I Can See Your Voice! Analyzing Public Opinions on Urban Issues in Thailand's Khon Kaen Municipality Through Social Media

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Abstract

This study investigates the role of social listening tools (SLTs) in local governance within Khon Kaen Municipality, Thailand, highlighting the interaction between digital discourse and urban management. Through the strategic deployment of SLTs on popular social media platforms such as Facebook, Twitter, and TikTok, the research examines public sentiments on urban issues, focusing on how these sentiments are expressed and can be leveraged to enhance governance. The study encompasses a period of data collection from March to April 2024, employing Mandala AI to analyze online mentions, hashtags, and engagement across diverse social platforms. The findings indicate that Facebook is the primary communication channel, with significant public interaction and engagement, followed by Twitter and TikTok, which cater to specific demographic groups and issues. The sentiment analysis reveals a predominance of neutral tones, punctuated by notable instances of positive and negative sentiments, particularly around local events and municipal issues. These insights are critical for policymakers, suggesting that real-time public feedback through SLTs can significantly inform and improve urban planning and policy responsiveness. The research underscores the transformative potential of integrating digital tools in local governance, proposing a model for other municipalities to enhance engagement, transparency, and responsiveness to citizen needs.

Keywords: local government, public engagement, social listening, social media, urban issues, Thailand

1 Introduction

Local governance plays a pivotal role in shaping the quality of life and well-being of communities. It acts as the first point of contact between the public and government authorities, making it crucial in the implementation of policies and the management of local resources. Effective local governance ensures that the specific needs and preferences of a community are addressed, leading to enhanced civic engagement and improved public services [1].

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In the 21ˢᵗ century, digital technology and social media have revolutionized the way people communicate and interact, not only with each other but also with their governments. The global proliferation of these technologies has introduced new dynamics into traditional governance processes. Today, nearly every aspect of daily life is mirrored in the digital space, influencing social norms, economic transactions, political discussions, and more [2].

For local governance, the integration of digital technology and the strategic use of social media platforms offer profound opportunities for improving transparency, accountability, and citizen participation [3]. These tools provide governments the ability to reach larger audiences, engage with citizens in real-time, and collect feedback more efficiently than ever before. However, they also pose challenges in terms of data management, privacy concerns, and the digital divide, which can exclude those without access to digital resources [4].

Social media platforms have become integral to daily life, serving as avenues for information sharing, community building, and civic action. People use these platforms to voice concerns, share experiences, and mobilize around issues affecting their localities, such as public safety, urban planning, and local government actions. This ongoing dialogue on social media produces a wealth of data that reflects the public's pulse on various issues impacting their communities [5].

Social listening refers to the process of monitoring digital conversations to understand and analyze public sentiment. This method allows governments and organizations to glean insights from the unstructured data generated on social media. By engaging in social listening, local governments can identify emerging issues, predict public reactions to policy changes, and tailor services to better meet the needs of their constituents. Effectively, social listening can transform passive data collection into active engagement, fostering a governance model that is more responsive and attuned to the needs of the public [6].

Social listening emerges as a potent tool for urban researchers and policymakers, providing real-time data on public opinion regarding various urban development issues. This approach not only democratizes the process of gathering public input but also offers a nuanced understanding of the community's pulse, essential for crafting responsive and inclusive urban policies [7][8]. Using the social listening tools (SLTs) provides an innovative approach to capturing and analyzing the voices of the community, offering insights that are essential for informed decision-making and policy development. This study attempts to focus on seven main urban issues, which are critical and controversial among many Thais, including smart city initiatives, public transportation and mobility, urban environmental management, housing and urban development, digital access and inclusion, public health and safety, and tourism and cultural heritage, reflects the multifaceted nature of urban living and the diverse interests of the populace [9][10].

Given the dynamic interplay between digital technology, social media, and local governance, this manuscript seeks to explore this nexus within the context of Khon Kaen Municipality in Thailand. Khon Kaen Municipality is one of the major urban areas in Thailand and the administrative and economic hub of the Northeast region, standing at the forefront of this urban and digital transformation. As the city navigates through the complexities of modernization and digital integration, understanding the public's perceptions and attitudes becomes crucial for local governance and policymaking. The research question guiding this study is: "How are public opinions on social media regarding specific urban issues related to Khon Kaen

Municipality expressed, and how can they be utilized for better local governance?" This question underscores the importance of understanding digital public discourse and harnessing it for the enhancement of governance processes, aiming to contribute both to academic knowledge and practical governance strategies [11].

This study is poised to offer a nuanced analysis of public opinions on urban issues in Khon Kaen Municipality, utilizing SLTs on Facebook, X (formerly known as Twitter), and TikTok. Expected findings include identifying common and unique public sentiments in the municipality towards a wide range of issues. These results aim to inform policymakers, contributing actionable insights to enhance urban planning and governance in Thailand, emphasizing the role of digital discourse in shaping urban futures.

2   Research Objective

The objective of this study is to examine the public opinions of residents in Khon Kaen Municipality on urban issues, as expressed on social media, through the use of a social listening tool on social media using a social listening tool. Specifically, it seeks to analyze the types of urban issues discussed and their associated sentiments

3   Literature Review

3.1   Big Data

Big Data refers to data sets that are so large or complex that they cannot be analyzed using standard, off-the-shelf software [12]. The concept of Big Data was first implemented in 1997 and widely adopted in 2006 by Google through the Hadoop project. This project leveraged distributed data frameworks like the Google File System (GFS), MapReduce, and NoSQL databases to greatly benefit both the public and private sectors.

In practice, Big Data is predominantly utilized by the private sector to analyze customer data and derive insights that help organizations respond to customer needs more effectively, thus enhancing their services. Conversely, the public sector has also adopted Big Data management, though to a lesser extent compared to the private sector. Nonetheless, Big Data has been employed for various public uses, such as disaster prediction and emergency response planning [13]. For instance, using Big Data to forecast severe weather events enables timely warnings to residents, which facilitates disaster preparedness and response. Additionally, it aids in crisis management by analyzing and synthesizing data to develop efficient problem-solving strategies.

Beyond direct data analysis, Big Data is also integrated with machine learning technologies, a branch of artificial intelligence, to enhance human language processing and develop tools known as social listening tools.

3.2   Social Listening

Social Listening, or Social Media Listening, involves identifying and assessing online content about specific topics discussed in social media applications or on the internet [3]. The unstructured data generated from online discussions necessitates knowing what

organizations aim to achieve with social listening. The tools suited for this process can range from free services like Google Alerts to more sophisticated software that integrates specific analytics and customer relationship management (CRM) systems, depending on the organizational goals.

Data gathered from social media and direct interactions are valuable, but social listening tools have become crucial instruments for rapidly meeting customer needs. Techniques for using social media to obtain insights include monitoring discussions, using software to collect opinions from various online channels, and encouraging customers to suggest and vote on new product features.

The functionality of social listening tools involves processing Big Data collected from various online sources through algorithms that analyze, synthesize, and present the data as statistical information. Currently, social listening tools are available both for free and at a cost [14].

The pioneering work of [15] in applying social listening to improve public sector services highlighted that social media monitoring is a complex activity. It requires not only traditional media monitoring but also specific, multidimensional approaches to enhance service delivery, often involving broad community participation online. [15] further explored the use of a streamlined social listening tool, Vizie, aimed at enhancing government services. This tool provided a centralized search interface, allowing users to send queries across various social media platforms and aggregate the results. Their analysis of user logs from nearly 200 registered users across 17 public agencies revealed that Vizie supported data exploration and facilitated decision-making regarding the relevance of online conversations, potentially leading to community engagement.

Research by [16] demonstrated the application of social listening tools to assess public awareness about respiratory viruses, suggesting their potential for future research applications. Additionally, these tools have been adapted for tourism in Thailand, analyzing Thai language texts from tourists to gauge sentiments and satisfaction, thereby enabling service improvements [17].

From this literature review, the authors recognize the potential for applying social listening tools in local governance, which is closest to the citizens, to provide more comprehensive insights into public opinions and suggestions for public policy design and public service delivery by local governing bodies.

4   Methodology

4.1   Research Design

This research employed a mixed-methods approach, leveraging social listening to gather and assess public opinions on urban issues from Facebook, Twitter, and TikTok. Concentrating on Khon Kaen Municipality between January and March 2024, the study aimed to uncover how one of the major urban municipalities in Thailand's Northeast region engages in digital discourse regarding urban development challenges. Quantitatively, a social listening platform will be used to capture mentions, hashtags, and keywords linked to specific urban

concerns, facilitating sentiment analysis, volume measurement, and trend spotting. Qualitatively, thematic analysis of selected posts and comments delved into deeper insights on topics such as smart city projects, urban transportation, environmental management, housing, digital inclusivity, public health, and cultural heritage preservation. This dual approach ensures a rich, layered understanding of public sentiment, enabling a nuanced comparison of perspectives across the municipalities. The methodology was crafted to offer a comprehensive analysis of digital public discourse, highlighting both communalities and variances in urban issue perceptions region wide.

4.2   Site Selection

The authors purposively selected Khon Kaen Municipality as the research site. Khon Kaen is an exemplary site for research on social listening due to its rapid urbanization, active social media usage, and involvement in smart city initiatives. As a major educational and technological hub in northeastern Thailand, it boasts a tech-savvy population that actively engages in public discourse on social media, providing a rich source of data. The local government's openness to digital transformation enhances the feasibility of integrating social listening into governance. Moreover, Khon Kaen's diverse demographics ensure a wide range of viewpoints on urban issues, making it an ideal setting to explore the potential of social listening tools to improve urban governance and policymaking.

4.3   Data

The authors retrieved data from monitoring public opinions in Khon Kaen Municipality from March 24, 2024, to April 22, 2024. The authors used targeted keywords including "Khon Kaen Municipality," "Municipality+Khon Kaen," "Khon Kaen City," and "Municipality+City of Khon Kaen," collecting data from Facebook, Twitter (aka X), Instagram, YouTube, Pantip, Reddit, and various websites using the Mandala AI tool.

5   Findings from Public Opinion Monitoring through Social Listening Tools in Khon Kaen Municipality

5.1   Overview of Social Media Platform Usage

Figure 1 illustrates data analysis from Mandala AI, showing that Facebook remains the primary platform for communication and opinion exchange among Khon Kaen residents, with a usage share of 91.56%. Twitter follows at 6.69% and TikTok at 1.75%, with no significant data from Instagram, YouTube, Pantip, Reddit, and other websites concerning mentions and engagement. The analysis revealed a total of 628 mentions and 47,101 engagements distributed as follows: Facebook had 575 mentions and 36,755 engagements; Twitter had 42 mentions and 9,492 engagements; TikTok had 11 mentions and 854 engagements, and no records were observed from Instagram, YouTube, Pantip, Reddit, or other websites.
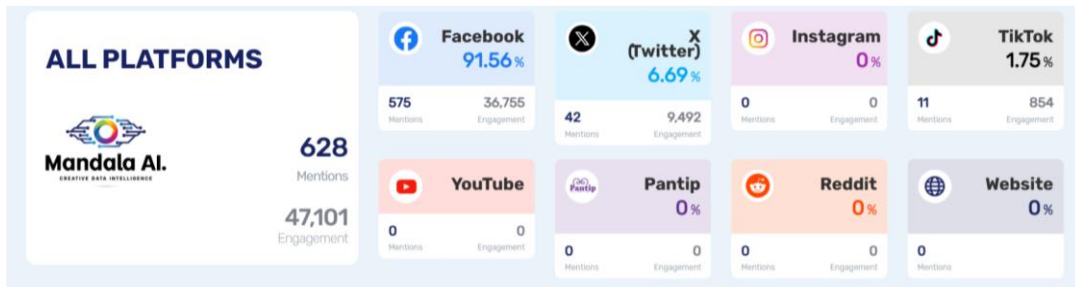
Figure 1: Overview of Public Opinion Data for Khon Kaen Municipality Across All Platforms
(Source: Mandala AI)

5.1.1 Most mentioned terms from word cloud summary by engagement

The analysis by Mandala AI for the period from March 24, 2024, to April 22, 2024, for Khon Kaen Municipality summarized the most frequently mentioned terms by engagement. These terms reflect a variety of topics and issues that interest and engage the citizens of Khon Kaen, including local stories, education, culture, social activities, and current events. Understanding these frequently mentioned terms on social media helps Khon Kaen Municipality to better develop and refine policies to align with the needs of the citizens.

5.1.2 Popular hashtags from hashtag cloud summary by engagement

The analysis from Mandala AI for Khon Kaen Municipality reflected widely mentioned and highly engaged hashtags as follows:

#MONO29 - Indicates the popularity of a channel or entertainment event.

#Songkran67 - Reflects interest in the 2024 Songkran festival.

#MONO29KHONKAENSONGKRANWetnFun2024 - Indicates activities related to the Songkran festival in Khon Kaen.

#KhonKaen - Shows discussions or activities within the province.

Other hashtags like #PhuketSchool, #ChulalongkornSchool, #BangkokChristianCollege, #MarySchool, #KasetsartUniversityDemonstrationSchool, #SriAyudhyaSchool, which mention various schools, could relate to news, activities, or educational issues, even though these institutions are located elsewhere.

5.1.2 Monthly mention frequency on social media platforms

The data analysis by Mandala AI from March 24, 2024, to April 22, 2024, showed that Facebook consistently had the most mentions, especially on April 9 and 13, which had the highest mention frequency. Twitter showed fewer mentions but more consistent than other platforms, and TikTok had fewer but some mentions on certain days. There were no mentions on Instagram, YouTube, Pantip, Reddit, or other websites as shown in Figure 2. This increased mention may reflect events or activities within the municipality that caught the public's interest. These analyses assist Khon Kaen Municipality in understanding issues that

require further information and help in strategizing communication with the public more effectively. It also aids in planning events or responses to community needs efficiently. The analysis also explored sentiment analysis, indicating overall neutral sentiments, with smaller proportions of negative and positive sentiments, suggesting areas for municipal improvement and development in communication, policy, and activities to better meet the emotional and practical needs of the citizens.
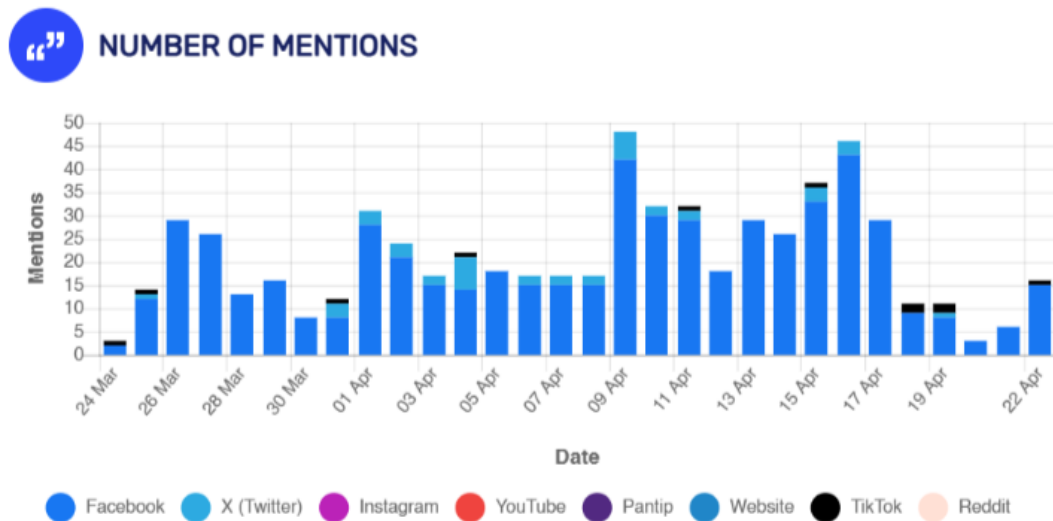

Figure 2: Mentions of Khon Kaen Municipality on Social Media Platforms Over a One-Month Period (Source: Mandala AI)

5.2 Optimal Posting Times and User Engagement on Social Media Platforms

Mandala AI's analysis of social media usage behavior within Khon Kaen Municipality has revealed clear patterns regarding the times when people prefer to publish content and when posts receive the most attention. This data is divided into two main parts: popular times for posting and times when user engagement is highest.

5.2.1 Popular posting times

On Facebook, the most popular time to post is at 16:00, with 74 mentions. On Twitter, the peak time is at 13:00, with 9 mentions, and on TikTok, it is at 10:00, with 2 mentions. This indicates varying preferences among users across different platforms and the times they are most likely to engage.

5.2.2 Best times for posting

Considering the volume of engagement, Facebook posts achieve the highest engagement at 21:00, with 9,723 interactions. Twitter posts peak at 16:00, with 4,553 interactions, and TikTok shows the most engagement at 07:00, with 291 interactions. This information is crucial as it allows the municipality to refine its communication strategies to align with times when public interaction with content is highest.

Khon Kaen Municipality can use these insights to schedule the publication of important news

or promotions and to plan community activities that aim to boost engagement and interaction, particularly during the times that have shown the highest levels of public interest according to the analyzed data.

5.3   Monthly Engagement on Social Media Platforms

Figure 3 illustrates the level of engagement across various social media platforms from March 24, 2024, to April 22, 2024. Overall, Facebook consistently shows high engagement, especially on April 15, where there was a significant spike in interactions, followed by Twitter, which shows fewer but consistent interactions, and TikTok, which shows sporadic engagement. There were no interactions noted on Instagram, YouTube, Pantip, Reddit, or other websites. The increased engagement on Facebook on April 15, during the Songkran festival, reflects substantial public interest in Khon Kaen.
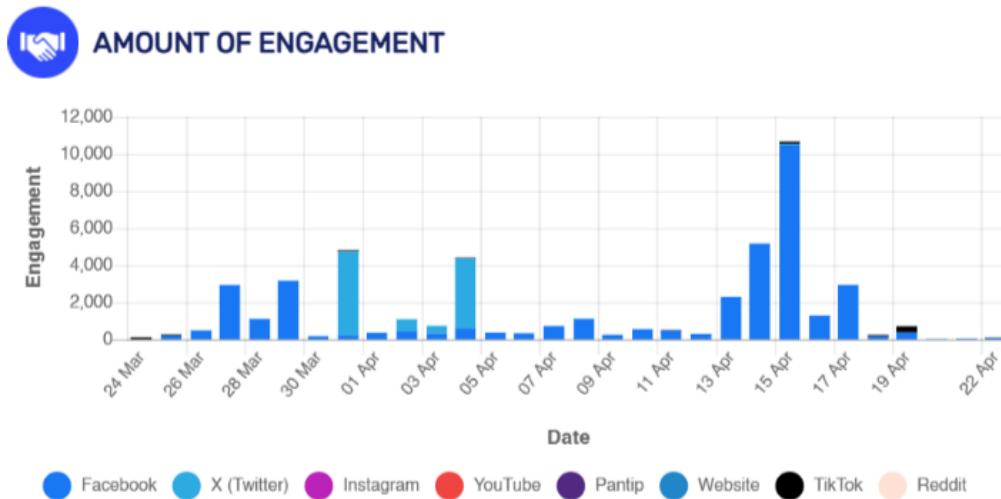

Figure 3: Volume of Engagement on Social Media Platforms Over a One-Month Period for Khon Kaen Municipality (Source: Mandala AI)

5.4   Sentiment Analysis

Sentiment analysis through Mandala AI categorizes emotions expressed in posts into three types: negative, neutral, and positive. The results show 1.59% negative, 79.46% neutral, and 18.95% positive sentiments. Most mentions exhibited a neutral tone, which might reflect a general neutrality in the expression of information or messages without clear emotional content. In contrast, both positive and negative sentiments were significantly less prevalent. Khon Kaen Municipality should continuously monitor and analyze these sentiments to enhance and develop policies, communication, and activities to better meet the needs and emotions of the citizens.

5.4.1   Negative sentiments

Negative sentiments (1.59%) were analyzed and found in 10 instances, involving content related to events like fires, rising vegetable prices, and issues with infectious waste management. This data reflects the usage of social media and people's reactions during such times

within the municipality, particularly regarding incidents related to the local government, such as:

- Posts about fire incidents causing damage to property and affecting the lives of citizens.

- Posts about rising agricultural product prices in the Bang Lamphu market in Khon Kaen.

Khon Kaen Municipality can use this information to review and assess situations within the municipality that may impact citizens' emotions and feelings, as well as to improve and check safety measures and emergency preparedness. This also enables the municipality to enhance the efficiency of communication and provide timely and clear information about such incidents to the public.

5.4.2 Neutral sentiments

Neutral sentiments (79.46%) were noted in 424 mentions during this period, with the distribution of content on Facebook being the highest at 382 mentions, followed by Twitter at 34 mentions, and TikTok at 8 mentions. Popular neutral content on Facebook related to municipal activities covered various cultural events, entertainment events, and significant social events, such as:

- Posts about Miss Universe Thailand.

- Posts promoting the MONO29 KHON KAEN SONGKRAN WET & FUN 2024 event, highlighting the fun of the Songkran festival.

- Posts discussing the number of participants in the Songkran festival in Khon Kaen.

Sharing this information helps inform people about activities within the municipality and raises awareness of local events. This content can serve as an indicator to assess community engagement and interest in different events, allowing Khon Kaen Municipality to evaluate the impact of these events on the community and to plan future activities efficiently to foster better participation and interaction.

5.4.3 Positive sentiments

The data analysis revealed a total of 114 mentions expressing positive sentiments (18.95%) during this period. Facebook dominated with 105 mentions, followed by Twitter (referred to as X) with 8 mentions, and TikTok with 1 mention. The content that garnered popularity related to the celebration of the Songkran festival on Khao Niew Road in Khon Kaen. Songkran, an important traditional Thai New Year festival, involves people gathering on Khao Niew Road to joyfully participate in water play, a gesture of goodwill and happiness for the upcoming year. According to the data, more than 150,000 tourists participated in this event, indicating its popularity and positive reception. This significant participation not only boosted tourism but also benefitted the local economy.

- The posts that reflected these positive aspects included:

- Posts that shared images from the Songkran festival, which received numerous likes and comments, showcasing the success and enjoyment of the event.

- Posts promoting the MONO29 KHON KAEN SONGKRAN WET & FUN 2024 event, which encouraged celebration and participation.

- Posts about local economic activities.

These posts highlight the positive aspects of life in the Khon Kaen community, showing public interest and support for cultural and social events. They contribute to creating a favorable atmosphere for communal living within the municipality.

6   Conclusion and Discussion

This study has provided valuable insights into the utilization of social listening tools (SLTs) for analyzing public opinions on urban issues within Khon Kaen Municipality. The findings highlight the profound impact of digital platforms in facilitating a more inclusive and dynamic dialogue between the public and local government. By leveraging SLTs to monitor and analyze discussions on social media platforms such as Facebook, Twitter, and TikTok, local governance can better understand and respond to the concerns and needs of its citizens.

The research revealed that Facebook remains the dominant platform for discussions related to urban issues in Khon Kaen, capturing a significant majority of user engagement and mentions. This underscores the importance of this platform in disseminating information and engaging with the community. Meanwhile, Twitter and TikTok, while less utilized, still play crucial roles in specific demographics or issue-specific dialogues. The data collected and analyzed through Mandala AI provided a clear indication of how different platforms serve various aspects of community engagement.

One of the key observations from the study is the timing and nature of interactions. Posts at certain times of the day received more engagement, suggesting optimal times for the municipality to release important announcements or engage in conversations to ensure maximum visibility and interaction. The sentiment analysis component of the study also offered important insights. While the majority of the sentiments were neutral, the presence of both positive and negative sentiments provides a nuanced understanding of public opinion that can be instrumental for policy adjustments and responsiveness. Positive sentiments were often tied to cultural celebrations and local events that unite the community, suggesting that these are areas where the municipality excels. Conversely, negative sentiments related to specific incidents or municipal issues indicate areas needing attention and improvement.

This study's implications extend beyond just operational adjustments in communication strategies. They touch on strategic governance enhancements, where insights derived from social listening can inform policy making, crisis management, and community relations. The ability to preemptively address issues, gauge public sentiment, and tailor communications based on real-time data can transform local governance into a more proactive, responsive, and citizen-centric entity. Moreover, the research contributes to the academic literature by demonstrating the practical applications of SLTs in a municipal context, aligning with global trends towards more digital and transparent governance. While the analysis of public

opinions using SLTs provides valuable insights, we acknowledge the limitation of a one-month data collection period. Typically, a longer period, such as one year, is recommended to capture time series trends and account for seasonal biases. Our one-month data was chosen to coincide with key municipal activities like the Songkran festival, allowing a concentrated view of public opinions during high social media activity. However, this approach limits the ability to analyze long-term trends. For future research, it recommends extending the data collection to at least one year to encompass more events and reduce potential biases. It could also expand on this foundation by exploring longitudinal impacts of SLTs on policy making and public trust, comparing multiple municipalities, or integrating more advanced analytical tools to deepen the understanding of social media dynamics.

7   Implications

The findings from this study are particularly pertinent for local governments aiming to enhance engagement and service delivery. By adopting a proactive approach to social listening, municipalities can not only improve their responsiveness but also foster a greater sense of community and belonging among citizens. This research also serves as a call to other municipalities to consider the strategic integration of digital tools in everyday governance, ensuring that the voices of their communities are not just heard but actively incorporated into the governance process. Overall, this study underscores the transformative potential of social listening in enhancing the adaptability and effectiveness of local governance, ultimately contributing to a more informed and engaged public sphere.

Acknowledgement

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