

The Impact of Internet Shutdowns on Women in Uganda

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DEFENDING THE INTERNET

WITH DATA

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Executive Summary

This study is part of Internews' OPTIMA training fellowship on network measurement. The report is presented into two sections. The first analyzes data collected through network measurement tools and the second part investigates the impact of internet shutdowns on women in Uganda. Network measurement tools were incorporated to build the parameters for when the shutdowns occurred and/or continue to occur to provide evidence and existence of internet disruptions, and how it is that these affect women in Uganda. The report involves the use of OONI network measurement data on the blocking of social media and the internet before, during and after Uganda's 2021 elections. Also, Internet Outage Detection and Analysis (IODA) data and Google Transparency Report were used as data sources to identify internet outages that occurred amid and following the elections. Primary data was further collected using key informant interviews and social network analysis specifically from Twitter based on conversations and perspectives shared within the research period. This analysis aimed to highlight the perspectives of women, persons with disability, minority groups (LGBTIQ), activists, and refugees on internet shutdowns and further investigate how internet blockages and outages affected their livelihoods. This was able to show how internet shutdowns are a huge violation of women's rights online in Uganda.

Probed ISPs: MTN UG(AS20294), Airtel (AS36977), Uganda Telecom (AS21491), and Roke Telecom (AS37063).

Testing/analysis period: January 9 to February 20, 2021.

Key Findings

The findings show a relatively limited blockage of Instagram website, whereas WhatsApp was more consistently blocked from January 12 to January 18. Twitter appeared to have been fully blocked between January 12 and January 26, 2021, and partially blocked again between January 31 and February 5. Facebook was blocked across Uganda with brief reopening between January 19 and February 10, 2021. The analysis showed that three frequently used communications apps (Facebook Messenger, Telegram and WhatsApp,) presented signs of blocking between January 12 and February 20, 2021.

Female respondents reported limited internet access which affected conducting online businesses hence resorting to using more expensive means such as phone calls in order to continue providing services to clients during shutdowns. Data collected through this study suggests that internet shutdowns greatly impacted the business operations of women in particular. Some reported missing opportunities, as well as difficulty accessing market prices, conducting bank transactions, reaching customers and carrying out transactions between two parties, like the delivery of goods and services. Some respondents reported incurring additional cost to reach clients in long distances using phone calls. School going children failed to access the online reading materials which was a total setback for them. Access to electoral and political information were also limited during the elections period.

Introduction

Internet blockages and outages are becoming the new normal, especially in African countries with frequent news of government ordered disruptions - particularly during election periods and protests. Internet shutdowns are largely driven by political and national security concerns in many countries. It is important to note that internet shutdowns violate Article 19 of the International Covenant on Civil and Political Rights (ICCPR) which calls all states to ensure that internet access is maintained at all times, including during times of political unrest.¹

The use of the internet and related technologies is growing steadily in Uganda with 18.9 million subscribers, or 46 internet connections for every 100 Ugandans. As of June 2020, Uganda's internet-based telephones (smart phones) penetration stood at 61% (25.5 million subscriptions). For the majority of Ugandans, the internet remains out of reach, particularly in rural areas where 75.5% of Ugandans live.² According to the Digital 2020 report for Uganda, there were 2.50 million social media users in Uganda in January 2020 with 26.83 million mobile connections.³ However, the 2020 Web Foundation research found out that the gender gap in basic internet access in Uganda is 42.9% (19.2% women and 27.9% men) which is still lower than the regional average for Africa of 49.6%.⁴

In the January 2021 elections, digital communications took centre-stage and played a crucial role in how candidates and parties engaged with citizens due to the restriction following the COVID-19 pandemic outbreak.⁵

This report shows the importance of accurately measuring internet shutdowns quantitatively. However, network measurements leave out some aspects that are huge and unquantifiable. The report explores how internet shutdowns impact women's rights online besides factors that are already keeping some women offline such as economic hardship, online threats and harassment, surveillance, expensive internet bundles, and taxation which is important.

Quantitative measurements don't cover scenarios and stories of how shutdowns happen and impact women and other groups in real life yet having the human impact on women are weapons to continue fighting shutdowns to make the internet accessible being a basic need. Exploring such impacts gives the researcher a chance to observe and acquire first-hand information which reflects the real impact (the psychological, social, and other personal effects) of shutdowns on women which are not shown through measurements. This can provide evidence of the human impact of shutdowns, often less documented for strong advocacy. Shutdowns deny women their right to democratic participation during elections or protests when the internet is needed the most.

¹Public Policy. (18 December 2019). Policy Brief: Internet Shutdowns
<https://www.internetsociety.org/policybriefs/internet-shutdowns>

²https://cipesa.org/?wpfb_dl=367.

³Simon Kemp. (18 February 2020). Digital 2020: Uganda <https://datareportal.com/reports/digital-2020-uganda>

⁴Women's Rights Online 2020 <http://webfoundation.org/docs/2020/10/Womens-Rights-Online-Report-1.pdf>

⁵https://cipesa.org/?wpfb_dl=367

Hence, the report provides evidence and the impact of internet shutdowns on women for further awareness creation and sensitization of the public about the impact of shutdowns so that the net starts working for vulnerable groups such as women in Uganda.

Background to Internet Shutdowns

Uganda's History of Internet Shutdowns

Given Uganda's history of curtailing usage of digital technologies during elections in different ways such as through websites blockage, SMS censorship, mobile money and social media shutdowns, the internet shutdown that occurred during this year's parliamentary and presidential elections didn't come as a surprise despite a declaration in June 2020 by the government to resort to digital campaigns and online voting in order to reduce the spread of the COVID-19 pandemic.⁶

Uganda has a long-standing history of internet shutdowns starting in 2006 when the Daily Monitor newspaper website was temporarily blocked for publishing electoral results directly from polling stations. In the same period, Radio Katwe news website was also blocked for being critical of the president. In 2011, the Uganda Communications Commission (UCC), ordered internet service providers to block SMS messages that contained "certain words." Social media platforms were then blocked in the aftermath of the 2011 elections when a walk to work protest was organized by the former opposition political leader, Kizza Besigye. In 2016, social media and mobile money services were blocked during the general elections over "national security" reasons.⁷ Further, during the swearing-in of the incumbent, who had been re-elected in a poll whose results were contested by opponents, social media access was once again restricted.⁸ In 2016, Uganda lost two million dollars every day when the internet was shut down by the government.⁹

Digital Siege During Uganda's 2021 Elections

Shutdowns Before Elections

Although the use of technology would promote the participation of marginalized groups including women, persons with disabilities, minority groups (LGBTIQ), activists, and refugees, the government-imposed internet censorship hindered their right to freely access information online and participate in the democratic process. Days before the 2021 general elections, the Ugandan government wrote to Google to block up to 14 YouTube channels which the regulator, the Uganda Communications Commission (UCC) accused of broadcasting information that potentially compromises national security. In response, Google requested for a court order to close the YouTube Channels.¹⁰

⁶https://cipesa.org/?wpfb_dl=367

⁷https://cipesa.org/?wpfb_dl=367

⁸https://cipesa.org/?wpfb_dl=367

⁹Tricia G Nabaye. (Monday January 25, 2021). Internet shutdown and hijack of citizen rights <https://www.monitor.co.ug/uganda/oped/commentary/internet-shutdown-and-hijack-of-citizen-rights-3268366>

¹⁰https://cipesa.org/?wpfb_dl=367

The Uganda government began by blocking social media platforms and Play Store Apps on January 9, 2021 even though Over the Top Tax was paid by users.¹¹ Days before the January 14, 2021 election day, Facebook had banned the accounts of pro-government entities,¹² including those of individuals that spread false and misleading information about the 2021 general elections; a move that caused President Museveni to cite indefinite ban on Facebook in Uganda stating that Facebook was taking sides with the opposition party.¹³

During Elections

This was followed by a complete shutdown on the eve of election (January 13, 2021) that blocked millions of Ugandans from communicating especially during the democratic process when the internet was needed the most. Data from Ugandan Internet Exchange Point (UIXP) showed that Uganda's domestic Internet traffic dropped by 95% as a result of the government's order to block all international gateways and access points on January 14, 2021.¹⁴ Reasons cited were fears that unnamed individuals had planned to mobilize protests in the event that the elections are not declared in their favour. Two radio stations, Baba FM and Busoga One, were also switched off by Uganda Police in Jinja over allegedly inciting election violence. For instance, Busoga One was switched off on January 14 for sharing live updates about the provisional results of presidential and parliamentary elections which was said to be causing people to incite violence.¹⁵ MTN issued a statement on January 12, 2021¹⁶ citing that they had received directives from the country's regulator,¹⁷ the Uganda Communications Commission (UCC) to suspend all the internet gateways.¹⁸

¹¹<https://twitter.com/cipesaug/status/1348954155394740227?s=20>

¹²James Propa. (30 January 2021). A social media blackout persists in Uganda, weeks after the election <https://globalvoices.org/2021/01/30/a-social-media-blackout-persists-in-uganda-weeks-after-the-election/>

¹³ Pro-govt Facebook accounts in Uganda claim blocking <https://www.monitor.co.ug/uganda/news/national/pro-govt-facebook-accounts-in-uganda-claim-blocking-3252430>

¹⁴<https://twitter.com/kyleville/status/1349624248592179205?s=20>

¹⁵HAKIM KANYERE. (January 24, 2021) Police switches off Balyeku and Mwirus's radio stations in Jinja <https://nilepost.co.ug/2021/01/24/police-switches-off-balyeku-and-mwirus-radio-stations-in-jinja/>

¹⁶MTN Statement on suspension of internet gateways in Uganda <https://www.facebook.com/MTNUG/posts/5644233898936144>

¹⁷MTN Statement on suspension of internet gateways in Uganda <https://www.facebook.com/MTNUG/posts/5644233898936144>

¹⁸<https://twitter.com/nbstv/status/1349404534536351744>



All other internet service providers (ISPs) in Uganda had to comply with the government's request to completely cut off people from accessing the internet in order to protect their operating license by the UCC.¹⁹ The Uganda Human Rights Commission also backed up the government decision to shut down the internet during the polling process.²⁰ Mr Kutesa Sam, the Foreign Affairs Minister said that the "internet shut down a day before election, was a necessary step to stop the vitriolic language and incitement to violence"²¹ which was a threat to Uganda's democratic process and the security of the citizens."²² He told international delegates and journalists that the internet shutdown was necessary as some presidential candidates were allegedly planning to commit post-election violence, calling it "Plan B".²³ This move was against international human rights principles of proportionality, necessity and legality.

After Elections

On January 18, the internet was partially restored after Yoweri Museveni was declared the winner. However, users still required circumvention tools such as virtual private networks

¹⁹Felicia Anthonio. (January 20, 2021). "No matter what they do, the world is watching": Some Ugandans are back online after internet shutdown during presidential election <https://www.accessnow.org/the-world-is-watching-uganda-elections/>

²⁰<https://twitter.com/ntvuganda/status/1351612810359398410>

²¹<https://twitter.com/DailyMonitor/status/1352143940623990784>

²²Job Bwire. (Wednesday January 20, 2021). Kutesa urges Ugandans to move on following disputed presidential poll <https://www.monitor.co.ug/uganda/news/national/kutesa-urges-ugandans-to-move-on-following-disputed-presidential-poll-3263490?s=08>

²³<https://twitter.com/DailyMonitor/status/1351837181858426881>

(VPNs) to access and use some services of the internet like social media platforms. As illustrated in this report, the blockage was maintained on some social media sites such as Facebook, WhatsApp, Instagram, Twitter and Play store Apps. Services such as mobile money services were also affected during the internet outage. Additionally, it was alleged that the government blocked more than 100 VPNs making it hard to access information, fight censorship and freely express views and associate online in Uganda and worldwide.²⁴ Internet speed was also reported by many internet users to have greatly slowed down affecting access to information and financial transactions.²⁵ This affected more than 16 million internet users with unpredicted loss, especially data subscribers, Over the Top (OTT) taxpayers and businesses such as banks who could not make normal banking transactions, and file the value added tax returns or remit tax payments by business and other sectors.^{26,27} Additionally, the five-day internet outage also led to the postponement of the arrival of the second Airbus from France in Uganda from January 25 to February 2 caused by communication technicalities during the shutdown. This postponement caused the government some economic loss unknown.²⁸ Netblocks approximates the 5 days internet outage caused a total loss of \$8.9 million USD to Uganda.²⁹ The Financial Technology and Service Providers Association estimates that companies such as SafeBoda with more than 22,000 drivers in Kampala reported that its employees could not earn at least 66 billion Ugandan shillings (\$17.89 million) daily during the shutdown.³⁰ Besides the economic loss, Uganda's domestic internet traffic reached 60% of normal levels on Uganda's first full day of outage (January 19, 2021) online following the internet shutdown according to an Internet exchange point operator.³¹ This left many Ugandans, especially vulnerable groups such as women, refugees, LGBTIQ, and PWDs in the 'cover of darkness' with no timely, accurate, and reliable information on human rights violations and online freedom to express opinions about electoral processes in Uganda.

Methodology

To investigate the blockage of internet platforms during the election period in Uganda, we analyzed OONI measurements collected from OONI Probe users in Uganda. This process aimed at collecting network measurement data to illustrate which websites were blocked,

²⁴Stephen Kafeero. (January 12, 2021). Uganda has shut down all social media two days ahead of a tense election <https://qz.com/africa/1956188/uganda-shuts-social-media-ahead-of-election-army-out-in-streets/>

²⁵<https://twitter.com/JackyKemigisa/status/1352310922019287040>

²⁶<https://twitter.com/Umemeltd/status/1348947372483743746>

²⁷Finance Ministry warned govt of huge losses due to Internet shutdown <https://www.monitor.co.ug/uganda/business/finance/finance-ministry-warned-govt-of-huge-losses-due-to-internet-shutdown-3262890>

²⁸Internet shutdown forces govt to postpone arrival of new Airbus <https://www.monitor.co.ug/uganda/business/finance/internet-shutdown-forces-govt-to-postpone-arrival-of-new-airbus-3262872>

²⁹James Propa. (Monday, 18th January 2021). A social media blackout persists in Uganda, weeks after the election. <https://globalvoices.org/2021/01/30/a-social-media-blackout-persists-in-uganda-weeks-after-the-election/>

³⁰Nita Bhalla and Alice McCool. (Thursday, 21 January 2021). 100 hours in the dark: How an election internet blackout hit poor Ugandans. Thomson Reuters Foundation. <https://news.trust.org/item/20210120134502-2jnhz/>

³¹<https://twitter.com/kyleville/status/1351629504272359425>.

and which ISPs implemented the blocks. OONI Probe is a free and open-source tool designed to measure various forms of internet censorship and network interference across the world. The timeframe for the analysis of OONI measurements collected from Uganda was between January 9 and February 20, 2021. This is because network disruption started on January 9 and was partially restored on January 18. However, blockage on social media platforms continued days after the election periods. Blockage on major social platforms was later restored except Facebook. The OONI measurement analysis was limited to social media websites and applications, App Store and Google play store.

The social media apps whose web connectivity were tested included; WhatsApp, Facebook Messenger, and Telegram. This is because the OONI Probe application can only carry-out tests for WhatsApp, Facebook Messenger and Telegram applications. Unlike the testing of websites (where any website can be tested), with apps it requires special tests that work differently depending on how the app is designed. This is why each of OONI's instant messaging app tests work differently, and each test tests the backend endpoints of each application.

We also used OONI probe's web connectivity tests to assess the blockages of the social media websites. The social media websites included: web.whatsapp.com, facebook.com, twitter.com, instagram.com, linkedin.com, and upload.twitter.com. The findings are also limited by the type and volume of measurements contributed by volunteer OONI Probe users in Uganda. For example, if a blocked service was not tested in Uganda in the analysis period, relevant measurement findings will not be available. Some samples of social media websites which presented signs of TCP/IP blocking on MTN (AS20294) in Uganda between January 9 and February 20, 2021 might mean that the social media websites were blocked. However, it is important to note that false positives can occur.

To identify Uganda's internet outage between January 13 and January 18 when the internet gateways were completely blocked, we used the data collected by the Internet Outage Detection and Analysis data (IODA) and Google Transparency report. This aimed at verifying the signals and timing of Uganda's internet blackout in regards to the Uganda Communications Commission (UCC) directives. The Google Transparency Report provided additional evidence to the IODA data examining Internet Outage.

Interviews were conducted to supplement and get further evidence on how the internet blockage and outage impacted women minority groups (LGBTIQ), refugees, activists, and persons with disabilities. A total of fifteen (15) women (minority groups, refugees, activists, and persons with disabilities) were interviewed. Perspectives from specific groups of women purposely selected were also collected strictly from Twitter platforms in order to analyze Twitter "conversations" and find out how women were further impacted by the shutdowns, with a focus on tweets located within a network of users. Data was further collected using desktop research as back up evidence on the topic.

In doing the assessment, the research was guided by a set of two main research questions. These included:

1. How did the blocking of social media applications and websites as part of the internet Shutdown between January 9, 2021 to February 20, 2021 affect Ugandan women?
2. How did the blocking of these websites and apps impinge on Ugandan women's right to access information and freely express their opinions online? [personal, professional and social lives of women and girls in Uganda].

Findings

Blockage of Websites and Apps Before Elections and After Elections

Blocking of Social Media Websites

Findings from the analysis show that there were few signs of blockage of the website from Instagram. This is according to OONI measurement data collected based on the web connectivity tests carried-out on www.instagram.com between January 12 and February 20, 2021.

The analysis showed that there was more consistent blockage of WhatsApp from January 12 to January 18. The OONI test shows that web.whatsapp.com first presented signs of blockage between January 16 and January 21, 2021 based on the chart below. However, from 9 January to 11 January, and from January 18 to February 20, 2021, the OONI measurement didn't present any data, meaning that no test was conducted in that period since OONI measurements largely depend on volunteers' tests done in the country.

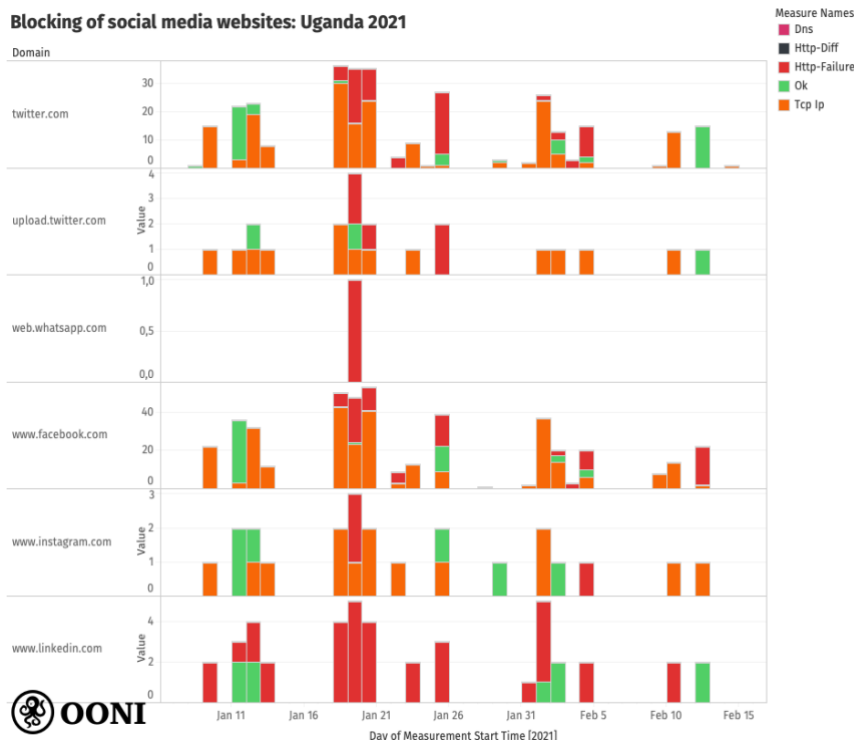
All the OONI measurement data collected between January 12 to February 20, 2021, show that there was a potential blockage of Twitter (www.twitter.com). Based on these data, Twitter appears to have been fully blocked between January 12 and January 26, 2021, and partially blocked again between January 31 and February 5.

OONI measurements show that the blockage of facebook.com started on January 12, 2021 after the president's address in which he instructed the blockage of Facebook access in Uganda. This was in response to Facebook's action of blocking fake accounts that were spreading disinformation. The OONI measurement data that was collected between January 12 and February 20, 2021 suggest that there were www.facebook.com blockages across the period in Uganda with the exception of a brief reopening between January 19 and February 10, 2021.

All of the observed social media websites experienced the same HTTP failures and connection reset errors in OONI measurements. This also points towards a blockage because ISPs often block websites using the same techniques.³²

³² The blocking of social media websites in Uganda based on OONI measurements collected from Uganda, https://explorer.ooni.org/search?until=2021-02-20&since=2021-01-09&probe_cc=UG

Blocking of Websites



The chart presents blocking of the specified websites within the date range (between January 9, 2021 to February 20, 2021). By "measure names" in the chart (DNS, HTTP-diff, Http failure, Ok, and Top up), we refer to the specific networks that were presented when those specific websites were tested in Uganda. To further understand the measure names in the chart, a brief explanation is available here: <https://ooni.org/nettest/web-connectivity/>

Additional Social Media Websites Blocked

Additionally, all the OONI measurement tests done between this same period showed that there were other social media websites such as skype.com, snapchat.com, wechat.com, tumblr.com also blockage.³³ [See appendix 2 below]

Blocking of Apps

The analysis of social media application blockages was carried out using OONI measurement data gathered between January 9 and February 20, 2021. From January 12 to February 20, 2021; Facebook Messenger, Telegram, and WhatsApp presented signs of blockage across this period in Uganda as shown in graph below.³⁴

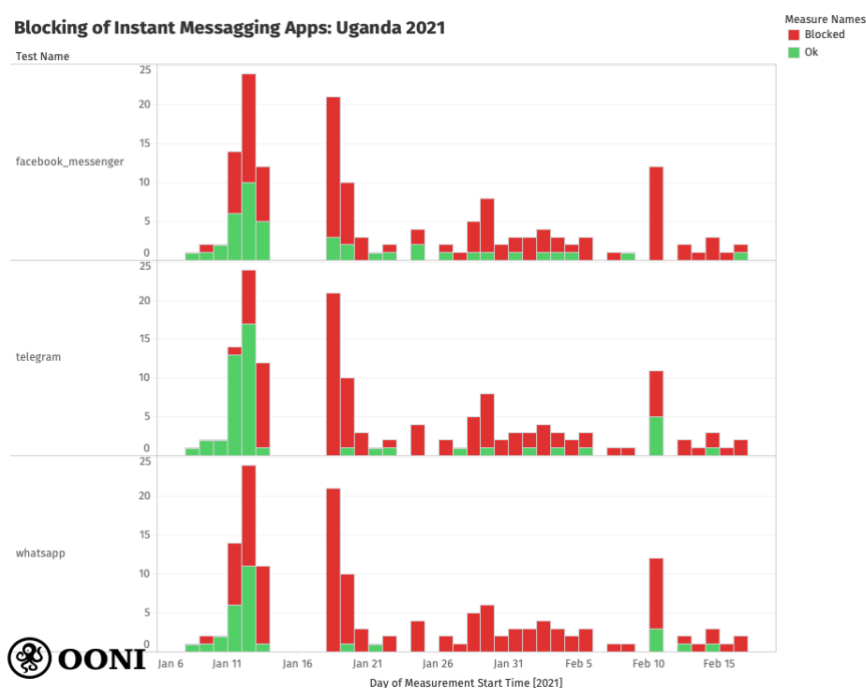
³³https://explorer.ooni.org/search?until=2021-02-20&since=2021-01-09&probe_cc=UG&probe_asn=AS20294&test_name=web_connectivity&only=anomalies

³⁴OOONI measurements collected from Uganda between January 9, 2021 to February 20, 2021 showing Blocking of instant messaging apps (Facebook Messenger, Telegram, and WhatsApp).
https://explorer.ooni.org/search?until=2021-02-20&since=2021-01-09&probe_cc=UG

It further indicates that no OONI measurements were collected from Uganda between January 14, 2021 to January 17, 2021, suggesting the presence of an internet outage. This is because the OONI Probe requires internet connectivity to perform tests;

The chart also shows that WhatsApp was blocked between January 21 to February 20, 2021 with minimal access in the same period. More specifically, WhatsApp appeared to have been blocked because attempted connections to WhatsApp's registration service and web interface (whatsapp.com) consistently failed.

Facebook Messenger appeared to have been blocked because attempted TCP connections to Facebook's endpoints failed. Connections to some Telegram endpoints succeeded, while others failed. The chart shows that Facebook Messenger, Telegram and WhatsApp between the testing period for this study (January 9 and February 20, 2021) provided strong signals of potential blocking as shown in red color in the chart below.



Blocking of App Store and Google Play Store

On January 9, 2021, netizens started facing difficulties downloading applications from App Store and Google Play Store. The blocking of Google Play Store affected the downloading of election monitoring applications such as the Uvote App which was launched days before elections to document any voter fraud and upload copies of results, photos and videos of election malpractice.³⁵ The Amani App developed by the Women's Situation Room Uganda to document election related violence before, during and after elections in Uganda was similarly impacted. The Seven App that simplifies health care between a patient and a doctor where a

³⁵<https://www.monitor.co.ug/uganda/news/national/bobi-launches-app-to-monitor-election-result-3246052>

patient can consult a doctor through chat and gets ePrescription on email instantly was also affected because the patients had to assess the services physically.³⁶

Google Play Store

Play. google.com on (AS20294) MTN UG network in Uganda

According to the OONI measurements data which shows the testing of play.google.com, data presented signs of blockage on (AS20294) MTN Uganda network every time it was tested between the period of January 10, 2021, 09:03 AM UTC to February 09, 2021, 05:36 AM UTC. The presented signs of HTTP blocking (HTTP requests failed) on AS20294 in Uganda might mean that <http://play.google.com> was blocked, but false positives can occur.³⁷

There was no test conducted on January 9, 2021 because OONI measurements data relies on tests conducted in the country by volunteers who were unavailable at that time. [See Appendix 3 below].

Play. google.com on (AS36977) Airtel UG network in Uganda

According to the OONI measurement data which shows the testing of play. google.com, there were no signs of blockage on (AS36977) Airtel UG network every time it was tested on January 29, 2021, 08:20 AM UTC, <https://play.google.com/store/> on AS36977 in Uganda. Though the status (confirmed and Anomalies) didn't present any test when results were filtered. This could mean that there was no test conducted on OONI measurement data on Airtel Uganda since OONI measurement relies on tests conducted in the country by volunteers.³⁸ [See Appendix 4 below]

Apple APP Store

App store on (AS20294) MTN UG network in Uganda

Although there were reported cases of Apple's App Store being blocked, the OONI measurement test conducted between January 11, 2021 and February 20, 2021 showed that apps.apple.com was accessible on (AS20294) MTN UG network in Uganda every time a test was conducted on January 18, 2021 at 11:43 UTC on web connectivity. The status (confirmed and Anomalies) did not show any result when the test was filtered. It is however possible that it was blocked on a different network compared to the tested one or the network was interfered beyond those measurements. Additionally, it doesn't show tests on several dates based on the testing period; this might also mean no test was conducted in this period.³⁹ [See appendix 5 below]

App store on (AS37063) Roke telecom Uganda

³⁶<https://www.mtn.co.ug/videos/how-seven-app-simplifies-healthcare/>

³⁷https://explorer.ooni.org/search?until=2021-02-20&since=2021-01-09&probe_cc=UG&probe_asn=AS20294&test_name=web_connectivity&domain=play.google.com&only=anomalies

³⁸play. google.com on (AS36977) Airtel UG network in Uganda https://explorer.ooni.org/search?until=2021-02-20&since=2021-01-09&probe_cc=UG&probe_asn=AS36977&test_name=web_connectivity&domain=play.google.com

³⁹https://explorer.ooni.org/search?until=2021-02-20&since=2021-01-09&probe_cc=UG&probe_asn=AS20294&test_name=web_connectivity&domain=apple.com

According to OONI measurement on web connectivity between January 9 and February 20, 2021, apps.apple.com showed anomalies meaning there might have been potential blockage between January 19 (11:39 UTC) and January 20 (11:03 UTC), 2021 on (AS37063) Roke telecom Uganda.⁴⁰ [See appendix 6 below]

Internet Outage

On Wednesday January 13, 2021, the eve of Uganda's General Elections, Uganda's communications regulator, the UCC, ordered telecoms operators and internet service providers in the country to suspend all internet gateways. Internet service in Uganda was partially restored as of January 18, 2021 at about 11am EAT when the presidential candidate was announced. The internet blackout and continuing social media censorship in Uganda is an attempt by the government to keep citizens and the rest of the world in darkness during an election period.⁴¹

The internet outage was visible on public data sources such as: Internet Outage Detection and Analysis (IODA), Oracle's Internet Intelligence Map, Cloudflare Radar, and Google traffic data. However, for the purpose of this study, Internet Outage Detection and Analysis (IODA) and Google Traffic data sources were used and considered.

Internet Outage Detection and Analysis (IODA)

The Internet Outage Detection and Analysis (IODA) by Center for Applied Internet Data Analysis (CAIDA) conducts measurement of internet outage or black out in nearly real time. IODA uses three complementary measurement and inference methods such as; Routing (BGP) announcements, Active Probing, and Internet Background Radiation (IBR) traffic in order to track and identify internet outages. Access to IODA measurements is openly available on their Dashboard, which enables users to explore internet outages with country, region, and AS level of granularity.

IODA data presented below in a chart clearly shows that Uganda experienced a widespread internet outage, starting at around 5pm UTC (7pm EAT) on January 13, 2021. This happened the same time that the UCC instructed the suspension of all internet gateways. The Outage lasted for 5 days until around 9:30 UTC (12: 30pm EAT) on January 18, 2021 in Uganda. However, IODA data in the chart below was collected between January 8 and February 8 to monitor internet outage for a duration of one month in Uganda.⁴²

⁴⁰Roke telecom on Appstore https://explorer.ooni.org/search?probe_cc=UG&until=2021-02-20&since=2021-01-09&domain=apps.apple.com&only=anomalies&test_name=web_connectivity&probe_asn=AS37063

⁴¹<https://news.trust.org/item/20210120134502-2jnhz/>

⁴² Internet Outage Detection and Analysis (IODA); IODA Signals for Uganda, <https://ioda.caida.org/ioda/dashboard#view=inspect&entity=country/UG&lastView=overview&from=1610064000&until=1612828740>



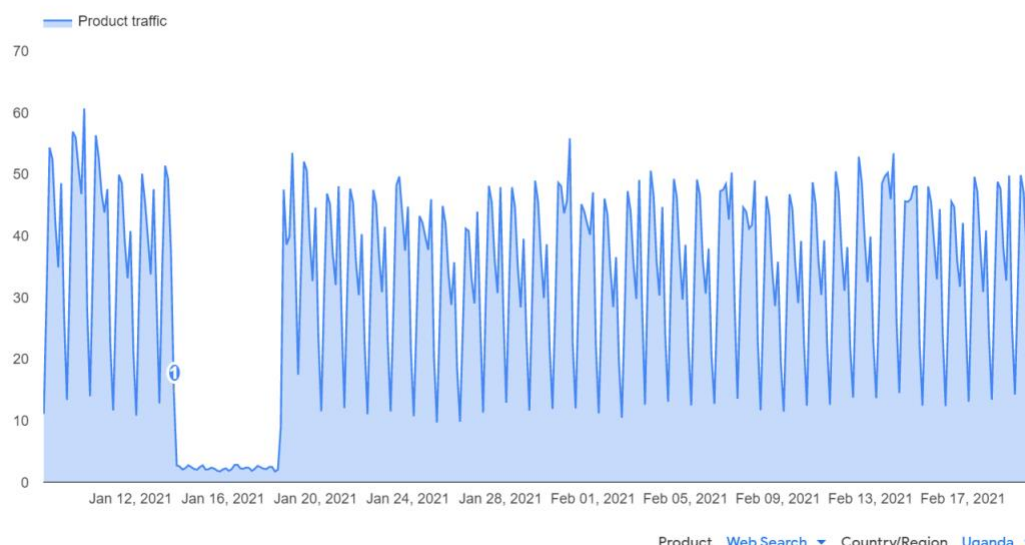
It is important to note that within this period (January 8 and 8 February) when IODA data was collected, observation of a major drop in active probing and also a drop in the BGP signal correlating in time with the drop in the other signals between January 13 and January 18, 2021, strongly suggesting that Uganda experienced a widespread internet outage. This is further indicated by the fact that we see these signals resume to their previous levels between January 18 and February 20, 2021.

Google Transparency Report

The chart below provides near real-time information about google traffic data to and from products and services in Uganda between January 9 and February 22, 2021. Each chart shows historic traffic patterns for Uganda and products. Amid the 2021 general election, Uganda was disconnected from the internet entirely. However, the Google Traffic data below shows network disruption in Uganda between January 9 and 13, 2021. The same applies to Google Traffic data between January 19 and February 20. This might have been because blockage remained on Facebook at the time of writing this report.⁴³

⁴³Google Transparency Reports, Traffic and disruptions to Google: Uganda (January 9 to February 20, 2021)
https://transparencyreport.google.com/traffic/overview?hl=en&fraction_traffic=start:1610064000000;end:1613779199999;product:19;region:UG&lu=fraction_traffic

Start 1/8/2021 End 2/19/2021



Network Level Analysis of IODA

IODA provides data at the network-level granularity. This provides room for examination of networks that were affected by the internet outage in Uganda. It also makes provision for examination of possible differences in the times at which the outage began and ended across various networks in Uganda. This network level analysis focused on only 2 networks: Airtel (AS36977), and Uganda Telecom (AS21491). Airtel is widely used networks in Uganda; however, Uganda Telecom was chosen because it is owned by the government of Uganda. IODA signals for the two networks were presented separately as shown below:

IODA Signals for (AS36977) Airtel Uganda

Internet Outage Detection and Analysis (IODA), Active Probing signals for Airtel network showing the time the outage began and ended.⁴⁴



⁴⁴<https://ioda.caida.org/ioda/dashboard#view=inspect&entity=asn/36977&lastView=overview&from=1610064000&until=1612828740>

IODA Signals for (AS21491) Uganda Telecom

Internet Outage Detection and Analysis (IODA), Active probing signals for Uganda Telecom network showing the time the outage began and ended.⁴⁵



The above 2 graphs show IODA's active probing signal for 2 major networks in Uganda; we see that the outage began at around 15:00 UTC on Airtel (AS36977), and 11:00 UTC on Uganda Telecom (AS21491) on Wednesday January 13, 2021 and ended between 9:00 UTC and 10:00 UTC on Monday, January 18, 2021 for all the networks. This level of coordination in timings suggests that network operators were able to anticipate and execute the enforcement and the relaxation of the shutdown according to pre-planned schedules.

Although the timing patterns of the outages are identical across the networks, the way these outages manifest in IODA's signals varies. For example:

- On Airtel (AS36977), internet outage started on Wednesday, January 13, 15:00 on Active probing and ended on Monday January 18, 10:00 on active probing.
- On Uganda Telecom (AS21491) internet outage started on Wednesday January 13, 11:00 on active probing and ended on Monday January 18, 09:00 on active probing.

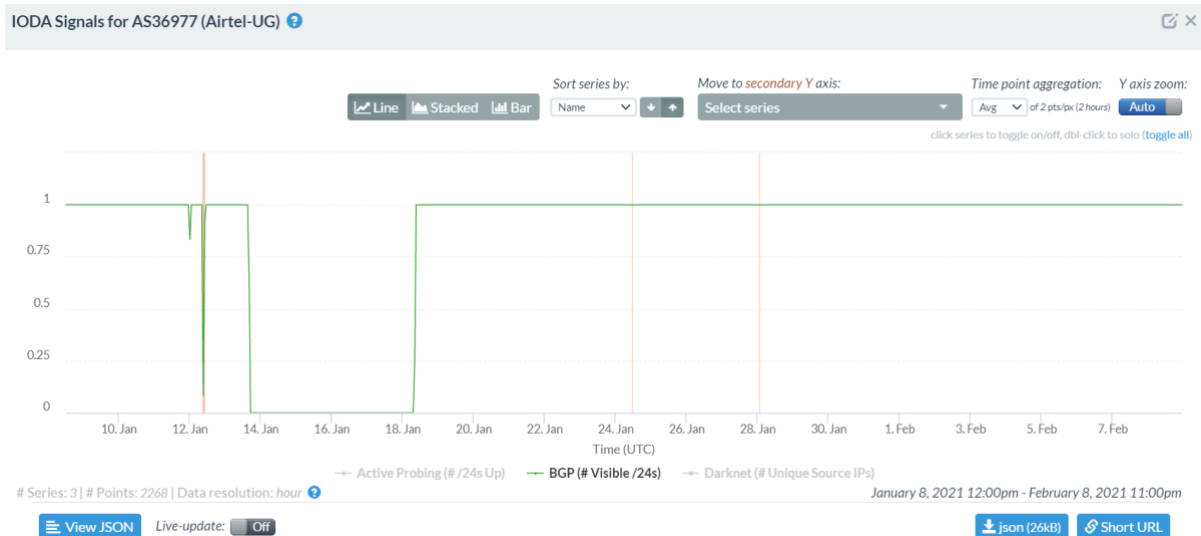
Not all networks experienced the outage at the same time. While others began many hours earlier, others began a few hours later. The differences in the timing patterns suggest that the implementation of blocking the internet gateways were left to the network operators.

IODA signals for Airtel Uganda on BGP

Internet Outage Detection and Analysis (IODA), BGP signal for Airtel network where outage began and ended at the same time.⁴⁶

⁴⁵<https://ioda.caida.org/ioda/dashboard#view=inspect&entity=asn/21491&lastView=overview&from=1610064000&until=1612828740&ioda-triple-signal-dialog.sortAscending=true>

⁴⁶<https://ioda.caida.org/ioda/dashboard#view=inspect&entity=asn/36977&lastView=overview&from=1610107200&until=1612785600>



Uganda Telecom showed a straight horizontal line on BGP signals. Therefore, the graph for Uganda Telecom was not presented.

The graph above shows IODA's BGP signal for the Airtel network from the previous graph that had similar outage timing patterns although on BGP, Airtel internet outage began on Wednesday January 13, 14: 00-15:59 and ended on Monday January 18, 10:00-11:59 UTC on BGP. Only Airtel Uganda is visible in the BGP signal. However, Uganda Telecom (AS21491) do not show any drop in BGP-visible /24 blocks during this period but straight horizontal lines. These dissimilarities in the outage's signature in IODA's signals may reflect the use of different approaches by these networks' operators for disconnecting their internet.

Discussion

How Internet Shutdown Impact Women's Livelihoods

This is the second section of the report which present the discussion on the huge and unquantifiable impact of shutdowns on women in Uganda.

Internet shutdowns, which are considered by most digital rights activists as a form of censorship, have far-reaching technical, economic, and human rights impacts that persist even beyond the period of a shutdown. In 2015, human rights bodies like the African Commission on Human and Peoples' Rights (ACHPR) to which Uganda is a party declared that internet "kill switches" can never be justified under International Human Rights Law, even in times of conflict.⁴⁷

Internet shutdowns orders by the government shouldn't decide how and when people should access the internet, especially vulnerable communities such as women who have already been hit hardest by internet access and affordability. For instance, around the world, women

⁴⁷Internet shutdown: Security versus outright tyranny

<https://www.monitor.co.ug/uganda/oped/commentary/internet-shutdown-security-versus-outright-tyranny-3264530>

still earn less than men, with a 50% income gap overall and a 40% wage gap for men and women in similar positions, according to the World Economic Forum Global Gender Gap Report.⁴⁸ This greatly affects their livelihoods such as education, health, relationship, businesses, jobs, and other opportunities easily accessible online.⁴⁹

Uganda enacted legal frameworks for universal access and service mechanisms as a part of efforts to bridge the digital divide, although limited access continues to affect vulnerable groups, including women, the poor, the elderly, and people with disabilities, more so than others. For instance, persons with disabilities tend to have lower levels of internet use than non-disabled persons, particularly women with disabilities who are least likely to use mobile internet.⁵⁰

Internet access continues to be restrained even though the COVID-19 pandemic has clearly shown that those without access to the internet and digital technologies are increasingly marginalized, both economically and socially. For instance, internet shutdowns affected dissemination of results from laboratories because results are sent by email and to people's phones through WhatsApp.⁵¹ As said by #WikiParty@michaelgraaf@campaign.openworlds.info [@michaelgraaf] on January 25, 2021, *"As soon as public business is conducted online and/or public records stored there, a country isn't a democracy unless all citizens have decent internet access"*. The COVID-19 pandemic outbreak led to many women and other vulnerable groups embracing digital marketing. However, moves like internet shutdowns might further widen the gender digital divide by disconnecting businesses, relatives and communities. For instance, Susan Tafumba, a 34-year-old groundnut seller at Nakawa market in Kampala city was one of the women whose trade collapsed due to the 5 days intentional Internet Outage in Uganda. Susan's business comes through a mobile phone app that customers use to order goods and later delivered to them by motorcycle taxis. Susan said that she lost about 300,000 Uganda shillings equivalent to United States Dollars (USD) 81.⁵²

For persons with disabilities, especially women with disabilities, an internet shutdown is particularly painful because many thrive on the internet for communication, accessibility and participation in all spheres of human endeavor like school, work, business and financial transactions which is much easier for them. For instance, internet banking is much more convenient than physically going to a financial institution without Braille or a sign language

⁴⁸Women's Rights Online 2020 <http://webfoundation.org/docs/2020/10/Womens-Rights-Online-Report-1.pdf>

⁴⁹FELICIA ANTHONIO. (20 JANUARY 2021). "No matter what they do, the world is watching": Some Ugandans are back online after internet shutdown during presidential election <https://www.accessnow.org/the-world-is-watching-uganda-elections/>

⁵⁰GSMA. (June 2020). Digital Exclusion of Women with Disabilities: A Study of Seven Low- and Middle-Income Countries https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/07/GSMA_Digital-Exclusion-of-Women-with-Disabilities_44pp_ACCESSIBLE.pdf

⁵¹Tonny Abet. (Friday January 22 2021). Internet blocking disrupted Covid testing, Health ministry says https://www.monitor.co.ug/uganda/news/national/internet-blocking-disrupted-covid-testing-health-ministry-says-3265600?view=htmlamp&twitter_impression=true&s=08

⁵²Nita Bhalla and Alice McCool. (Thursday, 21 January 2021). 100 hours in the dark: How an election internet blackout hit poor Ugandans. Thomson Reuters Foundation <https://news.trust.org/item/20210120134502-2jnhz/>

interpreter. Hence, Internet access gives them convenience and independence, which is taken away by internet outage and blockage.⁵³ Across Low-Middle Income Countries (LMICs), women are 20% less likely than men to use mobile internet, although the gap varies widely both regionally and at the country level.⁵⁴ According to the 2018 UCC study on access and usage of ICTs by people with disabilities (PWDs) in Uganda, it found out that “only 15% mentioned they were able to access the internet and 25% didn’t know about the internet whilst more male PWDs (6.2%) accessed it than their female counterparts (4%)”.⁵⁵ GSMA report further found out that Uganda is one of the 3 countries with the widest gender gaps in mobile internet use of 48% and there are also wide gaps among women with disabilities of 80%.⁵⁶

Uganda’s minority groups such as the LGBTIQ community especially women that are unfortunately already marginalized are also affected and this is an infringement on their voices and opinions.⁵⁷ This is because the women LGBTIQ community is part of the sections of the society that lack power and those that are systematically marginalized that use the internet and social media to circumvent or overcome some of the difficulties posed by the imbalance of power and social restrictions brought by patriarchal dominance in Uganda’s society. LGBTIQ women often suffer more from discrimination and violence and their participation rights are undermined.⁵⁸

Therefore, when the government implements repressive measures such as Internet shutdowns, the digital gender gap keeps widening among specific groups. Although nearly all people are affected when the government cuts off access to internet and social media, the effects hit hardest on people in already vulnerable or marginalized communities such as women and girls, persons with disability, ethnic minority groups, refugees, among others. The digital divide is widened among these groups as a substantial gap persists between women and men, girls and boys in regards to internet access and social media usage among this group further.

During this research, it was therefore important to assess the negative impact of intentional Internet shutdowns on women's freedom of expression and access to information in Uganda.

⁵³ Mohammed Kimbugwe. (MONDAY JANUARY 18 2021). PWDs bear the brunt of internet shutdowns <https://www.ntv.co.ug/ug/commentaries/pwds-bear-the-brunt-of-internet-shutdowns-3261046>

⁵⁴GSMA. (June 2020). Digital Exclusion of Women with Disabilities: A Study of Seven Low- and Middle-Income Countries https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/07/GSMA_Digital-Exclusion-of-Women-with-Disabilities_44pp_ACCESSIBLE.pdf

⁵⁵Women face internet access challenge during the COVID-19 pandemic in Uganda https://africaninternetrights.org/sites/default/files/Peace_Oliver_0.pdf

⁵⁶GSMA. (June 2020). Digital Exclusion of Women with Disabilities: A Study of Seven Low- and Middle-Income Countries https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/07/GSMA_Digital-Exclusion-of-Women-with-Disabilities_44pp_ACCESSIBLE.pdf

⁵⁷Kuchu Times Editor. (January 21, 2021). THE DIRE EFFECTS OF UGANDA’S INTERNET SHUTDOWN AS SHARED BY COMMUNITY MEMBERS <https://www.kuchutimes.com/2021/01/the-dire-effects-of-ugandas-internet-shutdown-as-shared-by-community-members/>

⁵⁸Gender and Elections <https://aceproject.org/ace-en/topics/ge/onePage>

Women's Perspectives on How the Internet Shutdown Impacted Their Livelihoods

Access to the internet and social media is one of the empowering tools now than ever. The existence of the gender gap in internet access means hundreds of millions of women and girls are missing out on opportunities to use the internet to learn new skills, start businesses, access healthcare and advice, transfer cash, and much more.

During the electoral period, women interviewees were asked how their access to social media and the internet changed between January 9 and February 20, 2021 and some respondents said they failed to access information on all social media platforms. One respondent reported:

"I had limited access to information during the internet shutdown because I have a hearing impairment that can hinder depending on the call or radio to receive information. Therefore, social media is the most effective platform for access to information as persons with hearing impairment," Female PWD

The majority of female respondents interviewed said that they faced limitations or barriers to access the internet and social media during election periods which affected the way the majority of women normally communicated. Some of the barriers faced included inability to communicate with peers through internet-based communications platforms, limited information on television news with no sign language interpreters, limited participation in democratic and elections processes, and affordability issues.

"The shutting down of legal access to the internet mostly affected my working patterns as I am a therapist who resorted to doing therapy online during the COVID-19 time and the shutdown of internet affected my affordable access to my clients as the use of online platforms to communicate with clients was cutting for me call costs," female refugee

Circumvention of Barriers During Shutdowns

As a way to circumvent or overcome barriers to internet access and social media during election periods, the majority of the respondents downloaded a VPN in the days before the presidential and parliamentary elections due to expected internet shutdowns. Additionally, some used some non-technical circumvention methods such as the use of offline communications platforms like physical meetings, use of written letters, and the use of phone calls to replace emails and other internet-based communications channels that couldn't be accessed during the internet outage. One of the respondents who used VPN said:

"At first I didn't understand what was happening because everything of mine worked perfectly. A day later, I couldn't access anything with my internet bundles. My husband is an IT Specialist, so he helped me download a VPN before the internet was shut down completely. It was quite a new experience for me because it is like connecting twice to one thing. Unfortunately, even now that the internet is back, I still

need VPN to access Facebook. So, the monthly OTT I paid was a waste and no refund has been promised. The experience was quite devastating,” Female refugee

Although, during the internet outage there was no way to overcome an internet shutdown since all the internet gateways were blocked. To access social media, many had to wait for the partial restoration of the internet and use VPN to access the internet.

While some were able to download the circumvention tools, others who were not able to download VPN. Other circumvention tools were completely lost towards and during shutdowns and had to use other non-technical circumvention methods such as SMS in order to communicate.

Virtual Private Network (VPN) Usage During Internet Blockage

In order to circumvent internet blockages, some of the respondents reported to have used VPN such as SECURE VPN, Thunder, Fast VPN, TOR browser and Psiphon. The reasons cited for using the VPN were to safeguard their personal information and online communication and data since they were worried about their personal data safety. This is what a female respondent had to say:

“I was definitely worried about my data safety,” female LGBTI

Most of the female respondents didn't seem to have used the VPN during the election period due to potential legal consequences or safety concerns. However, some used the VPN only to try to access information during the internet shutdown. Some of the female respondents who used the VPN were worried about using it. Some reported that internet shutdowns were threatening since it was considered illegal to connect to the internet using Virtual Private Networks. Other female respondents who used a VPN before said that they started using the VPN when the Over-the-Top Tax (OTT) was introduced to avoid payment of the tax in 2018. Female respondents who used the VPN for their first time said that they had no choice than to use it since they didn't want to miss out on important updates.

The Impact of Intentional Internet Shutdowns on Women's Professional, Personal, and Social Lives

Intentional Internet shutdowns negatively impact women's professional, personal, and social lives. The majority of female respondents said that they couldn't withdraw funds from their account online, receive money from their spouses or friends, or work from home due to dependence on internet connectivity to implement tasks - affecting their productivity. The adverse impact of internet shutdowns on women and their continual inability to communicate were categorized under the professional, personal, and social level.

Professional Lives

Female respondents reported that they were unable to work normally due to no or limited internet and hence they were unable to attend online meetings during COVID-19 where online communication was preferred. They faced difficulties reporting to donors about their activities, and had altered work patterns which led to usage of more expensive means such

as phone calls in order to continue providing services to clients during shutdowns. Additionally, it was reported that some couldn't reach work partners who were out of the country to deliberate on the work and hold strategic planning meetings, complete pending project work, difficulties to communicate with colleagues, upload videos, tether laptops to phones, access of Google Drive and Google Docs, and inability to send emails. Complication of work and assignment were disrupted because they depend on the internet to complete their routine work. Here is what a female LGBTIQ respondent had to say:

"My professional life was greatly affected because I work remotely via the internet and I am paid per hour worked. In essence, I lost a lot of money due to my inability to work. Social life was also affected because I mainly socialize through the internet."

Business Operations

Internet shutdowns greatly impacted the business operations of women. The majority of the women interviewed were not able to reach customers, conduct online transactions, lost money, conduct mobile banking, and file returns. Additionally, some said it was expensive to make phone calls, and conduct online safety training. Some reported missing opportunities, difficulties to access market prices, conduct bank transactions, difficulty to reach customers and do any transaction between the two parties, delivery of goods and services. Some respondents reported incurring additional cost to reach clients in long distances using phone calls.

"I failed to access the prices in the market and the demands from my customers," - Female entrepreneur

"The presence of internet during the COVID-19 pandemic enabled me offer affordable therapy services online, but with the shutting down of the internet, I was forced to use more expensive means like phone calls thus costing me a lot more than my returns," - Female Refugee

Education

During outage, school going children failed to access the online reading materials which was a total setback for them. Some school going students resorted to usage of offline education materials, and one missed the exam submission deadline.

"Unable to access remittances that were badly needed to resolve some issues, kids with online study unable to access, no news, limited contact with family and friends because call rates are crazy where WhatsApp usually saves us," Female netizen

The Election and Political Situation

Access to electoral and political information were also limited during the elections period. This is because the majority of the female respondents reported to have not had access to election information and post elections updates. Additionally, the election results were not accessed in real time on the internet and the majority had to only depend on the next

Electoral Commission announcement. These are what some of the female respondents had to say:

"I had no way of accessing to information as Facebook & Twitter where my informants in the refugee settlement," female refugee

"I couldn't access any of this information because I don't own a TV and I don't listen to the radio. Even still, the information through broadcasting services was heavily filtered," Female LGBTI

Impact on Personal and Social lives

Personally, the majority of the respondents mentioned that they couldn't communicate to friends and family through social media or even follow events as they unfolded during the elections. Some respondents were unable to access news during the internet outage since most of them relied on internet enabled mobile phones to access news and current information from news websites.

Socially, respondents said they couldn't socialize on the internet because they were distanced from friends and social lives, denied access to favorite shows, music and entertainment for leisure. For instance, a female LGBTIQ respondent said: *"Social life was affected because I mainly socialize through the internet"*.

Also, a female activist said, *"I do a lot of social engagement using many platforms for music and entertainment for leisure. The outage of the Internet affected me in a sense that I was denied access to my favorite shows."*

Therefore, it was traumatizing for some respondents to be offline and this led to some seeking mental health care support to manage depression.

Health and Safety

During the internet outage, all the online sites with health information were inaccessible and hence information on health was only accessible when women physically visited the community health centers. However, none of the female respondents mentioned having faced threats about their safety although a few faced mental health issues.

Family

Some respondents reported to have faced difficulties to reach distant family members. This is because the majority resorted to communicating to their family members through phone calls during the internet outage.

"Limited our social engagement with our loved ones and right to talk to them. It put many in worry state considering we are used to the online platforms," Female activist

Even though internet shutdowns negatively impacted women and girls during the electoral period, some female respondents said that internet shutdowns also positively impacted them. One respondent had a social media detox, another had more attention from the husband, and one reported reduced worries of her husband flirting with other women online.

“As a woman I didn't have to worry about my husband flirting with women online,”
Female netizen

Conclusion

Internet Shutdowns affects not just the personal and social lives but also the professional lives of women in specific groups. It stiffens service delivery just as much as it does with communication. Women and marginalized groups in Uganda continue to struggle to access the internet, a reality only worsened by shutdowns and beyond because of the lasting impact on their livelihoods and their digital rights. Gender digital divide may affect the achievement of the UN's SDG 1.4, which focuses on ensuring that all men and women, especially the poor and vulnerable groups, have equal rights to economic resources and appropriate new technology by 2030; as well as SDG 5(b), which focuses on the use of enabling technologies, in particular ICTs, to promote women's empowerment.⁵⁹ Defending digital rights for users - especially women and other vulnerable groups at risk during a black out - should be standard practice but this requires the use of policy, advocacy and technology to fight for secure, inclusive and open communications for all of us.⁶⁰ This requires the state to take specific measures to ensure that marginalized groups have effective exercise of their rights online.⁶¹

In the future, the government must find another solution or provide alternatives because shutting down the whole internet during the 2021 January elections was regrettable. With internet access, the elections could still have been peaceful. There is a need for the Ugandan government to adhere to the principles of the 2019 African Commission on Human and Peoples' Rights (ACHPR) Declaration of Principles on Freedom of Expression and Access to Information.⁶²

Recommendations

Recommendations for Government

- The Ugandan government in particular the UCC needs to keep the internet on at all times because internet access and use is a basic need for all especially marginalized groups.
- The government (the UCC, Ministry of ICT and NITA Uganda) should endeavour to assess the implication of shutting down social media and the internet on persons with disabilities especially those with hearing impairments.

⁵⁹Women face internet access challenge during the COVID-19 pandemic in Uganda
https://africaninternetrights.org/sites/default/files/Peace_Oliver_0.pdf

⁶⁰Katie Dancy-Downs. Error 404: Fighting internet shutdowns. <https://uk.lush.com/article/error-404-fighting-internet-shutdowns>

⁶¹African Commission on Human and Peoples' Rights: Declaration of Principles on Freedom of Expression and Access to Information in Africa 2019. <https://www.achpr.org/presspublic/publication?id=80>

⁶²African Commission on Human and Peoples' Rights: Declaration of Principles on Freedom of Expression and Access to Information in Africa 2019. <https://www.achpr.org/presspublic/publication?id=80>

- The OTT tax and the [proposed 12% tax on the internet](#) should be removed so that Ugandans can access the internet at a cheaper cost. This will help in increasing the number of women's access, control and meaningful use of the internet.
- The state should take specific measures to ensure that marginalized groups have effective exercise of their rights online.

Recommendations for NGOs, Activists and Donors

- ICT and Internet related stakeholders need to consider gender and vulnerable groups perspectives to address inequalities in connectivity.
- There is a need for more people on the ground trained on network measurement so that they prepare to take regular measurements because network measurement tools such as OONI largely depend on in-country volunteers to have tests run.
- Due to the nuances of methodological challenges, there is a need to collect data across providers since we couldn't have network measurements data from some internet service providers for OONI Probe.
- The need to use standard practice which requires the use of policy, advocacy and technology to fight for secure, inclusive and open communications for all.

NOTE: This study excluded the network measurement of circumvention tools used before, during and after election period due to Internet blockage. This is because another Internews OPTIMA fellow from Uganda researched VPN in the lens of network measurement. However, the study incorporated survey interviews to investigate the usage of VPNs during the election period by women in Uganda.

Appendices

Appendix 1: Study Questionnaire

1. During the election periods, how has your access to social media and the internet changed between January 9 and February 20?
2. Were there limitations or barriers to your access to the Internet and social media during election periods and how did it affect the way you normally communicate?
 - i. If yes, what were those limitations or barriers, as articulated by them?
 - ii. What did you do to circumvent or overcome those barriers?
 - iii. Follow up questions:
 - a) If you used a VPN, which VPN?
 - b) If you used a VPN, was it your first time using a VPN or have you used them before? If you used them before, why have you used them?
 - c) If you used a VPN, were you worried about using a VPN due to potential legal consequences or safety concerns?
 - d) If you didn't use a VPN, what other methods did you try to access information?
3. How were your personal, professional, and social lives impacted and affected by blockage and outage of the Internet and social media as a woman?
 - i. Did social media blockage and outage affect your business operations in any way? If yes, please explain.
 - ii. How did internet shutdown affect your access to information in terms of?
 - a) Information about the election and political situation
 - b) Information about health and safety
 - c) Information for your business & professional life
 - d) Information for your family & education
4. Any additional comment OR Recommendation?

Appendix 2: Additional social media websites blocked

AS 20294 2021-02-10 02:56 UTC Web Connectivity https://twitter.com/ Anomaly	AS 20294 2021-02-10 02:52 UTC Web Connectivity https://telegram.me/ Anomaly	AS 20294 2021-02-10 03:54 UTC Web Connectivity https://play.google.com/store/ Anomaly	AS 20294 2021-02-10 03:50 UTC Web Connectivity https://www.tiktok.com/ Anomaly	AS 20294 2021-02-10 02:52 UTC Web Connectivity https://www.skype.com/ Anomaly	AS 20294 2021-02-10 02:51 UTC Web Connectivity https://web.telegram.org/ Anomaly
AS 20294 2021-02-10 03:49 UTC Web Connectivity https://www.facebook.com/mymcountry... Anomaly	AS 20294 2021-02-10 03:49 UTC Web Connectivity https://twitter.com/otafire Anomaly	AS 20294 2021-02-10 03:48 UTC Web Connectivity https://www.facebook.com/mmmuntul Anomaly	AS 20294 2021-02-10 03:48 UTC Web Connectivity https://t.me/ Anomaly	AS 20294 2021-02-10 03:29 UTC Web Connectivity https://t.co/ Anomaly	AS 20294 2021-02-10 03:14 UTC Web Connectivity https://www.youtube.com/ Anomaly
AS 20294 2021-02-10 03:15 UTC Web Connectivity https://www.viber.com/ Anomaly	AS 20294 2021-02-10 03:12 UTC Web Connectivity https://www.messenger.com/ Anomaly	AS 20294 2021-02-10 03:12 UTC Web Connectivity https://www.facebook.com/tradobuga... Anomaly	AS 20294 2021-02-10 03:11 UTC Web Connectivity https://www.tumblr.com/ Anomaly	AS 20294 2021-02-10 03:05 UTC Web Connectivity https://www.wechat.com/ Anomaly	AS 20294 2021-02-10 03:03 UTC Web Connectivity https://www.snapchat.com/ Anomaly
AS 20294 2021-02-10 03:03 UTC Web Connectivity https://www.linkedin.com/ Anomaly	AS 20294 2021-02-10 03:01 UTC Web Connectivity https://www.wechat.com/ Anomaly	AS 20294 2021-02-10 02:56 UTC Web Connectivity https://www.whatsapp.com/ Anomaly	AS 20294 2021-02-10 02:51 UTC Web Connectivity https://tinder.com/ Anomaly	AS 20294 2021-02-10 02:44 UTC Web Connectivity https://www.flickr.com/ Anomaly	AS 20294 2021-02-10 02:43 UTC Web Connectivity http://imo.im/ Anomaly
AS 20294 2021-02-10 02:43 UTC Web Connectivity https://www.instagram.com/ Anomaly	AS 20294 2021-02-10 02:42 UTC Web Connectivity https://www.pinterest.com/ Anomaly	AS 20294 2021-02-10 02:41 UTC Web Connectivity https://badoo.com/ Anomaly	AS 20294 2021-02-09 05:49 UTC Web Connectivity https://vimeo.com/ Anomaly	AS 20294 2021-02-09 05:43 UTC Web Connectivity http://www.grindr.com/ Anomaly	AS 20294 2021-02-04 08:15 UTC Web Connectivity https://www.weebly.com/ Anomaly

Appendix 3: Play. google.com on (AS20294) MTN UG network in Uganda

OOONI | Explorer

Search

Countries

Country

Uganda

ASN

AS20294

From

2021-01-09

Until

2021-02-20

Test Name

Web Connectivity

Domain

play.google.com

Status

All Results

Confirmed

Anomalies

Filter Results

UG	AS 20294	2021-02-10 03:54 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-02-04 09:01 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-02-01 21:36 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-02-01 06:11 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-01-28 20:28 UTC	Web Connectivity	http://play.google.com/	Anomaly
UG	AS 20294	2021-01-25 06:14 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-01-20 20:00 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-01-19 20:56 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-01-19 00:27 UTC	Web Connectivity	https://play.google.com/store/	Anomaly
UG	AS 20294	2021-01-18 19:52 UTC	Web Connectivity	https://play.google.com/store/	Anomaly

Appendix 5: App store on (AS20294) MTN UG network in Uganda

OONI | Explorer Search Countries

Country
Uganda

ASN
AS20294

From
2021-01-09


Until
2021-02-20

Test Name
Web Connectivity

Domain
apple.com

Status
☒ All Results
☐ Confirmed
☐ Anomalies

Filter Results

UG		AS 20294	2021-01-18 11:43 UTC	Web Connectivity	http://apple.com/	Accessible
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Appendix 6: App store on (AS37063) Roke telecom Uganda

OONI | Explorer Search Countries

Country
Uganda

ASN
AS37063

From
2021-01-09



Until
2021-02-20

Test Name
Web Connectivity

Domain
apps.apple.com

Status
☐ All Results
☐ Confirmed
☒ Anomalies

Filter Results

UG		AS 37063	2021-01-20 11:03 UTC	Web Connectivity	https://apps.apple.com/us/develo...	Anomaly
UG		AS 37063	2021-01-19 11:39 UTC	Web Connectivity	https://apps.apple.com/us/develo...	Anomaly

About Sandra Aceng

Sandra is based in Kampala, Uganda. She is a program manager at WOUGNET, and coordinates a caucus called Women ICT Advocacy Group (WIAG) that comprises of organizations and individuals interested in ICT and gender issues to advocate for Internet access for all. Sandra is a 2020 Global Network Initiative (GNI)/Internews Fellow and an Associate Editor at Directory of Open Access Journals (DOAJ). She is a 2020 Ttaala Fellow by DefendDefenders aimed at skilling Human Rights Defenders in the digital age. She is a volunteer at Wikimedia Community User Group Uganda. During her free time, she contributes articles on women for women on Wikipedia, aimed at closing the gender gap. She attended trainings in Universal Periodic Review in 2019, SAFETAG in 2019, Geographical Information System (GIS) under the OpenEd fellowship program in 2016/2017-cohor and Aid Data Summer GIS in July 2017. She is a Cherie Blair Foundation Mentee Alumni 2018, a one-year online mentorship program for women entrepreneurs. Sandra's key interests are policy analysis, writing articles, entrepreneurship, volunteering, gender & ICT, and research.

