

Preregistration: How Internet Outages Shape Public Opinion in Africa

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Abstract

Shutting down Internet connectivity has become a popular instrument for repressive governments to silence dissent and uprisings in a digitized world. While authorities seek to suppress opposition forces or protest activities by imposing Internet outages, we know little about how the public responds to such incisive measures. In this paper, I argue that Internet disruptions allegedly initiated by the government lower the public’s trust in the current leadership as citizens blame the government for the service outages. For the analysis, I combine fine-grained data on Internet outages with survey data from the Afrobarometer and apply an “unexpected event during survey design.”

1 Study Information

1.1 Title

How Internet Outages Shape Public Opinion in Africa

1.2 Author

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1.3 Research question

In recent years, the emergence of Internet shutdowns has become a popular instrument under autocratic rule to silence dissent and popular uprisings. Internet disruptions allow authorities to cut off information flows and hinder citizens to receive and exchange sensitive knowledge. Autocratic governments have thus good reasons to use Internet disruptions as a tool to control the public discourse aside from less invasive measures, such as online censorship or pro-government propaganda. While we know that Internet disruptions occur worldwide, we know little about how citizens respond to such drastic measures. Wong and Liang (2021) show, for instance, that digital censorship signals the government’s inability to handle controversial issues. As a response, citizens view their government as less competent. In this study, I argue that citizens lower their trust in the current leadership when Internet shutdowns were allegedly imposed by the government. In particular, I test whether Internet disruptions have consequences for trust in government institutions among citizens in African countries.

1.4 Hypotheses

The use of Internet shutdowns allows autocratic leaders to control and restrict the public discourse. As a consequence, citizens are (1) restricted in their access to information, and (2) limited in their communication with others. Citizens have thus good reasons to feel repressed in their digital media freedom. In turn, they should become less likely to trust government institutions which allegedly suppress the population.

Hypothesis 1 *The occurrence of Internet outages reduces trust in government institutions.*

In addition, I argue that the decline of trust is more prominent in the recent days following a network disruption. Citizens might be less likely to trust their leadership right after an outage event because the restrictions caused by network disruptions are still very present. With some time passing, however, citizens are then more likely to trust their current leadership again as the occurrence of an Internet outage is not as prominent anymore. Thus, I expect that

Hypothesis 2 *the negative effect of Internet outages on trust in government institutions is stronger in the days following the event and will decline over time.*

2 Data description

2.1 Dependent variable: Trust in government institutions

Data source Private Organizational Data - Internally collected data by an organization made available for academic purposes. I rely on the Afrobarometer (2020) which collects survey data on public attitudes in African countries. Collected data covers fieldwork from seven survey rounds from 1999 to 2018 in 34 countries (Round 7). In my study, I primarily focus on merged data from Round 7 of the Afrobarometer which can be accessed here <https://afrobarometer.org/data/merged-round-7-data-34-countries-2019>. The Afrobarometer relies on face-to-face interviews from individual respondents. Questions are standardized, so that comparisons across countries and over time are attainable. Data includes time stamps of interviews and information about the regional affiliation of respondents.

Codebook Codebook and documentation are available at https://afrobarometer.org/sites/default/files/r7_merged.codebook_final_14dec20.pdf.

Sampling and data collection procedures The sample of the Afrobarometer (2020) is designed to represent a cross-section of all citizens who are of voting age in a given country. Every adult is given the same chance to be selected for the survey. This is reached by using random sampling methods at every stage of the survey and by sampling proportionate to the population size. The Afrobarometer clusters a sample of 1200 interviews (or 2400 depending on the population size) per country on a sub-national level. Within each primary sample unit (PSU), which is the smallest unit for which data is available, eight households are randomly selected. One individual respondent is then drawn from each household. By this, the Afrobarometer ensures that more populated regions will have a higher probability to be selected in the sample.

Data inclusion/exclusion Round 7 of the Afrobarometer covers survey data from 34 countries.

Operationalization of variables I will use a set of different variables capturing “trust in government institutions”. The Afrobarometer asks respondents the following question: “How much do you trust each of the following, or haven’t you heard enough about them to say?” and provides a set of items to respond to. For my study, I focus on trust in (1) the president and in (2) the parliament/national assembly. The variables range from 0 (“Not at all”) to 3 (“A lot”). Respondents could also refuse to answer or decide not to comment on the question at all.

2.2 Independent variable: Internet outages

Data source Private Organizational Data - Internally collected data by an organization made available for academic purposes. Data on Internet outages can be derived from the Internet Outage Detection and Analysis (IODA) project (Center for Applied Internet Analysis, 2020). The project gathers data on network outages in near real-time through a set of detection mechanisms (global Internet routing, Internet background radiation and active probing). Data collection began in July 2016 and is available on a per minute basis until today. IODA dissolves data on Internet outages to the level of a country, a region or an autonomous system (AS). The data is publicly available and can be accessed via <https://ioda.caida.org/ioda/dashboard>. To facilitate data extraction, IODA provides an Application Programming Interface (API) through which I can download the data directly (Dainotti et al., 2018).

Codebook There is no codebook available. However, further information can be found here: <https://www.caida.org/projects/ioda/>.

Sampling and data collection procedures The IODA project collects data on Internet outages via a set of measurements: global Internet routing (BGP), Internet background radiation, and active probing. In each of these measurement sources, an Internet outage alert is detected when the current value of visible networks is lower than a critical fraction of a historical value for which data has been collected a priori.

Data inclusion/exclusion I only include Internet outages in countries mentioned in Round 7 of the Afrobarometer on a sub-national level. For this, I receive a list of regional identifiers from CAIDA to extract the desired data on the regional level. With regard to the time frame, I request data on Internet outages (1) where the start date lies within the survey wave (which is different for each of the 34 countries) and (2) three months prior to the survey wave in each country.

Operationalization of variables In line with my hypotheses above, I use (1) the occurrence of an outage event, and (2) the distance to an outage event in days (for this I will apply a set of different time frames).

3 Knowledge of data

Prior work based on dataset I have never conducted any research projects with the Afrobarometer or with data from the IODA project.

Prior research activity Prior to producing this document, I have inspected data from the Afrobarometer to find out about its coverage and structure. In particular, I check whether the sample size is large enough to receive meaningful results from the analysis (as I intend to split the sample into a treatment and control group, prior and after an outage event).

Prior knowledge of current dataset To my knowledge there has not been any research on public opinion in African countries through an external shock induced by network disruptions.

Moment of preregistration Registration prior to any research conducting a combined analysis of the Afrobarometer and IODA data.

4 Research design: Unexpected event during survey design

To capture the effect of Internet outages on citizens' trust in government institutions, I employ a difference-in-difference estimation. For this, I divide my sample of survey respondents into a treatment and a control group. Within each country, respondents who were interviewed before (pre-phase) and after the Internet was disrupted (post-phase) in their region are assigned to the treatment group. Individuals who took part in the survey in a region, which was not affected by the outage, are part of the control group.

4.1 Case selection

I include all countries covered in Round 7 of the Afrobarometer. The interviews have been carried out between September 2016 and August 2018.

4.2 Description of variables

Trust in government institution No further modifications.

Internet outages As IODA captures any network disruptions which fall under a certain threshold value, it is most likely that not all incidences of Internet disruptions have been allegedly installed by the government. In fact, network disruptions could be the result of power outages or other unknown external factors. To capture incidences linked to repressive measures, I only look at outages which last over a distinctively long period of time. For this, I will use a parameter value of different time frames to change the inclusion of outage events to my study. Also, I only consider outages which begin at least one day after the survey has started in the respective country, so that I am able to assign respondents to the pre-phase of the treatment group.

Furthermore, I cluster outages within one country: if multiple regions are affected by Internet disruptions lasting over the same period of time (with a difference of 24h at most), I assume that this is the "same" network disruption occurring in more than one region. Therefore, I assign outage identifiers to each specific Internet outage.

4.3 Model setup

Statistical model I will use an OLS model to estimate the effect of Internet outages on trust in government institutions. The unit of observations is the individual respondent on the regional level (first-order administrative division).

Fixed effects The baseline model is accompanied by (1) country- and (2) outage-ID-fixed effects.

Time depending variable To capture that the negative effect of Internet disruptions on trust is more prominent right after an outage event, I include a time depending variable measuring the distance to the outage event in days.

Placebo test Additionally, I employ a placebo test of Internet outages which should in theory be unrelated to changes in the public's trust. For this, I look at short Internet disruptions which are most likely a result of power outages. These incidences would then be unrelated to the government's actions and should therefore show no effect on trust.

References

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