benefits of amalgamation. By revealing a deep institutional digital divide, this study highlights that any future administrative reforms must consider not only economic efficiency, but also ensure that all municipalities, regardless of size, have the capacity to maintain a vibrant local public sphere and democratic engagement in the digital age.

References:

Kaprál, A. (2024). Česko má nejmenší obce v EU, slučování ale obvykle odmítají [Czechia has the smallest municipalities in the EU, but mergers are usually rejected]. ČT24. https://ct24.ceskatelevize.cz/clanek/regiony/cesko-ma-nejmensi-obce-v-eu-slucovani-ale-obvykle-odmitaji-350960

OECD. (2025). Municipal level government by population size. OECD Data Explorer. https://data-explorer.oecd.org/vis?df%5Bag%5D=OECD.CFE.RDG&df%5Bds%5D=dsDisseminateFinalDMZ&df%5Bid%5D=DSD_DASHBOARD%40SNG_STRUCT&df%5Bvs%5D=1.0&lc=en