Crowdsourcing citizen feedback on district development in Ghana using interactive voice response surveys

Ciana-Marie Pegus
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Acknowledgements
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Executive summary

In mid–2015, VOTO Mobile, in partnership with the Ghana Center for Democratic Development (CDD–Ghana), applied to Making All Voices Count for a practitioner research and learning grant.

VOTO Mobile is a Ghanaian tech company and social enterprise. One of the tools it uses is the interactive voice response (IVR) survey. This entails survey respondents being called on their mobile phone and prompted by pre–recorded messages to respond to questions by pressing buttons on the phone. The results are stored on a database.

CDD–Ghana is a non–profit organisation focusing on good governance. It has worked with the United Nations Children’s Fund (UNICEF) to develop the District League Table (DLT), a tool for measuring and highlighting discrepancies in local government service delivery in different sectors.

Their research set out to examine:

• whether VOTO Mobile’s IVR methodology would be suitable for gathering data for future editions of the DLT

• how far the DLT reflected the priorities of Ghanaian citizens

• how IVR could be adapted to maximise the response rate of rural women.

This practice paper describes the research, its findings and its implications. It also reflects on the challenges facing a tech provider and a civil society organisation (CSO) in working together to develop tools for citizen engagement in local government monitoring.

Key themes in this paper

• How can tech providers and CSOs work together to collect useful, cost–effective data on local government services from a citizen perspective?

• To what extent can crowdsourced citizen feedback about development priorities help to make tools for monitoring local government more effective?

• How can methods for crowdsourcing citizen data engage the hardest–to–reach citizens?
Setting the scene for practitioner learning

Making All Voices Count is a citizen engagement and accountable governance programme. Its Research, Evidence and Learning component, led by the Institute of Development Studies (IDS), focuses on building an evidence base on what works in technology for voice, transparency and accountability, how it works, and why (McGee, Edwards, Minkley, Pegus and Brock 2015). Through practitioner research and learning grants, IDS gives tech for transparency and accountability practitioners funding of around £25,000, and mentoring support. This provides them with the space and capabilities to explore key questions that will enable them to better implement their governance projects. It is hoped that this real-time applied research will contribute to project learning and improved practice.

The practitioner research and learning grants support grantees to form their own learning and judgements, and the development of the Making All Voices Count practice papers series is part of this process. Practice papers document the practitioner research and learning processes from the perspectives of both the grant recipients and the fund managers. They situate the research findings and the reflective processes which led to them in contemporary debates in the field of transparency and accountability.

Making All Voices Count practice papers are co-produced and intended to prompt critical reflection on key learning questions. The Making All Voices Count–IDS team does not proscribe research questions and methods; rather, it encourages grant recipients to explore questions that they believe are of importance to the implementation of their project. Some of the practitioner research is embedded in Making All Voices Count’s innovation and scaling grants, which are curated and managed by Ushahidi and Hivos.

In mid-2015, VOTO Mobile, in partnership with the Ghana Center for Democratic Development (CDD-Ghana), applied to Making All Voices Count for a practitioner research and learning grant. VOTO Mobile is a Ghanaian tech company and social enterprise. CDD-Ghana is a non-profit organisation focusing on good governance. The VOTO Mobile/CDD-Ghana research had two key questions:

1. How far does the District League Table (DLT) tool reflect the priorities of Ghanaian citizens?
2. Which characteristics of VOTO Mobile’s interactive voice response (IVR) surveys maximise the response rate of rural women?

Through this collaborative research process, VOTO Mobile and CDD-Ghana also wanted to learn how best to work together, and whether the IVR methodology would be suitable for gathering data for future editions of the DLT. VOTO Mobile wanted CDD-Ghana to understand and engage with the VOTO Mobile platform and IVR technology, and to understand its uses and limitations.

This practice paper describes:

- the VOTO Mobile platform and the DLT
- why VOTO Mobile and CDD-Ghana sought answers to their research questions, and how they went about getting them
- the issues which emerged from working together
- the results and implications of their research.

VOTO Mobile/CDD-Ghana’s research questions

1. How far does the DLT tool reflect the priorities of Ghanaian citizens?
2. Which characteristics of VOTO Mobile’s IVR surveys maximise the response rate of rural women?
VOTO Mobile, CDD-Ghana and the District League Table

VOTO Mobile is a Ghana-based tech start-up and social enterprise. It sees its role as “making it easy for businesses, governments and non-governmental organisations (NGOs) to share information and gather feedback through interactive SMS (short message service) or voice calls in local languages – using mobiles to instantly reach across distance, language and literacy barriers”. Its mission is “to increase participation and accountability in the services delivered to citizens, and to empower communities to collect and share information to drive positive social change”.

VOTO Mobile’s platform has been used for a range of purposes including delivering information on prenatal care, election monitoring and national polls. One of the tools it uses is the IVR survey, in which survey respondents are called on their mobile phone, and pre-recorded messages prompt them to respond to questions by pressing buttons on their phone. The results are then stored on a database.

CDD-Ghana is a non-profit organisation dedicated to the promotion of society and government based on the rule of law, appropriate checks on the power of the state, and integrity in public administration. Its mission is to promote democracy, good governance and economic openness in Ghana and Africa. CDD-Ghana has worked with the United Nations Children’s Fund (UNICEF) to develop the DLT, a tool for measuring and highlighting discrepancies in district development. The DLT is a tool that ranks Ghana’s 216 districts by their level of development according to six sectoral indicators, which are shown in Table 1.

The index is compiled using publicly available administrative data on metropolitan, municipal and district assemblies, although not all the data have been updated annually (UNICEF and CDD-Ghana 2015b). Information provided by the Ministry of Local Government and Rural Development, the Ministry of Education, the Ghana Education Service, the Ministry of Health, the Ghana Health Services, the Community Water and Sanitation Agency, the Ghana Water Company Ltd, the Ghana Police Service and the Ghana Statistical Service was used to produce the index (UNICEF and CDD-Ghana 2015b).

The DLT states that it does not measure the performance of districts in the six sectors, but rather it looks at the state of development in them. It emphasises that districts that perform poorly should have resources and support channelled to them (UNICEF and CDD-Ghana 2015b). This recognises that some districts – especially in the north of Ghana – are much less developed and less well resourced than others, and therefore do not score highly in the index.

Table 1: Sectors and indicators in the DLT

<table>
<thead>
<tr>
<th>Sector</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Education</td>
<td>Pass rates in the four core Basic Education Certification Examination subjects</td>
</tr>
<tr>
<td>2 Sanitation</td>
<td>Certified as ‘open defecation free’</td>
</tr>
<tr>
<td>3 Water</td>
<td>Coverage of rural water supply</td>
</tr>
<tr>
<td>4 Health</td>
<td>Delivery with skilled attendant</td>
</tr>
<tr>
<td>5 Security</td>
<td>Number of people covered by one police person</td>
</tr>
<tr>
<td>6 Governance</td>
<td>Minimum conditions for District Administration³</td>
</tr>
</tbody>
</table>

Source: UNICEF and CDD-Ghana (2015a)

³ The governance dimension is measured by whether districts meet the requisite legal, political, fiscal and administrative requirements outlined by the Functional Organisational Assessment Tool, developed by the Ministry of Local Governance and Rural Development.
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It is time-consuming, costly and complicated ... to obtain up-to-date information and feedback from citizens that can be used to plan, implement and monitor development interventions. This is one reason why indices like the DLT tend to use readily available datasets, rather than attempting to incorporate citizen feedback.

Working together to test a new data collection method for the DLT

It is time-consuming, costly and complicated for government officials, civil society organisations (CSOs) and other service providers to obtain up-to-date information and feedback from citizens that can be used to plan, implement and monitor development interventions. This is one reason why indices like the DLT tend to use readily available datasets, rather than attempting to incorporate citizen feedback.

VOTO Mobile, with CDD-Ghana, wanted to compare DLT data with the opinions of citizens. According to the final narrative report on the research, they were “interested to see whether or not crowdsourced citizen feedback about development priorities could help ensure DLTs correspond with and are responsive to citizens’ development priorities.

VOTO Mobile sought to collect and analyse both active and passive data: feedback on government surveys, and the different ways that rural women responded to different survey treatments.

The research set out to determine:

- the best methods for using IVR to improve rates of engagement with rural women
- the extent to which the DLT results correlate with a crowd-sourced method of getting inputs about citizen priorities.

VOTO Mobile’s final research report (unpublished 2016).
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How did the IVR survey work?

CDD-Ghana has significant experience in designing surveys that are delivered by enumerators – for example, it has managed several waves of Afrobarometer’s opinion polls⁵ – but it had not used VOTO Mobile’s IVR survey service before. After testing alternative versions of three questions in a mini-pilot, VOTO Mobile and CDD-Ghana elected to go with the questions with the lowest drop-off rates.

VOTO Mobile and CDD-Ghana decided to ask questions on citizen satisfaction with the six DLT sectors, asking how ‘happy’ participants were with the services received in their district in each sector. On governance, the survey also sought to get more in-depth information about the frequency of the meetings convened by assembly officials. It asked citizens to rank the relative importance of key services and assess which services needed to be improved the most in their area. It also asked respondents whether they believed they were heard or not.

Survey implementation

The survey was deployed between April 16 and May 10, 2016. IVR calls went out to a random sample of mobile-phone-owning Ghanaians. VOTO Mobile conducted IVR polls in all regions in Ghana, and reached out to rural and urban respondents.

- Interactive voice response
  IVR technology uses pre-recorded audio files to present the survey questions. The respondent experience starts with a phone call arriving on their mobile phone. They pick up the call and are prompted to select a language in which to continue (e.g. “For English, press 1”). The respondent then hears the questions spoken aloud and indicates responses by pressing digit(s) on the keypad of their phone.

- Recruitment of respondents
  Respondents were recruited through random digit dialling, which generates random numbers conforming to Ghana’s mobile phone network numbering scheme and sends the calls out to them. This creates a completely random sample, with each SIM (subscriber identity module) card in Ghana having an equal chance of being selected for participation. Respondents do not need a smartphone.

- Language
  IVR audio files can be recorded in any language desired. This survey offered the option of choosing any of Twi, English, Ewe, Hausa, Dagbani or Gonja.

- Survey flow
  Respondents were asked sets of questions on: (1) demographics, including regional information; (2) their priorities for public services; (3) their satisfaction with public services; (4) civic participation; and (5) the DLT. Finally, they identified their district and heard a closing message.

- Data collection
  Numbers were dialled between 08:00 and 20:00 on all days of the week. A user who missed the call could call back and still access the survey. Every interaction was logged and stored on VOTO Mobile’s software system. This included the time the phone call was made, whether it was picked up, for how long the respondent listened and what answer they provided for each question. A complete response to the survey took an average of eight minutes.

Source: VOTO Mobile’s final research report (unpublished 2016)

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⁵ The Afrobarometer polls are public attitude surveys on democracy, governance, economic conditions and related issues, conducted in Africa.
Survey findings

The VOTO Mobile survey received a number of responses from different regions, ranging from 327 in the Northern Region to 472 in the Volta Region. Over 50% of respondents were from rural areas, and a third were female.

What increases the response rate of rural women?

VOTO Mobile gained insights into the factors that led rural female respondents to complete the survey through a randomised experiment with two variants, known as A/B testing. Through switching the order of language options, the gender of the recorded voice, the time of day of the call, the inclusion of encouraging messages and the number of response options, VOTO Mobile could get data on the effect these different factors had on respondent behaviour overall, and in particular on rural women. The two biggest factors that led to increased female participation were making calls in the evening or afternoon, and offering a choice of popular languages first. A summary of VOTO Mobile’s experiments on the characteristics of the survey is shown in Table 2. Afterwards, VOTO Mobile staff reflected that these numerous and technically complex experiments on increasing the participation of rural women were highly beneficial, but time-consuming.

Table 2: The tests and their impact on response rates

<table>
<thead>
<tr>
<th>Test</th>
<th>Impact on response rates overall</th>
<th>Impact on rural female participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender of the voice heard</td>
<td>Response rates were a statistically significant 22% higher with a female voice than with a male voice.</td>
<td>No statistically significant impact on rural female participation.</td>
</tr>
<tr>
<td>Order of languages in the language selector</td>
<td>A statistically significant 26% increase in choosing a language (17.4% versus 13.9%) when users were presented with the primary languages first. However, after this step there was no impact on survey completion rates.</td>
<td>The portion of respondents who are rural women was a statistically significant 28% higher when the language order was primary first and secondary last.</td>
</tr>
<tr>
<td>Time of day of call</td>
<td>Calls in the morning or afternoon were slightly more likely to have complete responses than those in the evening. The increase was 11–14% and was statistically significant. There was no difference in response rates on weekdays versus weekends.</td>
<td>Calls in the morning had a statistically significant lower portion of respondents who were rural women. There were 33% more rural women in evenings compared to mornings and 42% more in afternoons compared to mornings.</td>
</tr>
<tr>
<td>Encouragement message to women to complete the survey</td>
<td>No impact</td>
<td>No impact</td>
</tr>
<tr>
<td>Offer an encouraging message to finish with four questions remaining</td>
<td>The encouragement message resulted in a small but statistically significant 3.3% increase on response rates.</td>
<td>No positive impact on rural female participation. In fact, the absolute impact was a 9% decrease in their participation.</td>
</tr>
<tr>
<td>Offering three or four response options in a Likert scale</td>
<td>No statistically significant impact.</td>
<td>The lower number of options had a statistically significant effect on increasing the response rate of rural women. The 14% increase in rural female members of the final sample may indicate that simpler, shorter texts are particularly important to this group.</td>
</tr>
</tbody>
</table>

Citizen priorities and perspectives on services, and correlation with the DLT

In terms of overall satisfaction with the six DLT sectors, the survey revealed that Ghanaians were mostly unhappy with the services provided to them, showing particular discontent with sanitation. Between 45% and 51% of all respondents were not happy with the assembly’s overall performance, educational performance in their district, health care (including the availability of birth attendants and the accessibility of clinics), the number of police personnel and access to clean water.

**Figure 1 Happiness of respondents with the six DLT sectors**

<table>
<thead>
<tr>
<th>Access to clean water</th>
<th>Security</th>
<th>Health care</th>
<th>Sanitation</th>
<th>Educational performance</th>
<th>Assembly performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>Not happy</td>
<td>No strong opinion</td>
<td>Happy</td>
<td>Not happy</td>
<td>Happy</td>
</tr>
</tbody>
</table>

These aggregated findings are not particularly illuminating in and of themselves, but they are intended to be indicative of the type of information on citizen satisfaction that can be gleaned through the IVR methodology. Longitudinal data on citizen satisfaction on these dimensions could be useful as a monitoring tool if collected and analysed at the district level.

As for the issues that citizens thought were priorities, both rural and urban citizens believed that it was important to improve education and health, but people living in rural areas accorded these issues a higher priority, along with improving the supply of water. Citizens living in urban areas attached more importance to sanitation, governance and security than rural respondents.

In its report to Making All Voices Count, VOTO Mobile assessed the extent to which the results of the IVR and the DLT correlated for four of the six sectors – health, education, water and security. According to these findings, there was a very slight district-by-district correlation between the DLT and IVR survey results in the fields of education and water. However, the DLT’s data did not correlate with VOTO Mobile’s results on health and security. In fact, there would have been more correlation between the DLT results and a dataset in which data points were selected at random. VOTO Mobile interpreted these results to mean that the indicators used by the DLT are not always good predictors of citizen satisfaction for these sectors.

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6 Sanitation and governance were not analysed, as both of these are ‘yes–no’ questions on the DLT. Accordingly, VOTO Mobile felt it made little sense to determine the level of correlation between the IVR survey and the DLT in these sectors. For sanitation, the DLT looks at whether the district is certified as ‘open defecation free’, but according to the data from the 2015 DLT, no district achieves this. For governance, the DLT measures whether a district complies with the minimum legal, administrative and fiscal conditions to effectively administer the district; according to the 2015 DLT, all districts met the minimum criteria.
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Through IVR and surveys, VOTO Mobile believes that it can provide cost-effective information to key decision-makers quickly, in theory enabling them to make more grounded decisions. However, this is contingent on data that are intelligible, actionable, trustworthy and relevant, and decision-makers that are willing and able to allocate resources based on the data received.

Putting the research process and findings into context

Political decentralisation in Ghana was initiated under the military dictatorship in 1988, but was enshrined in the constitution in the newly democratic country in 1992. Article 35(6)(d) underscores the role of fiscal and administrative decentralisation in strengthening democracy and enhancing citizen participation in local decision-making (Republic of Ghana 1992). The mandate of district assemblies in Ghana is expansive, and they are, by and large, severely under-resourced (Hoffman and Metzroth 2010).

At present, the District Development Facility is the primary source of revenue for districts. The District Development Facility has instituted a mechanism to assess the needs of districts and to track the efficacy of the use of these resources. Allocations are based on needs and performance following a yearly assessment of each metropolitan, municipal and district assembly, conducted using the Functional and Organisation Assessment Tool (SEND Ghana 2016). The DLT is intended to add to this process by highlighting districts where resources are needed and incorporating dimensions on the quality of services received. VOTO Mobile is currently engaged in advocacy work to include information on citizen satisfaction as a component of assessing the performance of districts and determining citizen needs.

The challenge of determining citizen priorities and the potential of IVR

In Ghana, as in most countries, there is no systematic or easy way to provide inputs on citizen satisfaction and preferences to decision-makers. In the past, there have been sporadic consultations with established CSOs on big issues such as constitutional reform (Mohammed 2015), but it remains particularly challenging to crowdsource feedback from marginalised groups. Data collection in Ghana is complex due to disperse rural populations, limited resources and varied levels of literacy (Lerer, Ward and Amarasinghe 2010). Household surveys are expensive and irregular, and in-person surveys mean that enumerators need to be trained, making this data collection mechanism less scalable and useful (Ibid.)

Data from Round 6 of the Afrobarometer survey indicates that there is little incentive for citizens to share their opinions with government officials. 1,142 of 2,400 respondents (47.6%) thought that
members of parliament never listen to what ‘people like them’ say, with 916 of 2,400 (38.2%) believing that local councillors never listen to them (Afrobarometer 2016). 72% of the sample said they never contacted local government officials with their problems or to share their views, with an even larger number of the surveyed population believing government officials to be corrupt and untrustworthy.

Through IVR and surveys, VOTO Mobile believes that it can provide cost-effective information to key decision-makers quickly, which in theory would enable them to make more grounded decisions. However, this is contingent on data that are intelligible, actionable, trustworthy and relevant, and decision-makers that are willing and able to allocate resources based on the data received.

The limits of IVR
In this research, the survey design process took far longer than anticipated. The survey went through eight different iterations and had to be tested three times. VOTO Mobile has knowledge on how to administer mobile surveys, and how to best get responses through IVR polls, but CDD-Ghana – with good reason – initially wanted to ask questions that closely aligned with the DLT. Practically, this meant a choice between asking respondents “how satisfied are you with the number of police officers in your districts?” rather than “how safe do you feel in your district?”.

After A/B testing showed that the latter approach led to lower drop-off rates, CDD-Ghana agreed to use the broader questions.

The delivery method of a survey shapes its parameters. IVR surveys require respondents to listen, understand and remember questions and then make decisions based on options they are presented with, which they must hear, understand and remember. As such, IVR is constrained by the limits of human cognition and short-term memory, in a way that household surveys or online surveys are not (Miller 1956). Long, complex or pointed questions and response options may lead to respondent confusion and frustration, and they may choose to discontinue the survey. As with all technologies, IVR needs to be considered from the user perspective (De Lanerolle, Walker and Kinney 2016).

VOTO Mobile understands how to get intended users to engage with its tool. Through this research, it learned that a better approach would be to reframe conversations with CSOs on survey design from “what questions do you want to ask?” to “what information do you want to collect?”, as the latter gives VOTO Mobile more leeway to develop an IVR-appropriate script.

Towards better collaboration between tech providers and CSOs
By working together, VOTO Mobile and CDD-Ghana wanted to see if they could collect data on district services from a citizen perspective in a rapid, cost-effective manner to feed into the DLT. The parameters of the DLT are established by UNICEF and CDD-Ghana, and given computational challenges as well as the need to get district buy-in to the index, it is unclear whether and how data gathered on citizen satisfaction by VOTO Mobile can supplement or contribute to it. However, this pilot yielded many valuable lessons for VOTO Mobile and CDD-Ghana, and other practitioners more broadly.

As a result of this research, VOTO Mobile is using passive data on user interaction and behaviour to tweak its approach to IVR, including changing the voice of the audio recording to female, calling in the evening or afternoon to reach rural female respondents, and designing opinion questions with simpler and fewer response options. VOTO Mobile sees data on patterns of participation as highly valuable information that contribute to adaptive management and evidence-informed programming.

In its final report, VOTO Mobile noted that there was “a greater need for ongoing collaborations between technology providers and CSOs, and potentially the need to create opportunities for
CSOs to learn about and test various technologies that could enhance their work. As a result of this collaboration, we have been able to continue our own organisational learning with respect to how we can most effectively communicate with first-time users of mobile surveys.\footnote{VOTO Mobile’s final narrative report (unpublished 2016).} The co-founder of VOTO Mobile, Louis Dorval, even said that he would use this research process as an example of how to adjust and translate in-person surveys in future design processes with CSOs.

Other Making All Voices Count research underscores the need for much deeper, reflective collaboration between CSOs and tech providers (Ibid.), and this research was a valuable co-learning process, particularly given the promise of IVR as a cost-effective and scalable data-collection methodology.
References


Miller, G. (1956) ‘The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information’, Psychological Review 63.2: 81–97


About Making All Voices Count

Making All Voices Count is a programme working towards a world in which open, effective and participatory governance is the norm and not the exception. It focuses global attention on creative and cutting-edge solutions to transform the relationship between citizens and their governments. The programme is inspired by and supports the goals of the Open Government Partnership.

Making All Voices Count is supported by the UK Department for International Development (DFID), the US Agency for International Development (USAID), the Swedish International Development Cooperation Agency (SIDA) and the Omidyar Network, and is implemented by a consortium consisting of Hivos, IDS and Ushahidi.

Research, Evidence and Learning component

The programme’s Research, Evidence and Learning component, managed by IDS, contributes to improving performance and practice, and builds an evidence base in the field of citizen voice, government responsiveness, transparency and accountability (T&A) and technology for T&A (Tech4T&A).

About Making All Voices Count practice papers

The Research, Evidence and Learning component has produced a series of practitioner research and learning grants to support a range of actors working on citizen voice, T&A and governance to carry out self-critical enquiry into their own experiences and contexts. The main output of each grant is what the practitioner learns and applies to their own practice. Practitioners can also decide to produce their own written outputs. The purpose of the practice paper, written on completion of each grant, is to capture the essence of that learning process through a reflective dialogue between programme staff and funded partners, to share with a wider audience of peer practitioners and policy-makers.

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