



MINING CITIZEN FEEDBACK DATA FOR ENHANCED LOCAL GOVERNMENT DECISION-MAKING



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PROGRAM AREA: ECONOMIC WELL-BEING

SUMMARY

Like many middle-income countries, decentralisation is a national priority in Indonesia. As their administrative responsibilities and fiscal resources have increased, local governments have sought better evidence to inform policy. In this project, Pulse Lab Jakarta explored the contribution of advanced data analytics to local government decision-making by generating insights from a combination of existing complaint systems and passive feedback from citizens on social media. The results demonstrate the potential utility of (a) near real-time information on public policy issues and their corresponding locations within defined constituencies, (b) enhanced data analysis for prioritisation and rapid response, and (c) deriving insights on different aspects of citizen feedback. The publication of citizen feedback on public-facing dashboards can enhance transparency and help constituents understand how their feedback is processed.

BACKGROUND

Following the *Reformasi* movement, initiated in 1998, democratisation and decentralisation are central components of the Government of Indonesia's policy platform. With greater administrative responsibilities and increased democratic accountability, local governments are looking for methods to collect and understand citizens' opinions on public services and local development.

Two citizen feedback systems exist for local governments; one managed by the central government and the other initiated by sub-national administrations. LAPOR! (www.lapor.go.id) is the national complaint system in Indonesia to which a citizen can report any complaint in Indonesian, either via SMS or the internet. LAPOR! is designed to improve accountability and, in time, the quality of public services. Many local governments operate their own SMS-based citizen feedback mechanisms alongside LAPOR!.

In addition to formal citizen feedback mechanisms, social media platforms contain vibrant discussions within and between communities on issues of concern. An opportunity exists to supplement formal feedback with the passive feedback contained within public discourse on Twitter.

For this project, Pulse Lab Jakarta combined data on citizens' opinions from Twitter, LAPOR! and a local SMS-based feedback mechanism to provide structured insights for local decision-makers. Nusa Tenggara Barat (NTB) province, one of Indonesia's poorest regions, was the focus of this initiative due to the provincial administration's interest in new approaches to public governance and due to the fact that it had been a major beneficiary of the Australia Indonesia Partnership for Decentralisation.

DATA ANALYSIS OF MULTIPLE SOURCES OF CITIZEN FEEDBACK

Three data sources were used for this project: two datasets from two active citizen feedback platforms (national- and provincial-level systems) and public posts on Twitter, which passively captures citizens' opinions on local issues. When multiple types of data are combined, for example active and passive feedback from citizens, it is expected that a fuller picture of public opinion is available to decision-makers.

Electric power continuity is a major development issue in NTB province. The following example presents different perspectives on the issue and highlights the value of multiple data sources.

TWITTER *"The power outage happened at dawn, electricity was restored at 2PM and yet now the outage happens again, PLN [the electricity company in Indonesia] does not understand."*

LAPOR! *"The power outage happens six times a day in Mataram, Nusa Tenggara Barat. Although, the duration of the power outage is less than a minute, it is really disturbing our activities and might break our house appliances. Need PT PLN attention to solve this problem."*

SMS GATEWAY *"Why do power outages frequently happen after the change of the Regent?"*

In order to prepare the datasets relevant to NTB province, the geospatial information of each message was used to determine if a tweet was posted in NTB. The Twitter dataset was further refined by removing spam and other irrelevant tweets. Following this process, a combined total of over 92,000 messages were structured by 1600 filtering rules using over 350 keywords, which were informed by the ten national development priorities.¹

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¹ The ten national priorities include food sufficiency, energy, maritime development, infrastructure and transportation, education, health, poverty alleviation, bureaucratic reform, tourism, and industry.

	Twitter	LAPOR!	SMS
Num. of msg. used	91,995	171	115
Timeline	June 2013-Dec 2014		Oct 2013

Table 1: Number of messages used for this project and their date of submission.

The next step involved the application of several analytical methods including volume analysis, text analysis, locational analysis, topic detection and anomaly detection, among others.

INSIGHTS & OUTCOMES

Visualising changing trends in the volume of messages provides an easy way to understand popular priorities and concerns in near real-time. In June and July 2013, a spike in comments and messages about poverty alleviation, in particular regarding the unequal distribution of a social protection programme, was identified along with locational information on where citizens raised the issue (see Figures 1 and 2). The locational information in particular proved useful to the NTB administration in planning its response.

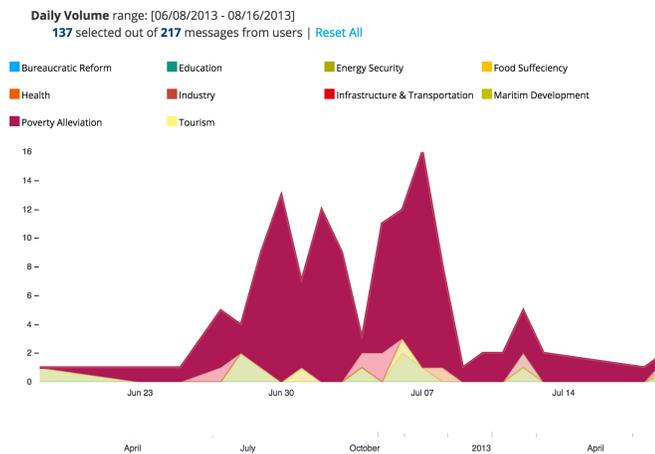


Figure 1: Dynamics of the volume of LAPOR! by the 10 national priorities



Figure 2: A visualization based on the ten cities/regencies within the province (the darker the colour, the higher the density of messages classified as Poverty Alleviation)

Some issues are inherently coupled, requiring multiple authorities to investigate and respond. The dashboard used word co-occurrence analysis to identify linked problems. Some examples of issue coupling included:

FOOD SUFFICIENCY AND ENERGY SECURITY (TWITTER)

“The brown rice and broccoli prices go up following the increase in fuel price”

HEALTH AND POVERTY ALLEVIATION (LAPOR!)

“Dear health minister, I have suffered heart disease for 14 years. Is there any way for poor people to receive free surgery? Is there any possibility that the surgery will be free in future?”

A volume analysis gives a good snapshot of current issues raised by citizens, but when the volume of messages is high across many issue areas policy-makers cannot easily determine which issues to prioritise. A simple but automatic anomaly detection method based on a dynamic threshold value was applied to the database in order to identify automatically sudden spikes. For instance, a sudden volume change on Government Aid (“Bantuan Pemerintah”) was identified, as shown in Figure 4, enabling prioritisation by decision-makers.

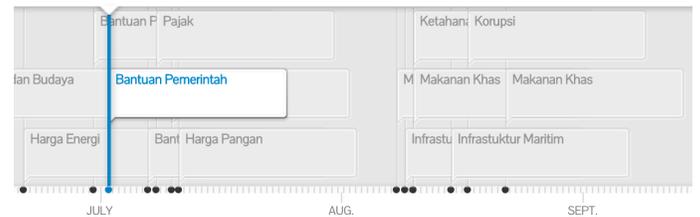


Figure 4: The dashboard automatically highlights priority issues

CONCLUSIONS

This project demonstrated the potential of using multiple sources of near real-time information for decision-making in local government, especially the value of combining active citizen complaints with passive opinions expressed via social media.

The visualisation of complex datasets enables non-technology literate officials to process citizens’ feedback at low cost and at scale, as well as to prioritise trending issues based on enhanced data analysis.

The project highlights the potential of existing datasets, but also the need to integrate new information management systems into national and local governance. It represents another step towards realising the potential of networked governance in Indonesia.

IMPLICATIONS & RECOMMENDATIONS

- Social media captures a richer array of issues than formal complaint mechanisms and should be considered an essential source of citizen feedback.
- It is advisable that provincial administrations consider integrating real-time data from their formal feedback systems into the dashboard, as opposed to mining historical data.
- The integration of additional data sources should also be considered when designing dashboards.
- Whenever possible, provincial administrations should publish this type of citizen feedback dashboard in order to enhance transparency and to help constituents understand how their feedback is processed.