Repressing or regulating?

How African states control online activities

Pauline Marguerite Lemaire

Thesis for the degree of Philosophiae Doctor (PhD)
University of Bergen, Norway
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Scientific environment

Pauline Lemaire is a doctoral researcher at the Chr. Michelsen Institute (CMI) and at the Department of Comparative Politics at the Faculty of Social Science, University of Bergen.

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'When I set sail, will there be enough wind?'
The Dead Weather (2009)

'Heureux qui, comme Ulysse, a fait un beau voyage'[1]
Joachim Du Bellay, Les Regrets (1558)

As I embarked on my doctoral research, I envisioned it as an opportunity to take a step back from my career and deploy my curiosity to domains I had not considered before. It was not all smooth sailing – as research never really is – and I had to adapt to the circumstances, including the pandemic, which hit just as I was about to travel on fieldwork. Thankfully, I was supported by many colleagues and friends throughout the journey.

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[1] 'Happy, the man who finds sweet journey's end,
Like Ulysses'
(translation by A. S. Kline)

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In memory of my father – I would have loved to share the journey with you.

[2] This time!

// Abstract

Social media and the internet have been considered as great tools for democratic participation, making it easier for citizens to participate in politics and for candidates to reach electors. However, the internet and social media also present challenges. For example, the activities of online companies are difficult to tax, and social media have also been used to spread hate speech and fake news. In parallel, a large body of literature has identified and classified the variety of online control mechanisms states can and do deploy to limit online activities.

The present dissertation explores African states' use of online control mechanisms by focusing on a) the implications of these online control mechanisms for their citizens' exercise of online freedoms, and b) the conditions under which online control mechanisms deployed in response to global challenges constitute a form of regulation or a form of repression. It contributes to the literature on online control mechanisms by bringing in insights from the literatures on the political use of social media and the internet and on the negative aspects of social media for democracy.

It is composed of four independent research articles. Methodologically, the dissertation uses a mixed methods approach. Together, the four articles offer a unique contribution to the field, emphasising that African states deploy a variety of online control mechanisms to both repress and regulate their citizens' online activities. Crucially, they consider the regulatory challenges faced by African states, as well as the political systems in place in African countries.

The two first articles explore the implications of online control mechanisms of the exercise of online freedoms. Article 1 ('Online censorship and young people's use of social media to get news') shows that higher levels of social media shutdowns are associated with a higher use of social media to get the news. Surprisingly, the relationship is stronger for older citizens. Article 2 ('Social media and parliamentary candidates in Uganda', co-authored with Gerald Kagambirwe Karyeija) explores how candidates to the January 2021 parliamentary elections in Uganda used social media to campaign. Based on interviews and social media data, it shows that social media

offered a range of opportunities to opposition and pro-regime candidates, but that the control mechanisms deployed by the regime unsurprisingly benefited pro-regime candidates. Theoretically, it inductively develops the opportunity structure of using social media in the campaign for opposition and pro-regime candidates.

The last two articles explore cases when states justify the use of online control mechanisms based on challenges that more democratic as well as more authoritarian regimes face. Article 3 (‘Revenue mobilisation or repression? Taxing online activities in Africa’) sketches a theory of the drivers of the (non) adoption of different taxes on online activities based on the comparisons of Uganda and Benin, and Nigeria and Rwanda. It shows how both economic and political interests might explain that some states adopt taxes that are levied on social media users, while others adopt taxes levied on platform companies. While more authoritarian states might be inclined to adopt repressive taxes, those authoritarian states that have strong incentives to facilitate social media adoption among their citizenry are unlikely to tax online activities. Article 4 (‘How African countries respond to fake news and hate speech’, co-authored with Lisa Garbe and Lisa-Marie Selvik) identifies which content regulation strategies are discussed in news items covering African countries. It finds that states with lower levels of freedom of expression see a higher salience of technical strategies (such as blocking the internet or filtering content) than states with higher levels of freedom of expression. In states where there are fewer legislative constraints on the executive, legal instruments to regulate hate speech and fake news are more salient.

Sammendrag

Sosiale medier og internett har blitt sett på som gode verktøy for demokratisk deltakelse, som gjør det lettere for innbyggerne å delta i politikken og for kandidatene å nå ut til velgerne. Internett og sosiale medier byr imidlertid også på utfordringer. Det er for eksempel vanskelig å skattlegge nettselskapenes aktiviteter. Sosiale medier har også blitt brukt til å spre hatefulle ytringer og falske nyheter. Parallelt med dette har en stor mengde forskningslitteratur identifisert og klassifisert de ulike kontrollmekanismene stater kan ta i bruk for å begrense aktiviteter på nettet.

Denne avhandlingen utforsker afrikanske staters bruk av kontrollmekanismer på nettet ved å fokusere på a) hvilke implikasjoner disse kontrollmekanismene har for borgernes utøvelse av friheter på nettet, og b) under hvilke betingelser kontrollmekanismer på nettet, brukt til å svare på globale utfordringer, utgjør en form for regulering eller en form for undertrykkelse. Avhandlingen bidrar til litteraturen om kontrollmekanismer på nettet ved å kombinere innsikter om politisk bruk av sosiale medier og internett, og om de negative sidene ved sosiale medier for demokratiet.

Avhandlingen består av fire uavhengige forskningsartikler. Den benytter seg av en flermetodisk tilnærming. Til sammen gir de fire artiklene et unikt bidrag til feltet, og de understreker at afrikanske stater tar i bruk en rekke ulike kontrollmekanismer for å både undertrykke og regulere innbyggernes aktiviteter på nettet. Det er viktig å ta hensyn til de reguleringsmessige utfordringene afrikanske stater står overfor, samt de politiske systemene i de afrikanske landene.

De to første artiklene utforsker hvilke implikasjoner kontrollmekanismer har for utøvelsen av friheter på nettet. Artikkel 1 ("Online censorship and young people's use of social media to get news") viser at høyere nivåer av nedstengning av sosiale medier er tilknyttet større bruk av sosiale medier for å få nyheter. Overraskende nok er sammenhengen sterkere for eldre borgere. Artikkel 2 ("Social media and parliamentary candidates in Uganda", skrevet sammen med Gerald Kagambirwe Karyeija) undersøker hvordan kandidater til parlamentsvalget i Uganda i januar 2021 brukte sosiale medier i valgkampen. Basert på intervjuer og data fra sosiale medier viser

artikkelen at sosiale medier ga både opposisjon- og regimevennlige kandidater en rekke muligheter, men at regimets kontrollmekanismer favoriserte regimevennlige kandidater. Artikkelen utvikler induktivt en teori om mulighetsstrukturer for bruk av sosiale medier i valgkampen for opposisjonelle og regimevennlige kandidater.

De to siste artiklene tar for seg tilfeller der stater begrunner bruken av kontrollmekanismer på nettet med utfordringer som både mer demokratiske og mer autoritære regimer står overfor. Artikkel 3 ("Revenue mobilisation or repression? Taxing online activities in Africa") skisserer en teori om driverne bak ulike skatter på nettaktiviteter som tas i bruk i noen stater, basert på sammenligninger av Uganda, Benin, Nigeria, og Rwanda. Den viser hvordan både økonomiske og politiske interesser kan forklare at noen stater innfører skatter som pålegges brukere av sosiale medier, mens andre innfører skatter som pålegges plattformselskaper. Mens mer autoritære stater kan være tilbøyelige til å innføre repressive skatter, er det lite sannsynlig at de autoritære statene som har sterke insentiver til å legge til rette for at innbyggerne tar i bruk sosiale medier, vil skattlegge nettaktiviteter. Artikkel 4 ("How African countries respond to fake news and hate speech", skrevet sammen med Lisa Garbe og Lisa-Marie Selvik) kartlegger strategier for innholdsregulering som diskuteres i nyhetssaker fra afrikanske land. Studien viser at tekniske strategier (som blokkering av internett eller filtrering av innhold) er mer fremtredende i stater med lavere grad av ytringsfrihet enn i stater med høyere grad av ytringsfrihet. I stater der den utøvende makten i mindre grad er begrenset av den lovgivende makten, er juridiske virkemidler for å regulere hatefulle ytringer og falske nyheter mer fremtredende.

List of Publications

Lemaire, Pauline. (2023). 'Online censorship and young people's use of social media to get news'. *International Political Science Review*, 0(0). DOI: 10.1177/01925121231183105.

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Introduction

In January 2021, two days before general elections, Uganda blocked access to social media platforms, including Facebook, Twitter, and WhatsApp (Bwire 2021). President Museveni justified the decision as a response to the decisions taken by Facebook and Twitter to suspend pro-regime accounts (Kahungu and Tumusiime 2021). Both companies had just announced the suspension of pro-regime accounts that were manipulating messages, and the campaign (Reuters 2021).

In July 2022, the Kenyan government announced it would not block Facebook, nor shutdown the internet ahead of the general elections to be held on 9 August (AFP 2022). The announcement came just after the country's National Cohesion and Integration Commission[3] warned that Facebook needed to tackle the spread of hate speech and disinformation, or else could risk being suspended, and alerted the Communications Authority of Kenya, which regulates online activities (Miriri 2022). Facebook assured that it would be 'addressing these errors' (AFP 2022), and internet and social media access were not disrupted during the elections (Freedom House 2022).

In both Uganda and Kenya, electoral campaigns were marred by attempts to manipulate social media, spreading hate speech and disinformation, and manipulating social media posts to make them more popular among users. In Uganda, the regime believed Facebook was moderating online activities too much, and in favour of the opposition. In Kenya, an independent body raised the alarm without accusing either side, engaged the regulator in discussions, and warned Facebook. In Uganda, social media and the internet were later shutdown – and Facebook remains blocked to this day. It appears that in Uganda, the state repressed online freedoms, while in Kenya, it adopted a more regulatory approach, thereby safeguarding online freedoms.

[3] Kenya's National Cohesion and Integration Commission is an independent state agency established in the aftermath of the post-2007 election crisis to eliminate ethnic violence and ethnic discrimination.

The examples of Uganda and Kenya point to the dilemmas raised by social media and the internet for democracy: while they can be an important space of political activities, they can also be misused (to spread disinformation or hate). In the latter case, how can they be regulated, and when does regulation constitute repression? A large body of scholarship has presented evidence that these technologies can play an important role in facilitating political participation and can help bring about regime change (Howard and Hussain 2013) or reinforce democracy (Boulianne 2019; Skoric et al. 2016). In that sense, they are a 'liberation technology' (Diamond 2010).

On the other hand, a second strand of that literature highlights the potential negative aspects of the internet and social media for politics and for democracy. Increased use of the internet and social media have been linked to higher levels of political violence (Pierskalla and Hollenbach 2013; Warren 2015), while the abuse of social media to spread hate speech and disinformation have been well documented (Bradshaw and Howard 2018; Ogbonna and Okafo 2020). These negative aspects lead to an increased focus on the need to regulate online activities and to research highlighting the particular place of platform companies in that context (Gillespie 2013; Gorwa 2019), as the example of the 2022 Kenyan elections presented above highlights. In that context, recent scholarly efforts have emphasised the need to regulate online activities in addition to the regulatory efforts platforms undertake (Stockmann 2023). However, research only rarely investigates how African countries attempt to regulate online content[4] and do not investigate how these attempts might relate to the fact that authoritarian regimes have become well versed in using the internet and social media to control their citizens (Greitens 2013; Gunitsky 2015).

In fact, a parallel literature identifies and classifies the ways in which online activities can be controlled and manipulated by states (Earl, Maher, and Pan 2022; Keremoğlu and Weidmann 2020; Morozov 2011). Most recently, this literature has been

[4] For an exception, see De Gregorio and Stremlau (2021).

complemented by research identifying the effects of specific control mechanisms on the use of specific online platforms in a specific country (M. E. Roberts 2020). However, there is a lack of studies employing a more comparative lens to understand the implications of different types of social media control mechanisms on online political activities, including across the African continent. This literature on controlling online political activities speaks to the broader scholarship investigating the survival of authoritarian regimes and the tools they deploy to manipulate nominally democratic institutions – such as elections – in order to ensure their survival (Schedler 2002; Gandhi 2008). Indeed, it emphasises how regimes can repress and manipulate online activities to ensure their survival (Gunitsky 2015).

The issues of repression and regulation of online activities are particularly relevant for Africa. The continent lags behind in terms of the number of internet and social media users (ITU 2022), but citizens of many African countries have been using social media to mobilise (Howard and Hussain 2013; Iwilade 2013). Additionally, African states regularly deploy a series of online control mechanisms, such as internet shutdowns during elections (Freyburg and Garbe 2018). This means that the internet and social media have become spaces of political contention, and that African users experience a wide range of online control mechanisms. Yet, there is only limited scholarship investigating the dilemma outlined above, that is, how African states deploy online control mechanisms to repress or to regulate online activities, some of which are important political ones.

The present dissertation therefore focuses on the African continent. It contributes to the literature on online control mechanisms by bringing in insights from the literatures on the political use of social media and the internet and on the negative aspects of social media for democracy. In doing so, it explores the broad question of the role played by social media and the internet in political processes. Specifically, the research presented here explores a) the implications of the online control mechanisms deployed by African states for citizens' exercise of online freedoms (Articles 1 & 2), and b) the conditions

under which online control mechanisms constitute a form of regulation or repression (Articles 3 & 4).

Each article included in the dissertation stands as an independent scientific contribution and adopts its own theoretical framework and research design to answer its specific research question. These are detailed in Table 1. However, together, the four articles offer a unique theoretical, methodological, and empirical contribution to the field. Theoretically, my dissertation inductively identifies the opportunity structure of social media use for electoral candidates in authoritarian regimes (Article 2) and proposes a theory of the incentives that can drive the adoption of different kinds of taxes on online activities (Article 3). Methodologically, the dissertation uses a mixed methods approach to explore the role social media play in politics. Empirically, it emphasises that African states deploy a variety of online control mechanisms both to repress and to regulate their citizens' online activities. Crucially, my research shows how future research needs to consider the regulatory challenges faced by African states, as well as the political systems in place in African countries, and citizens' perceptions when investigating online control mechanisms.

Indeed, Articles 1 and 2 find that citizens and candidates are aware of those online control mechanisms that are blunt, such as social media shutdowns, and can adapt accordingly to continue exercising their online freedoms. Article 1 focuses on freedom of information. It finds that citizens of states that shut down social media tend to use social media to get the news *more* than citizens of states who do not rely on social media shutdowns. It also finds that, surprisingly, this relationship is stronger for older citizens. A secondary finding is that citizens might be aware of surveillance mechanisms deployed by states, as those citizens of states that monitor social media use social media to get the news *less* than citizens of states that do not monitor social media. Turning to the use of social media to campaign in legislative elections, the case of the January 2021 legislative campaign in Uganda provides evidence that the online control mechanisms deployed by the regime – shutting down social media and

spreading disinformation – benefited pro-regime candidates, who were less affected by campaign restrictions and less dependent on using social media to campaign. The article does find some evidence of candidates and voters using circumvention tools to bypass social media shutdowns, but the of circumvention tools use does not appear widespread among interviewees. Thus, online control mechanisms do restrict online freedoms, despite the existence of circumvention tools. Article 1 finds a negative relationship between social media shutdowns and citizens' use of social media for news, which points to a possible backlash effect of shutting down social media in a quotidian setting. Article 2 focuses on a contentious event – an election – and shows that in that case, online control mechanisms present an important challenge for candidates, as not all voters are able to use circumvention tools and bypass state controls.

Turning to regulating online activities, it is difficult to disentangle when online control mechanisms are mere regulation from when they are a form of repression that uses regulation as a justification. Article 3 finds that a combination of economic and political incentives lay behind the adoption – or non-adoption – of different forms of taxation of online activities. Overall, more authoritarian regimes have both economic and political incentives to tax their citizens' online activities. Doing so limits access to the internet and social media to a small urban elite. However, evidence from Rwanda shows that it might be in an authoritarian regime's interest to instead encourage internet adoption to monitor its citizens and to implement an ambitious development strategy based on information and communication technologies. Regarding the regulation of online hate speech, disinformation, and misinformation, news items from African states that do not respect freedom of expression appear to discuss internet shutdowns as a regulatory tool more than others (Article 4). However, news items from states that have lower levels of legislative constraints also discuss legislation against hate speech, disinformation, and misinformation more. Again, this highlights the difficulty of disentangling regulation from repression, but also shows that it is important to consider both aspects when investigating online control mechanisms.

The remainder of this framing introduction is structured as follows. First, in the next chapter, I present the theoretical and normative underpinnings of the overall dissertation, first focusing on internet and social media control mechanisms and then presenting how the dissertation takes authoritarian politics as a starting point. The following chapter presents an empirical and theoretical overview of the use of the internet and social media for politics in Africa, before detailing the research design the dissertation adopts. It is followed by a chapter discussing the approach adopted in the dissertation in terms of case selection, data collection and methods, as well as offering general reflections on the limitations and ethical dimensions of my doctoral research. The final chapter presents the main findings, discusses the dissertation's main contributions, and identifies potential avenues for future research. The framing introduction is followed by the four articles.

Table 1 Overview of articles

#	article	line of enquiry	research design	data	findings
(1)	'Online censorship and young people's use of social media to get news' (forthcoming), *International Political Science Review.*	Implications of online controls for the exercise of online freedoms	Cross-national (multilevel logistic regressions)	Cross-national dataset (34 countries)	The article explores the relationship between regimes' controls of social media and African citizens' use of social media for information. It shows that overt forms of controls, such as social media shutdowns, are associated with a higher informational use of social media. Surprisingly, the association is stronger for older citizens.
(2)	'Social media and parliamentary candidates in Uganda', with Gerald Kagambirwe Karyeija, under review at the *Journal of Modern African Studies.*	Implications of online controls for the exercise of online freedoms	Case study (Uganda)	35 interviews; social media data	Taking the 2021 legislative campaign in Uganda as a case, we show that social media can facilitate campaigning for opposition and independent parliamentary candidates. However, social media offer opportunities for electoral autocracies to further control and influence campaigns, thus forcing candidates to navigate online manipulation and censorship efforts.
(3)	'Revenue Mobilisation or Repression? Taxing online activities in Africa', unpublished manuscript.	Online controls as regulation or repression	Comparative case study (Benin, Uganda, Nigeria, Rwanda)	Official documents; media reports; time-series data	The article sketches a theory of drivers behind different strategies to tax online activities. Taxes indirectly paid by citizens on their use of specific platforms are adopted by more authoritarian states, unless they have strong incentives to increase internet and social media adoption in the form of their economic strategy or an interest in monitoring their citizens. Indirect taxes on internet data are adopted based on pressures to collect revenue, and are likely to be set at a higher, more repressive rate in more authoritarian countries.
(4)	'How African countries respond to fake news and hate speech' (2023), with Lisa Garbe and Lisa-Marie Selvik, *Information, Communication & Society.*	Online controls as regulation or repression	Cross-national statistical analysis	Newspaper articles covering 47 countries	We find that in states that restrict freedom of expression, news reports are more likely to discuss technological approaches as a solution to combat online hate speech and fake news. Legal approaches to regulating hate speech and fake news receive more attention in states with weaker legislative constraints on the executive. States do justify the repressive use of online controls as a form of regulation.

Theoretical underpinnings: online control mechanisms and regime type

The dissertation explores the role online control mechanisms play in the exercise of political rights across Africa, while also acknowledging that African states, like other states, face challenges that can justify regulating online freedoms. Therefore, this first chapter proposes to place the concepts of online repression and regulation within the broader literature focused on internet control, and to reflect on the normative perspectives that undergird the concept of online controls.

Controlling the internet and social media

The internet plays an essential role for citizens in the exercise of their political freedoms, particularly their freedom of information and their freedom of expression. Freedom of information and expression are guaranteed in article 19 of the Universal Declaration of Human Rights (United Nations 1948):

> *'Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.'*

The internet's role in the exercise of these fundamental rights is outlined in the report of the United Nations Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression (La Rue 2011). While that report expressed concerns over regulation that could result in disproportionate restriction of these fundamental rights and freedoms, the report also reiterates that there are limits to these freedoms and that there is a need for some regulation (Kettemann 2020, 36; La Rue 2011, 7–8).

In order to discuss how online activities can be regulated and controlled, it is necessary to start with a short discussion of how the internet and later social media emerged from the core ideas of a decentralised infrastructure and a space of freedom. Then, I will review the classifications of online control developed so far.

Defining the internet and social media

The internet is grounded in physical infrastructure including submarine cables connecting continents to each other and the network created by open exchange protocols between machines and datacentres. (Goldsmith & Wu, 2006, pp. 13–46; Kettemann, 2020, pp. 24–25; Lessig, 1999, pp. 4–5, 102–103). The combination of physical infrastructure and network enables the easy transfer of data, without relying on centralised systems and without regards for territorial borders. A variety of layered actors are involved in connecting users to data or to other users, from those responsible for cables, to those storing data, to those producing or sharing content (Mueller 2015, 805).

As succinctly presented above, internet infrastructure involves a wide range of actors. However, most internet traffic is directed to a small set of platforms (Hindman 2018, 19–20) that "provide storage, navigation, and delivery of the digital content of others" (Gillespie 2013, 407). The definition of 'platform' remains broad, and includes varied type of services such as social media, search engines, or marketplaces (Gorwa 2019). Narrowing down from platforms to a clear definition of social media, which are the main focus of the dissertation, proves challenging. Indeed, an early definition of social media describes social media as 'allow[ing] the creation and exchange of User Generated Content' (Kaplan and Haenlein 2010, 61). This is closely connected to the definition Gillespie proposes of platforms mentioned above.

However, the above understandings of social media are very much centred on Western, Educated, Industrialised, Rich and Democratic (WEIRD) countries. This is of course partly because these and most other online platforms originated from the technology community of the United States' Silicon Valley (boyd 2015), even though some social

media platforms were created in other regions, most famously China (Stockmann, Luo, and Shen 2020). An important critique of the research on social media is that it disregards the uses that are developed in response to challenges met in specific to geographies beyond WEIRD countries (Schoon et al. 2020). It is therefore helpful to draw on the definition of social media as a phenomenon, and not "the sum of its terms' parts" (boyd 2015). This helps move beyond broad definitions that transform into a long list of examples. It also highlights that a platform like WhatsApp can be social media for a group of users, if they use the platform to discuss as within large groups, instead of using it as a one-on-one messaging system (Miller et al. 2016, 8–9). In the present dissertation, social media consist in a set of internet-based platforms that enable information sharing between many users. This definition is voluntarily broad, as the articles adopt different understandings of social media, depending on how research participants themselves understand social media.

But let us go back to the roots of the internet and the creation of social media as a space where individuals would collaborate without any form of hierarchy or authority, and beyond state borders (Kaplan and Haenlein 2010; Lessig 1999, 4–5). Early studies of the role of the internet in politics highlight the potential of the internet as a democratising tool, in particular because it facilitates access to information and free expression (Groshek 2009; Nisbet, Stoycheff, and Pearce 2012), and as it ensures a level of transparency that fosters good governance (Khazaeli and Stockemer 2013). While the internet has been identified as a "liberation technology" (Diamond 2010), others highlight the problematic aspects linked to online activities, such as cybercrime or the use of the internet to build terrorist networks (Deibert and Rohozinski 2010), and more recently issues related to hate speech (Gagliardone 2019) and election manipulation (Giglietto et al. 2020). In fact, these latter issues are at the heart of debates regarding how to regulate online platforms, with some emphasising the need for companies to take responsibility (Gillespie 2013), and others proposing that the focus should be on those behind these disruptive behaviours (Mueller 2015). In fact, a large

body of scholarship has focused on identifying and classifying the control mechanisms that can be deployed over the internet.

Classifications of online control mechanisms

As a lawyer, Lessig identifies 'forces' that regulate internet, namely norms, the market, the architecture, and legislation (Lessig 1999, 86:99, 164:185; 2006, 121:137, 233:275). In short, he dismantles the libertarian utopia and provides a framework to look for how online activities are regulated. Three of the forces – or mechanisms – he identifies are institutional, while the architecture mechanism is technological: states can implement technical measures to limit what people in country can access (Boas 2006, 364). Apart from legislation, these forces are not necessarily exerted by the state. Taking the market as an example, a large literature has been dedicated to how the business models of platform companies have led to a system of 'surveillance capitalism' (Zuboff 2019) where the companies exploit user data, endangering privacy (Couldry and Mejias 2019) and democracy (Couldry 2017; Hindman 2018). This literature calls for better regulation of platform companies, beyond existing data protection or anti-monopolistic legislation (Bennett 2023; Gorwa 2019). Note that while market forces of course influence states' policymaking, these forces only form the background to my dissertation.

My scientific investigation takes the works of Lessig (1999; 2006) and Boas (2006) as a conceptual starting point, distinguishing between institutional and technical controls. The simplicity and neutrality of this framework is helpful, as it makes it possible to explore vast questions – for example, regulating hate speech, disinformation, and misinformation – across a large number of countries. Both types of controls are exercised by the state, whose role is at the heart of my research. Indeed, Lessig identifies two other 'forces' – norms and the market – that are not directly linked to the state, although the state can regulate the market or foster norms via legislation. However, controlling online activities is more complex than such a simple framework implies, as reflected by the work of Deibert, Palfrey, Rohozinski and Zittrain (2010). In this technical report, they investigate the tools deployed by states from the

Organization for Security and Co-operation in Europe (OSCE) to then offer a classification of online controls. They do not focus solely on authoritarian states such as Russia to develop their classification, which leads to the fruitful development of a classification that includes techniques deployed in Europe. They identify three 'generations' of control mechanisms that are implemented by democratic and authoritarian regimes alike (Deibert et al. 2010, 1–14).

The first generation includes strategies based on denying access to specific websites, such as those offering child pornography, propagating terrorist ideologies, or opposing the state. The second generation includes institutional mechanisms, like law-making. Third-generation mechanisms were originally described as 'competing with potential threats', which included a long list of techniques including surveillance and computer network attacks (Deibert et al. 2010, 7). Deibert, Palfrey, Rohozinski and Zittrain emphasise that some of the control mechanisms from each of the three generations are used in European countries, in particular pressuring Internet Service Providers to deny access to child pornography or terrorist propaganda, legislating on those issues, and deploying surveillance of online communication services (2010, 290–91). This framework was later revised to depart from the generational perspective and use adjectives that describe how each type of control works. Defensive controls are those where regimes limit access. Institutional controls include laws, regulations, and other types of state requirements. Offensive controls imply that states are more proactive and use tools that facilitate surveillance and propaganda, monitoring what is being shared online, and producing competing content (Deibert 2015, 66–69). The more recent formulation also focuses the lens on authoritarian regimes: although it mentions that some of these tools are used in democratic countries, it emphasises that online controls are deployed by authoritarian regimes to ensure their survival. It is also apparent from this work that in Europe, most mechanisms are deployed through legislation first, which reveals one of the limits of this framework: it does not draw very clear lines between the different types of control mechanisms.

In fact, three more recent classifications can be helpful to disentangle how states control online activities. The first such classification is similar to the one formulated by Deibert (2015). It distinguishes between offline response, online restriction, and online engagement (Sanovich, Stukal, and Tucker 2018). Offline responses include a wide variety of tools, including legal prosecution of platform companies or users, requirements to register, or forms of controls of online companies, such as taking them over. Online restrictions include the first generation of controls identified earlier – like filtering online content – as well as taking control of internet service providers or shutting down the internet. Online engagement covers propaganda through either paid-for online messages or automated messages ('bots'). While this framework helps clearly distinguish between online and offline mechanisms, the place of an important tool mentioned earlier remains unclear: that of surveillance.

The second recent classification of state controls focuses the lens on how online controls effect users (M. E. Roberts 2018). In her study of the system in place in China, Roberts emphasises the costs control mechanisms inflict on users, thereby deterring them from using digital media (2018, 42). She identifies three types of mechanisms: fear, friction, and flooding, each making it more costly for citizens to use digital media (2018, 42–92). Filtering online content creates friction, and creating content via paid-for or automated messages creates a flooding effect, making other content difficult to access, while fear is created for example when users are reminded their online behaviour is monitored by the state, a regular occurrence in China. Here, the same mechanism can create different effects, for example taking down social media messages can create fear for users posting the message, while creating friction for others. Moreover, online controls are classified based on the effect the state aims to create, but not necessarily based on citizens' own perceptions.

By contrast, Keremoğlu and Weidmann (2020) propose to classify control mechanisms based on the layer of the internet that each mechanism targets: the infrastructure, the network, or the application layer. This classification has the advantage of considering online surveillance tools as well as tools linked to restrictions or engagement, as they

themselves demonstrate. State surveillance can be organised at the level of the network – for example by having all internet traffic going through state providers – or at the level of applications – by monitoring public posts and by requesting platform companies share information on users. Similarly, online restrictions can be organised at the infrastructure level, when internet access is deployed (Boas 2006) including differentially across regions, thereby underserving specific ethnic groups (Weidmann et al. 2016). They can also occur at the network level, by blocking specific websites, or at the application level, when filtering out messages. However, as these two examples show, the same kind of control mechanism can be applied to different layers of the internet, and it is not always very clear which layer is targeted by which mechanism. Additionally, offline controls such as legislation do not necessarily target a specific layer. This classification, however, helps in connecting control mechanisms with the way the internet works as a combination of physical infrastructure, network protocols, and platforms (or applications).

Each of the above classifications offers fruitful starting points to investigate the implications of online controls and highlights the large variety of tools states can deploy to control online activities. First, they help map and identify what tools are in the state's toolbox and how each of these tools might affect online access and online content. Second, they adopt different angles, such as focusing on how control mechanisms work (Deibert 2015; Sanovich, Stukal, and Tucker 2018), the way they impact users (M. E. Roberts 2018), or the layer of the internet targeted (Keremoğlu and Weidmann 2020). As a result, these classifications must be flexible. However, these two characteristics also explain that each classification has limitations. Indeed, none of these classifications has been systematically operationalised, apart from the case studies of Russia (Sanovich, Stukal, and Tucker 2018) and China (M. E. Roberts 2018). The more recent frameworks help in mapping the complex landscape of control mechanisms available to states. However, they are developed based on autocracies, and do not indicate whether control mechanisms are deployed beyond autocratic contexts.

This point is also what motivates the most recent theoretical work on control of online activities to limit social movements (Earl, Maher, and Pan 2022). Earl and co-authors (2022) develop a typology of what they call ‘digital repression’, based on a) who is repressing (the state, officials loosely connected to the state, or private actors), b) if the mechanism is akin to non-digital repression, or if it is internet-specific, c) whether the method is coercive or channels behaviours in a specific direction, and d) whether it is overt or covert. They consider repression as a ‘nonnormative term’ to describe ‘actions or policies that are meant to, or actually do, raise the costs of activism’ (Earl, Maher, and Pan 2022, 1). While this typology helps bridge the normative limitations of other classifications and maps the mechanisms neatly onto the actors who implement them, its neutrality also hinders reflection around the possible legitimacy of using online control mechanisms to solve policy challenges. Its focus on social movements and activism might also be questioned, as it assumes that the use of online control mechanisms always aims at limiting activism.

Authoritarianism as a normative starting point

If early studies of online controls built catalogues on mechanisms based on democratic as well as authoritarian states (Deibert et al. 2010; Lessig 1999), more recent efforts discussed above have focused on authoritarian states almost exclusively (Keremoğlu and Weidmann 2020; Sanovich, Stukal, and Tucker 2018). Beyond classification attempts, a growing body of literature investigates the conditions under which states implement different control mechanisms.

Early efforts included both democratic and authoritarian states and painted in broad strokes the two main motivations between online censorship: protecting a) state authorities and b) the public good (Howard, Agarwal, and Hussain 2011). However, most research focuses on authoritarian states, with only a few exceptions. Indeed, scholarship turned to investigating specific types of controls, showing for example that authoritarian states that allow some level of political participation use internet filtering

much more than those who do not (Hellmeier 2016). During elections, authoritarian states use denial-of-service attacks, which render websites inaccessible due to a high number of simultaneous connection attempts (Lutscher et al. 2020). Such attacks particularly target opposition and civil society websites, especially those hosted abroad. Internet shutdowns are a feature of politically contentious events in authoritarian regimes, be it mass-mobilisation movements like the Arab Spring (Hassanpour 2014) or elections (Freyburg and Garbe 2018). Interestingly, Iran developed its strategy of online controls in response to international democracy-promotion efforts and sanctions (Michaelsen 2018). Most of that body of research focuses on authoritarian states, showing that states can combine different forms of controls to limit online freedoms, but does not consider how more democratic regimes regulate online activities (MacKinnon 2010; Pearce and Kendzior 2012). Authoritarian states are, however, selective with regards to when to combine different techniques, and when to only use one and not the others (Kawerau, Weidmann, and Dainotti 2023).

Taken together, this body of literature largely focuses on how authoritarian states deploy online controls aims at ensuring regime survival, with only a few exceptions including democratic states in their analysis (Howard, Agarwal, and Hussain 2011; Meserve and Pemstein 2018; 2020). Indeed, democracies also use internet filtering, particularly following terror attacks, but also in cases of defamation or to protect intellectual property (Meserve and Pemstein 2018; 2020). Here, the focus is strictly on democracies, but Howard, Agarwal, and Hussain (2011) consider authoritarian and democratic states simultaneously. They show that both types of regimes rely on online censorship to protect state authority (for example, to protect national security or national institutions) and to protect the public good (such as preserving cultural values or dissuading criminal activities) (Howard, Agarwal, and Hussain 2011, 229). Note that their definition of censorship includes both shutting down access to internet and blocking access to specific websites or filtering specific content.

The way in which the literature is skewed towards authoritarian regimes implies, on the one hand, that the use of online control mechanisms in democracies is understudied and that, within democracies, such mechanisms are seen from the perspective of regulating problematic uses of internet and social media (Meserve 2018). However, on the other hand, problematic uses of internet and social media are not limited to democratic states (Howard, Agarwal, and Hussain 2011). Indeed, the rapid diffusion of misinformation, disinformation, dangerous or extreme speech, as well as the question of taxing the revenues of large platform companies also concern authoritarian states. My doctoral research therefore attempts to take up the challenge raised by Meserve (2018) to not limit the investigation of states' use of online control mechanisms to authoritarian regimes, but in a slightly different manner. That is, instead of solely focusing on democratic states, I choose to include both more authoritarian and more democratic states in the universe of cases. This is particularly important as the challenges social media and internet present to states are often found across regimes, while the solutions can vary depending on regime type.

Democratic and authoritarian regimes

My exploration of online control mechanisms deployed across regime types starts from the long tradition in comparative politics of defining regimes based on the democratic ideal (Dahl 1971; Gandhi 2008; Levitsky and Way 2010; Schedler 2002). In his canonical definition of democracy, Dahl highlights that the main characteristics of the ideal type are its responsiveness to citizen preferences, where participation and contestation are open for all (1971, 2–3). Dahl emphasises that both broad-based participation and contestation are fundamental to democracy: that is, all are allowed to share their preference through voting, and all are allowed to compete politically (Dahl 1971, 5). Democracy implies that citizens enjoy fundamental political rights, such as freedom of expression and the right to alternative sources of information, in addition to the right to vote and to compete for office (Dahl 1971, 2–3; 1998, 85). While this definition of democracy offers a useful starting point, it can be expanded to include the institutions through which democratic states are organised to ensure the executive

remains accountable outside of elections and that all citizens as well as the state itself are subject to the rule of law (O'Donnell 1998). This is achieved through the separation of the executive, the legislative, and the judicial powers (Rose-Ackerman 1996), where the legislature and the judiciary constrain the executive. In sum, the more maximalist definition of liberal democracy includes the respect for citizens' rights, the existence of constraints on the executive, as well as free and fair elections as the procedure to select those who will exercise power (Coppedge et al. 2016).

Elections are indeed not sufficient to identify democracies, and in fact most authoritarian states do hold regular elections (Levitsky and Way 2010; Schedler 2002). The quality of elections matter, leading to the most parsimonious definition of democracy (and by extension dictatorship) including a condition that elections have led to the alternance of the ruling party at least once (Alvarez et al. 1996; Gandhi 2008). However, the extent to which authoritarian regimes allow contestation varies, leading to the development of more complex regime classifications, including competitive authoritarian regimes (Levitsky and Way 2010; Schedler 2002).

These regimes allow higher levels of contestation while simultaneously manipulating institutions – including elections – to ensure meaningful contestation is not possible, relying on a long 'menu of manipulation' to tilt the playing field (Schedler 2002). This list includes a wide variety of tools that can be used to manipulate the institutions, such as vote-buying, manipulating electoral rules, as well as restricting civil liberties. Note that this menu of manipulation concerns manipulation of the vote, as well as manipulation of other institutions such as the legislature or the judiciary. In fact, elections are often the first step for regimes transitioning from authoritarian to democratic, but they are not the only step: respect for citizens' rights, including freedom of expression and the right to information, and constraints on the executive are also essential, even though they come later (Mechkova, Lührmann, and Lindberg 2019). Authoritarian regimes that hold elections therefore manipulate other aspects to ensure their survival and limit the extent to which citizens, other institutions, and the

media and civil society hold them accountable. Here, it is important to note the critique that the study of authoritarian regimes is based on the study of democracy: authoritarian regimes are analysed based on which aspect of democracy they lack (Glasius 2023, 13–14). However, one of the strengths of this approach is that it conceptualises regime type on a continuum, from more authoritarian to more democratic (Dahl 1971; Coppedge et al. 2016; Mechkova, Lührmann, and Lindberg 2019), and makes it possible to compare different states to each other.

Repression and regulation

The ambition of my doctoral project is to investigate the implications of online control mechanisms for freedom of expression and information, and to explore cases when states justify the use of such controls based on challenges more democratic as well as more authoritarian regimes face. And indeed, beyond the menu of manipulation identified by Schedler (2002), authoritarian regimes also deploy a large 'menu of autocratic innovations' that were first developed in democracies before being distorted and re-used by authoritarian regimes (Morgenbesser 2020, 1057), such as legislation nominally aimed at limiting misinformation and disinformation, but actually repressing the freedom of expression of critical voices. This emphasises the importance of investigating when regulation is repression, especially when considering, as I do here, that repression is the regulation of fundamental political liberties, such as freedom of expression and information, that grossly discriminates against those who challenge power[5] (Davenport 1995, 683; 2007, 2). If authoritarian states face similar challenges online to those faced by democracies, and attempt to regulate them, it is important to adopt a comparative perspective to understand to what extent they approach online

[5] This departs from the definition of repression used by Earl and colleagues (2022) presented in the previous section. While they consider repression to be a nonnormative term, they do not make it possible to disentangle the use of online control mechanisms to protect fundamental rights from coercive use, i.e regulation is considered as repression in their typology.

controls differently, as well as the implications of these online controls for civil liberties.

Morgenbesser (2020) anchors his ‘menu of autocratic innovations’ in Glasius’ concept of ‘authoritarian practice’ (2018), but suggests that these innovations are imported from democratic states by authoritarian states. The concept of ‘authoritarian practice’ goes hand in hand with the concept of ‘illiberal practice’, and together they describe a pattern of actions by an organised entity that sabotages accountability processes – in the case of authoritarian practices – or that infringe on human rights – for illiberal practices[6] (Glasius 2018; Glasius and Michaelsen 2018). Authoritarian and illiberal practices can also overlap, as exemplified in the case of the deployment of a broad-reaching online surveillance policy by the United States’ National Security Agency revealed by Edward Snowden (Glasius and Michaelsen 2018). The ‘menu of autocratic innovations’ can thus be more useful when better anchored in Glasius’ concepts of authoritarian and illiberal practices, which do not assume a unilateral relationship where democratic innovations are imported and distorted in authoritarian states. Non-democratic African states have innovated, for example, in introducing new ways of taxing the digital sector (Hearson 2021, 161), and such innovations could be adopted by more democratic states.

Authoritarian and illiberal practices are forms of repression, as they limit challenges to the exercise of power by sabotaging accountability processes. Not all regulation of freedom of expression and right to information are repressive. Indeed, as mentioned in the opening of the present chapter, the rights to information and free expression can be restricted in some cases (La Rue 2011, 7–8): to protect the rights of others, and to protect national security or public order, as well as ‘public health or morals’.

[6] Glasius (2023) emphasises that authoritarian and illiberal practices are not only deployed by states, but can also be deployed by other actors who can influence the state, such as corporations or religious organisations. Nevertheless, my dissertation focuses on states (in Africa) and how they interact with their citizens.

Restrictions need to be legal (that is, fit with the few cases just listed), necessary, and proportionate (PoKempner 2019, 226). In other words, regulation that respects democratic principles is not repression. However, regulation is not the preserve of democracy, nor is repression the preserve of authoritarian regimes (PoKempner 2019; Glasius and Michaelsen 2018; Davenport 2007).

Online controls, internet, and social media in Africa

While the ambition of my doctoral project is to investigate the implications of online control mechanisms for freedom of expression and information and to explore cases when states justify the use of such controls based on challenges more democratic states as well as more authoritarian states face, it focuses on the African continent. In this chapter, I therefore present an empirical overview of the use and control of internet and social media across Africa, compared to the rest of the world. I then map previous research on social media, censorship, and politics in Africa. Then, in the last section of this chapter, I describe the design I adopt in this dissertation.

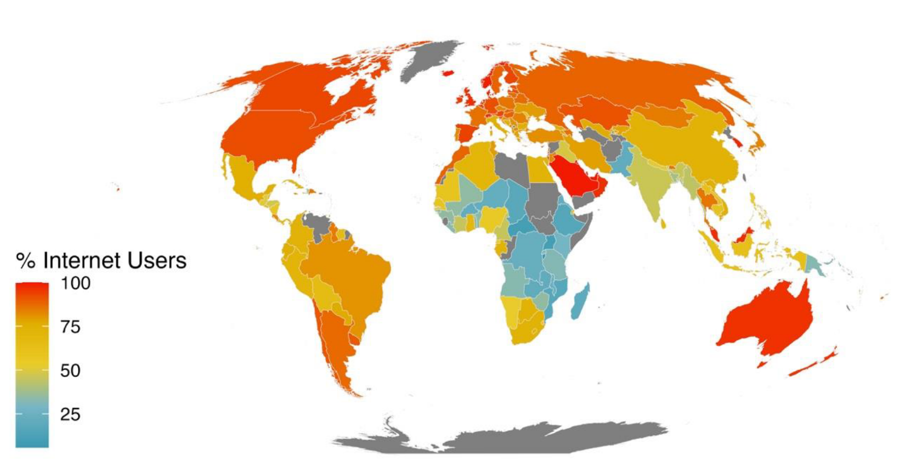
Empirical overview

As discussed in the previous chapter, social media rely on the internet infrastructure. The use of the internet has spread across the world since the 1990s, but there remain large disparities from country to country and between continents. Figure 1 shows that overall, the share of the population using the internet in African states remains lower than that of the rest of the world, with a few exceptions in North and Southern Africa. The comparatively low level of internet use across Africa is explained by three factors: lack of infrastructure, particularly to connect rural areas, the high cost of devices, and the high cost of internet data (Berrou and Mellet 2020). This, however, does not mean that investigating the relationship between African states' use of online control mechanisms and their citizens use of internet and social media is irrelevant.

To the contrary, the number of African users continues to grow, meaning that new users join an internet that is under state control to a much larger extent than during the Arab Spring, for example. Additionally, platform companies such as Facebook or Google are using this as an opportunity, developing their own undersea fibre optic cables to increase the speed of internet connection to the African continent (Hindman 2018, 22; Onukwue 2022). They also have developed partnerships with telecommunications providers to offer what is called 'zero-rating', that is, free access to a limited version

of Facebook for example, or free Wi-Fi connections in urban areas (Onukwue 2022; Oyedemi 2020). These strategies aim to get mobile phone owners who might not be able to afford the cost of mobile data to start using the services of these platforms, and to collect data about these users – often unbeknownst to them (Nothias 2020). This also explains why African users of social media are not always aware that they use the internet (Silver and Smith 2019).

Figure 1 Internet users as percentage of population

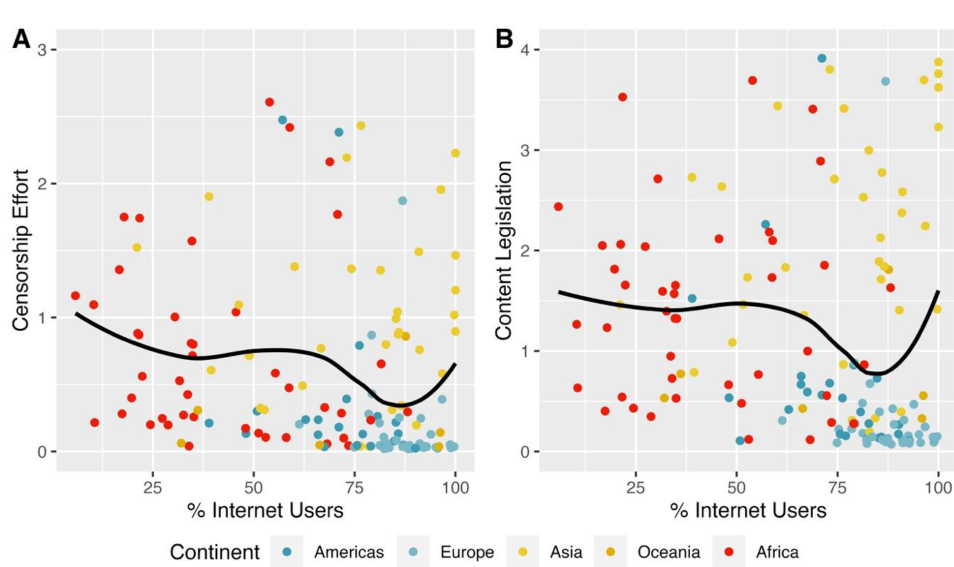


Source: International Telecommunications Union via the World Bank. Figures for 2021.

Despite being among those countries with the lowest share of internet users, African states control online activities, as shown in Figure 2, which presents two broad measures of state control of online activities: internet censorship and the repressive legislation of online content. In panel A, 'internet censorship effort' designates efforts by the state to block or filter access to specific websites, including using denial-of-

service attacks, and shutting down the internet, partially or completely. A value closer to 3 indicates the state successfully blocks access to online political content that is not pro-government, values closer to 2 reflect that even if the state tries to block such content, many users are able to circumvent the blocking. A value of 1 indicates that the state blocks access to politically sensitive content, but that some critical voices are accessible. 0 denotes the state does not restrict access to online political content. In panel B, 'content legislation' represents the extent to which existing legislation opens up for the state to remove content at will, where 4 indicates that the legislation enables the state to remove almost all political content, while 0 indicates that the legislation only enables content removal based on clearly defined and narrow criteria.

Figure 2 State efforts to censor the internet and regulate political content.



Source: V-Dem and ITU via World Bank. Figures for 2021. The indicators for internet censorship effort and internet content legislation have been reversed, so that a higher number represents a higher level of censorship, or legislation that opens for arbitrary regulation of political content.

The fitted line in each panel shows that the level of internet control (censorship effort for panel A, and restrictive legislation in panel B) is higher in countries where the proportion of internet users is either extremely high or extremely low. African countries, represented by red dots, tend to be on the lower end of the x-axis (with a lower share of internet users), but they do at a minimum attempt to censor online political content (closer to and above 1 in panel A), and they do rely on legislation that enables political content removal (closer to and above 1 in panel B). This further motivates a closer examination of the relationship between the political uses of the internet and state control across the African continent, especially as one censorship strategy deployed by authoritarian states is to avoid deploying the necessary infrastructure for internet access (Weidmann et al. 2016).

Online citizens-state interactions in Africa

The overview above shows that African citizens do use internet – although to a more limited extent than people in other geographies – while African states do deploy online control mechanisms. Empirical research focusing on the use of social media for politics in Africa has explored how African citizens use social media for politics, how electoral candidates use social media to campaign, and how African states have attempted to control access to internet and social media as a form of censorship.

Citizens' use of social media

So, who actually uses social media and the internet for politics across Africa? Early studies have focused on the use of mobile phones and mobile access to the internet or social media (Archambault 2010; Wasserman 2011), as most African users access social media and the internet from a mobile device, particularly in rural areas where devices are often shared (Burrell 2010). Access to the internet and social media is still an issue (Adjin-Tettey 2020; Chiweshe 2017), as the Ugandan parliamentary candidates interviewed for Article 2 emphasised, both regarding voters residing in rural areas, but also regarding the urban poor. In fact, there remain large gaps regarding who

uses social media across the African continent, with younger citizens using social media more than older citizens, men using social media more than women, and large differences between urban and rural areas (Conroy-Krutz and Koné 2022).

This does not mean that African citizens do not use social media for politics, as shown by the wave of protests during the Arab Spring, spreading across North Africa, including Sudan and Mauritania (Howard and Hussain 2013). Even before these events, in September 2010, citizens in Mozambique mobilised to protest against food prices via text messages and, frustrated by the lack of media coverage, relayed their grievances on social media (Iwilade 2013). Other examples include campaigns in Zimbabwe (Gukurume 2017; Moyo 2011), in Ethiopia (Gagliardone and Pohjonen 2016), in Uganda (Kasadha 2020; Kuye 2020), and in Nigeria (Armstrong and Butcher 2018), to name but a few cases. Social media are also frequently used by citizens around elections, as in Kenya after the December 2007 election and the crisis that followed: citizens used social media during a media black-out to track electoral violence (Mäkinen and Kuira 2008).

Electoral candidates

A number of edited volumes offer in depth qualitative case studies showing that activists and politicians use social media during protest movements and elections (Dwyer and Molony 2019; Kperogi 2023; Mutsvairo 2016; Ndlela and Mano 2020a). In many cases, candidates seem to use social media to campaign independently from potential party strategies (Dwyer, Hitchen, and Molony 2019; Cheeseman et al. 2020). Most case studies focus on a single social media platform, such as Facebook (Bosch, Mare, and Ncube 2020; Masilo and Seabo 2015), Twitter (Maio and Dionne 2021) or WhatsApp (Cheeseman et al. 2020). This is due, in part, to methodological challenges I will discuss in the next chapter on data and methods. These studies start from the perspective that social media is a ‘game changer’ in electoral campaigns, enhancing political participation and facilitating mobilisation (Ndlela and Mano 2020b, 8). They do not take into account, however, the role of regime, and in particular how more

authoritarian regimes deploying online control mechanisms might affect electoral campaigns.

A recent edited volume represents an exception, as it includes in-depth case studies of the censorship efforts deployed by some African states and how they affect online dissidents (Kperogi 2023). However, this volume does not propose to systematise how different types of control mechanisms might have different implications. While internet shutdowns impact citizens' political rights as well as their everyday lives (Chari 2023), their impact on candidates' campaigns remain understudied. There is rich evidence that social media represent an important tool for candidates, but there is little exploration of whether social media might benefit pro-regime or opposition candidates more.

States' use of online control mechanisms

The growing body of literature investigating the online control mechanisms African states deploy focuses, to a large extent, on shutdowns (Marchant and Stremlau 2020; Mpofu 2023), particularly during elections (Freyburg and Garbe 2018). This is how the Mozambican state justified its request to operators in 2010, although this decision has been widely linked to the regime's will to limit contestation (Iwilade 2013, 1061). Indeed, shutting down the internet is a widespread practice during contentious events across the continent, as systematic comparative studies of elections (Freyburg and Garbe 2018) and large protest movements show (Rydzak, Karanja, and Opiyo 2020). There is evidence that internet shutdowns have a limited effect on protest movements across Africa (Rydzak, Karanja, and Opiyo 2020). Outside of contentious events such as protests or elections, there is limited empirical research identifying the implications and effects of online control mechanisms on citizens' everyday use of social media across Africa, in a comparative perspective.

Other control mechanisms are also deployed by African states, such as online surveillance (Duncan 2018; Galava 2019), the use of repressive cybercrime legislation (Cross 2021; Galava 2019; Parks and Thompson 2020), and taxation (Bergère 2020). These case studies provide important steppingstones in building a systematic

understanding of the range of mechanisms deployed by African states to control their population's online activities. They also emphasise that authoritarian African states justify coercive legislation, surveillance efforts, and to some extent internet shutdowns by appealing to the risks posed by hate speech and disinformation and misinformation campaigns.

While there is a link between mobile phone coverage and political violence and between social media and violence (Pierskalla and Hollenbach 2013; Warren 2015), scholars of online hate speech in Ethiopia faced the challenge of having to define 'hate speech', a term that is extremely polarised in Ethiopia, and risked alienating the state and the opposition with their finding that hate speech was limited to a small number of social media users that had little reach (Pohjonen 2019). The phenomenon of disinformation and misinformation is also frequently analysed as justification for authoritarian policies (Galava 2019). It is, however, rarely analysed in African contexts (Gagliardone et al. 2021; Guess and Lyons 2020, 26), while at the same time being recognised as a global challenge. This does not mean that disinformation and misinformation are not important issues – and indeed, case studies of the use of social media by electoral candidates do mention these issues (Dzisah 2020, 112–13; Ngange 2020, 130–31). Overall, while there is evidence that global issues are used as justification for the introduction of policies that control online activities in authoritarian states in Africa, research exploring the conditions under which African states deploy online control mechanisms rarely tries to connect these to global issues (De Gregorio and Stremlau 2021).

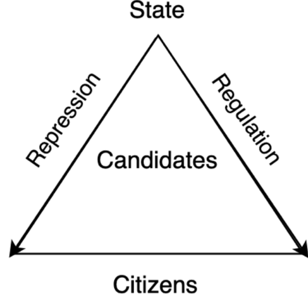
Research approach

The scholarship reviewed above provides necessary insights into the strategies African states deploy to control online activities on the one hand, and into the political uses of social media and internet on the other. However, taking these two literatures into consideration together raises a new series of questions. In this dissertation, I aim to

explore the relationship between the control mechanisms African states deploy and citizens' and candidate's use of social media. I will also examine the extent to which control mechanisms can be a form of regulation or a form of repression. Some of them might be forms of regulation deployed to tackle well-identified challenges, while in other cases such challenges can be used as justification for repression (Galava 2019; Iwilade 2013).

Therefore, I focus on online control mechanisms in two different ways. First, I investigate the implications of these mechanisms for the political uses of social media by citizens and by electoral candidates. Second, I explore how African states approach two policy challenges: taxing online activities and handling hate speech and fake news. Together, these two approaches enable me to draw a more nuanced picture of the online control mechanisms African states deploy. I thus explore two lines of enquiry, at three levels. The overall approach is summarised in figure 3, which shows how both lines of enquiry work together. The first line of enquiry is concerned with identifying the impact of online control mechanisms at the level of citizens (Article 1) and candidates (Article 2). It focuses on the repressive use of online control mechanisms by states. The second line of enquiry focuses on states, and particularly on the repressive and regulatory dimensions of the policies they rely upon – represented by the two arrows in figure 3.

Figure 3 Research approach



In the first line of enquiry, I explore the implications of online control mechanisms for political uses of social media in Africa. A number of studies, each investigating the effect of a specific mechanism on the use of a specific social media platform in a specific country, find both backlash and chilling effects (Hobbs and Roberts 2018; Pan and Siegel 2020). These studies identify how a specific control mechanism (shutting down access to a social media platform or arresting online activists) *causes* backlash among some citizens while it has chilling effects for others. However, the extent to which these findings can be generalised is limited, as they each focus on a single country (China and Saudi Arabia respectively).

The only study – to my knowledge – investigating the effect of a control mechanism on everyday use of social media focuses on the specific tax on the use of social media introduced in Uganda in July 2018 (Boxell and Steinert-Threlkeld 2022). By examining the number of messages posted on Twitter and geolocated in Uganda before and after the tax, the study shows that the introduction of the tax led to a reduction in the number of messages posted from Uganda. They also identify a backlash effect of the tax, leading to increased levels of calls for mobilisation. While they are able to identify effects, the study is difficult to generalise from beyond the case of Uganda, especially as this specific tax has only been implemented in Uganda and Benin for a short period of time (Rukundo 2020).

Two studies have adopted a more comparative approach to the relationship between internet censorship and surveillance one the one hand, and democratisation and political participation on the other, but these only include a very small number of African countries (Chan, Yi, and Kuznetsov 2022; Stoycheff, Burgess, and Martucci 2020). They find a negative relationship between censorship and political participation, and a positive relationship between surveillance and political participation. They also consider political participation from a broad perspective, including a large number of political activities and not specifically the use of social media to get news, which is an important aspect of citizens' exercise of their right to information. Article 1 proposes

to fill some of the gaps identified above, to further develop the evidence base on the implications of online control mechanisms for political uses of social media. Here, I find a positive relationship between social media shutdowns and the use of social media to get the news, particularly among older citizens. Article 1 includes a more in-depth review of the literatures on online control mechanisms and their implication for citizens' political activities.

Article 2 develops theory on the implications of online control mechanisms for parliamentary candidates by identifying the opportunity structure of using social media to campaign in an electoral authoritarian regime, for both opposition and pro-regime candidates. It thereby enriches the literature on social media and elections (Ndlela and Mano 2020a). This article extensively reviews the literature on the place of social media in electoral campaigns.

The second line of enquiry aims at going beyond the normative roots of the scholarship on online control mechanisms. It therefore investigates two policy challenges that concern African states as well as most other states in the world: a) taxation of the digital sector and b) regulation of hate speech, disinformation, and misinformation. These two issues are generally recognised as global issues (Faulhaber 2019; Gelepithis and Hearson 2022; Ebert and Maurer 2013; Persily and Tucker 2020). However, research concerned with online control mechanisms in authoritarian states has identified these two issues as justifications states use to deploy intrusive controls such as specific taxation on the use of social media (Boxell and Steinert-Threlkeld 2022; Kakungulu-Mayambala and Rukundo 2018) or coercive cybercrime legislation (Cross 2019; Parks and Thompson 2020).

There are a small number of studies exploring the repressive dimension of social media taxation (Bergère 2020; Boxell and Steinert-Threlkeld 2022; Kakungulu-Mayambala and Rukundo 2018). While this type of taxation was only implemented in Benin and Uganda, other studies have shown how more authoritarian regimes strategically deploy internet infrastructure to limit access (Boas 2006; Weidmann et al. 2016), emphasising

the important role played by accessibility. But accessibility is also a matter of affordability (Karikari 2023). Therefore, the taxation policies adopted by African states can lead to the exclusion of sections of the citizenry. However, taxing online activities is also a global issue, as highlighted in the previous paragraph. A limited but growing body of literature explores how African states tax online activities and the broader telecommunication sector from a political economy perspective (Mader, Duvendack, and Macdonald 2022; Magwape 2022; Matheson and Petit 2021). Article 3 therefore offers a more in-depth review of the existing literature on taxing online activities and brings it in conversation with scholarship on online control mechanisms. It sketches a theory of the drivers behind the adoption of different types of taxation, showing how economic incentives and the need for authoritarian regimes to survive both play into the implementation of different taxes.

Regulation of negative speech online, that is, hate speech, disinformation, and misinformation, is the second global issue that I and my co-authors investigate in Article 4. Here, the contribution is exploratory in nature, aiming at mapping the state responses to hate speech, disinformation, and misinformation based on media discourse. It puts to work the early classification of online control mechanisms proposed by Lessig (1999; 2006) to explore patterns of regulation, and connects them to the literature on authoritarian regimes. The article includes an in-depth review of the scholarship on authoritarianism discussed in the first chapter. Here, we show how the extent to which states respect freedom of expression and the absence of meaningful legislative constraints lead to a greater use of technological and legal approaches to regulate hate speech, disinformation, and misinformation, measured by media coverage.

Each article in my dissertation thus approaches online control mechanisms slightly differently, either to investigate their implications for citizens (Article 1) and for candidates (Article 2), or to evaluate the extent to which they constitute a form of regulation or repression (Articles 3 and 4). Taken together, the four articles map the

landscape of how African states control online activities and contribute to the growing scholarship on states' control of online activities by bringing in insights from a range of other literatures, including the literature on the use of social media for news (Article 1), during elections (Article 2), as well as literature focusing on taxing the digital sector (Article 3), and the literature on authoritarianism (Articles 1, 2, 3, and 4).

Case selection, data, and method

In this chapter, I present how I selected the cases studied for my doctoral research, the data and methods used, and the limitations of my scientific enquiry. Note however that I have employed mixed methods, and that each article approaches case selection, data, and methods differently, and each comes with its own set of limitations. These are described in detail in the relevant section of each article. Table 2 offers an overview of cases, data, and method for each article.

Table 2 Cases, data, and method by article

art.	case(s)	unit of analysis	research design	data	method
(1)	Africa	Citizen	Cross-national statistical analysis	Cross-national dataset (34 countries)	Multilevel modelling: logistic regressions
(2)	Uganda	Candidate	Case study	35 interviews; social media data	Content analysis; descriptive statistics
(3)	Benin, Uganda, Nigeria, Rwanda	State	Comparative case study	Official documents; media reports; time-series data	Content analysis; descriptive statistics
(4)	Africa	State	Cross-national statistical analysis	Newspaper articles (47 countries)	Structural topic modelling; multilevel modelling: linear regressions.

Case selection

My doctoral research aims at contributing to scholarship on state control of online mechanisms by focusing on the strategies deployed by African states. As shown in the previous chapter, African states do attempt to control online activities, even as African countries have a lower share of internet users compared to other continents. This

highlights how important it is to understand the implications of online control mechanisms for political uses of social media, as new users are increasingly getting onto the internet while also being under state control. Similarly, African states face the need to tackle global challenges, such as how to tax online activities and how to respond to hate speech, disinformation, and misinformation. Additionally, democratisation processes that started in the 1990s seem to have all but stalled, with only very few African countries having achieved high levels of democracy, in contrast to countries in Latin America and Eastern Europe that achieved much higher levels of democracy during this third wave of democratisation (Arriola, Rakner, and Van De Walle 2023, 3–7). The African continent is an important and unique case when exploring states' use of online control mechanisms and their implications for citizens and candidates: the appearance of the internet is concomitant with the third wave of democratisation, while social media are increasingly adopted at a time where democratisation has stalled. It thus represents a useful case to explore the potential transformative role social media can play in politics, at the hands of citizens, electoral candidates, and states. Therefore, the common thread between all articles is a focus on the African continent. As I also aim at moving beyond the focus on authoritarian states that permeates existing scholarship, I include more democratic states as well as more authoritarian states.

These two driving principles lie behind the case selection in the four articles. In fact, Article 1 and Article 4 adopt a cross-national perspective, including all African countries for which data is available. This means that Article 1 includes 34 countries from across the continent, ensuring variation in terms of regime type. Likewise, Article 4 includes 47 countries in the analysis. These comparisons of many countries are complemented by two studies with many fewer cases. Article 2 provides an in-depth study of the case of the 2021 parliamentary election campaign in Uganda, while Article 3 relies on comparing Uganda, Benin, Nigeria, and Uganda in terms of their efforts to explore taxation of online activities.

Initially, Uganda was selected for both articles because of the unique policy choices made by its regime. First, in 2018, the country made the headlines of technology-

focused international media for its innovative tax on social media use (Dahir 2018; Dreyfuss 2018). Second, the country held general elections during the Covid-19 pandemic in January 2021, and the regime limited campaign rallies, inviting candidates to rely on the media and social media instead. Uganda is an authoritarian regime that has been led by President Yoweri Museveni since 1986, where regular elections, dominated by the ruling party, are regularly organised (Tripp 2010; Wilkins, Vokes, and Khisa 2021). These two policy choices were particularly relevant in my scientific enquiry, as they represent the meeting point between the use of control mechanisms to tackle global challenges (the pandemic, in addition to the issue of taxing online activities) and/or to repress political activities.

The case of Uganda can be said to constitute an extreme case in two respects. First, the pandemic-related restrictions on campaign rallies and encouragements to use social media instead mean that, unusually, candidates were more likely to use social media to campaign. Second, the innovative character of the tax implemented in Uganda – it was a first in July 2018 – and the fact that it was in place over several years point towards Uganda as an extreme case, even though Benin implemented a similar tax a few months later, though only for a few days. As an extreme case, Uganda offers the opportunity to explore a phenomenon (here the online campaign on the one hand, and the tax on the other) in depth and to generate theory (Gerring 2016, 68–72).

Article 2 explores the online parliamentary campaign in Uganda in depth. Although it is a single-case study, it includes a within-case comparison, as it compares the experiences of pro-regime candidates with those of opposition candidates, in order to identify the opportunities and challenges social media offer in the context of an electoral authoritarian regime. Here, the extreme character of the campaign, held in a context where limiting inter-personal contacts was an important part of limiting the spread of the virus, magnifies the role played by social media. This helps to shed light on online campaign practices and their limits.

In Article 3, the case of Uganda is compared to three other cases: Benin, Nigeria, and Rwanda. These four cases are selected as a set of diverse cases to explore the conditions under which states tax the use of social media. Here, the logic is again exploratory and aims at generating theory (Gerring 2016, 91). Therefore, the four cases are selected to include both more authoritarian and more democratic regimes, in two paired comparisons (Gisselquist 2014). Uganda and Benin are selected as they implemented a similar tax on social media use, but differ in terms of regime type: Benin has been considered as a 'minimal democracy', as competitive elections are regularly held, and as there is regular alternance in power (Gisselquist 2008). This contrasts with Uganda, where elections, although regularly held, have not resulted in power alternation (Wilkins, Vokes, and Khisa 2021; Tripp 2010). The second pair of cases – Nigeria and Rwanda – have not implemented such taxes. Rwanda is an authoritarian state, where complex structures of surveillance and control of citizens have been deployed (Reyntjens 2020; Purdeková 2011). Nigeria is comparatively more democratic, having experienced regular elections since the return to civil rule in 1999, including alternance in power (Obadare 2022), even though elections are regularly marred by violence and corruption remains an issue (Obadare 2022; Demarest and Langer 2019). Taken together, these diverse four cases make it possible to explore potential drivers of the (non) adoption of taxes on social media, as they cover both cases where taxation was introduced and cases where it was not, while the cases vary in terms of level of democracy and authoritarianism (Gisselquist 2014). The four cases are used to generate a theory of the drivers of different forms of taxation of online activities. The respective case selection processes are further described in the research design sections of Articles 2 and 3.

Data and method

To conduct my doctoral research, I have adopted a variety of methodological approaches, combining primary and secondary, quantitative and qualitative data sources and selecting the most appropriate methods to analyse each type of data,

depending on the research question that drives each article, and on data availability. Primary data collection efforts have concentrated on three datasets: 35 interviews of candidates to the Uganda 2021 parliamentary elections (D1), a dataset on the social media presence (or absence) of 91 candidates to these elections (D2), and news stories covering the African continent (D3). These datasets are summarised in table 3. Data collection and analysis procedures are detailed in the appendices of the relevant articles.

Table 3 Primary data collected.

data	type	n	sampling	analysis	art.
D1	Interviews of parliamentary candidates	35	Winning candidates sampled at Parliament House, purposive sampling of losing candidates.	Content analysis	(2)
D2	Social media presence of candidates (Twitter and Facebook Page)	91	Based on the 35 interviewees, their top-2 contenders were identified. Search on Twitter and Facebook's CrowdTangle.	Descriptive statistics	(2)
D3	News stories on hate speech, disinformation and misinformation	7787	Keyword-based search of Factiva, a proprietary database of news stories	Structural topic modelling	(4)

The choice of data and methods, throughout my dissertation, is driven by the challenge of comparing authoritarian to democratic regimes when access to and quality of available data is limited. First, I am interested in the practices of authoritarian and democratic states regarding the control of online political activities. Scholars have highlighted the inherent difficulty in understanding how authoritarian regimes really work in the discipline of political science, as publicly available documents produced by these regimes represent what these regimes want the public to see, but not necessarily their inner workings (Ahram and Goode 2016; Art 2016; Barros 2016). They emphasise that qualitative fieldwork can partly alleviate the problem, however

challenges remain. Researchers first need to get access to the country and to willing research participants, the extent to which participants are (or can be) truthful about the inner workings of the regime is limited, and ethical questions regarding the position of researchers and the risks run by participants arise. These issues were further compounded by the Covid-19 pandemic, which rendered fieldwork at first impossible due to travel restrictions, and later raised other ethical questions (Lemaire 2021; MacLean et al. 2020).

Second, I aim to investigate the implications of control mechanisms for online political activities that are already subject to state control. This means that what can be learned from social media data is limited by the fact that such data is produced in a constrained environment. Of course, what can be learned from social media data is limited by what kind of data is available to researchers. I embarked on my doctoral research in an environment marked by scandals related to the misuse of social media data by researchers to influence politics: the Cambridge Analytica scandal (Bruns 2019; Venturini and Rogers 2019). Application Programming Interfaces (API), which makes a large amount of platform data easily available to programmers, became more difficult to access for researchers – especially for those wanting to analyse Facebook use. While Twitter had remained relatively accessible to researchers, this stopped in February 2023 (Allem 2023). These restrictions on data access condition what can be studied. Moreover social media data come with drawbacks, related to who the active social media users are, as these active users are the ones who produce the data that researchers then study (boyd and Crawford 2012). For example, many follow social media accounts but never post. In the context of authoritarian regimes like Uganda, publications on social media can offer interesting perspectives in how politicians operate, but these publications are the object of state control mechanisms, meaning that special care must be taken when analysing and publishing results based on social media posts (Gorwa and Howard 2018; Zimmer 2010).

While these challenges did not condition the research questions I ask, they certainly influenced the data I was able to collect – and the methods I used. Overall, I use two

different approaches: Article 1 adopts a decidedly quantitative approach, while Articles 2, 3, and 4 adopt a mixed methods approach, where different methods complement each other (Greene, Caracelli, and Graham 1989). The analytical approach varies depending on available data.

Two of the articles are based on mostly secondary data. Article 1 relies on publicly available datasets: the Afrobarometer, which features cross-national survey data on African citizens' attitudes toward democracy, and data from the Digital Society Project, which offers expert-coded data on state control of the internet and social media included in the Varieties of Democracy data. Accordingly, I use multilevel logistics regressions to analyse the data and explore the relationship between social media controls and citizens' use of social media to get the news. This method does not make it possible to identify a causal relationship – but establishing correlations between state implementation of social media controls and citizens' use of social media for news identifies a useful avenue for future research to test the potential causal mechanisms at play. Article 3 includes the analysis of legislation and available official documents, and the four case studies it includes are also built on the analyses of other scholars and secondary quantitative data.

For the two other articles, original data was collected, but only Article 2 involves interviews 'in the field'. Interview data (D1) was collected, to a large extent, by my co-author and two research assistants, while I conducted three interviews with my co-author, all of them in Kampala, Uganda. This strategy was adopted as the Covid-19 pandemic made it difficult for me to travel to Uganda and conduct more interviews together with my co-author. Interviews were conducted based on a set of open-ended questions that I developed together with my co-author. The list of interviewees and the data collection process are further described in Article 2, while the interview guide is included in the appendix for that article. It is however important to note that the majority of interviewees were winning candidates (31 out of 35), and that they were interviewed about 15 months after the end of the campaign. The timeframe means that

our interviewees were able to reflect on their experience, but it also means that they might recall the campaign imperfectly, and that their views may have been coloured by their online experiences after the end of the campaign. The interview data is therefore complemented by the data I collected on the presence (or absence) of our interviewees and their top two contenders on two social media platforms, Twitter and Facebook Pages (D2). This presents the advantage of including more data from losing candidates, as our sample of interviewees is dominated by winning candidates. The interviewed winning candidates were selected at Parliament House in Kampala, Uganda, using a snowballing strategy, while the losing candidates were selected for interview according to a similar principle. This means that the sample of candidates interviewed is not a representative sample of all the candidates who ran for the January 2021 parliamentary elections. Likewise, as the social media data was collected for the interviewed candidates and their top two contenders, the social media data is not representative either. This would be highly problematic if the ambition was to make causal inferences. However, as the aim is exploratory, that is, trying to develop a theory of the opportunities and challenges social media present for opposition and pro-regime candidates, this is less problematic. However, the challenges and opportunities identified in this study will need to be further tested, on a more representative sample of candidates and in other locations before generalising.

As Article 2 and its appendix make clear, the collection of social media data did face a series of challenges. First, it was not possible to collect data from Facebook Profiles. Instead, we collected data from Facebook Pages – a public mode of communication for political parties, businesses, or public personalities – relying on access to Facebook's CrowdTangle system (CrowdTangle Team 2021). Additionally, it was not feasible to get the consent of all candidates regarding the collection of their data for our project, as they were not easily reachable. Instead, we limited data collection to those Twitter profiles and Facebook Pages that clearly stated that these were set-up for the 2021 electoral campaign and those that were the pages of current Members of Parliament (in the case of winning candidates). This ensured that the data collected was considered

public by the candidates, as it was clearly produced to garner votes during the electoral campaign (Zimmer 2010). The data collected was anonymised. Further, the content of social media posts was not analysed, in order to limit the risk of potentially reidentifying anonymised interviewees. We only analysed the number of posts, their timing, and the number of "likes" and "shares" they generated. The procedure was checked for compliance with data protection legislation by Sikt, the data protection service provider for Norwegian research institutions.

Interview data and social media data were analysed concomitantly. Interview notes were analysed iteratively, to identify recurring themes, with a look at identifying patterns, as well as diverging experiences of social media use during the campaign (Fuji 2017, 76–78). In parallel, social media data from Twitter and Facebook Pages were analysed quantitatively. The aim here was to visualise the number of posts candidates published on different platforms, over time. For the analysis, posts are aggregated at party level. This is due to ethical considerations: as the interviewed candidates were granted anonymity, and as social media posts were collected based on the interviewed candidates' constituency, detailed analysis of candidates' posts would risk reidentifying interviewees. No sophisticated statistical analysis is conducted based on the social media data: the sample is not representative, and many candidates posted extremely little, meaning that regression results would not be robust. Additionally, the article engages in theory-building, and does not aim to find support for hypotheses.

Thus, in Article 2, social media data and interview data complement each other, enabling to strengthen our analysis (Greene, Caracelli, and Graham 1989). While social media data enrich the analysis from interview data, by broadening the scope to include more losing candidates in the analysis, interview data provide necessary insight into what cannot be observed directly from the social media data collected: the external constraints that shape social media use in the form of the regime's control, as well as details regarding the use of social media platforms from which data could not be collected – Facebook profiles and WhatsApp (Greitens 2013).

Articles 3 and 4 also use a mixed methods approach. In Article 3, the case studies combine the analysis of official documents with that of quantitative data and secondary sources. Article 4 uses mixed methods in a two-step process. We initially use structural topic modelling on new articles to explore the public debates on hate speech, misinformation, and disinformation. Once validated by two of the co-authors (including myself) and two research assistants, the topic proportion for the two main topics related to regulation are used as dependent variables in linear multilevel models, in order to identify patterns based on regime characteristics. Here, the two-step approach makes it possible to develop our analysis in a systematic way: once the automated exploration of news articles is completed, we can systematically use the resulting topic to find support for some of our initial hypotheses.

Overall, the diversity of methods adopted in my doctoral research mitigates limiting issues related to the difficulties of studying authoritarian regimes. The kind of in-depth fieldwork often recommended to investigate authoritarian regimes has been difficult to implement in the context of the pandemic (Ahram and Goode 2016; Art 2016). However, by contrasting the official discourse of authoritarian regimes with findings from more democratic regimes, I am able to identify patterns and point to new avenues of investigation – even though I cannot directly infer the motivations behind authoritarian practices.

Limitations and ethical considerations

Throughout my doctoral research, I had to make choices on how I would answer my research questions. These choices were driven, first and foremost, based on the specific question asked in each article, and on the research design adopted. Each article includes a discussion of the limitations inherent to the data and methods used. More pragmatic considerations also played a role, as exposed above, including the availability of data during a time of crisis.

The choices made also came with trade-offs. Two articles, Article 1 and Article 4, have the ambition to compare many countries, so as to ensure a certain level of generalisability. However, the data available to compare these countries mean that the analysis is conducted at a relatively abstract level. In Article 1, control mechanisms implemented by African states are measured based on expert coding, while in Article 4, states' regulatory strategies are measured via the automated analysis of a large number of news stories. This kind of abstraction makes it possible to detect patterns and identify future lines of enquiry. However, the data and methods used do not make it possible to make a causal argument. This is exemplified in Article 1: in countries that shut down social media, do older citizens use social media to get the news more than younger citizens, and more than citizens of states that do not shut down social media because shutdowns signal that social media are an interesting source of information? Or, do states shut down social media more because older as well as younger citizens use social media for news? This question is carefully discussed in Article 1, but ultimately, the research design does not enable me to conclude with certitude on the causal relationship.

By contrast, Article 2 consists in a single case study, and Article 3 uses two paired comparisons. How can findings from each of these studies travel? I argue, in Article 2, that findings from the case of 2021 legislative campaign in Uganda help draw the opportunities and challenges social media represent an authoritarian regime and its opposition. While I proceed inductively, using the case of Uganda to sketch the opportunity structure, this would need to be tested for other campaigns, in other countries, or at a wider scale. Article 3 proceeds in a very similar way, this time leveraging two paired comparisons to develop a theory of the conditions under which states adopt more or less repressive taxes on online activities. Here, the paired comparison alleviates some of the issues of external validity, as the four cases make it possible to evaluate different potential factors. However, again, analysis across a greater number of countries could usefully test the theory the article develops.

An additional set of considerations played a role in the decisions I made regarding the approach I adopt in the dissertation: ethical considerations. When my co-author and I investigate how candidates to the 2021 legislative election in Uganda used social media, we investigate a sensitive topic – politics in an authoritarian regime. We developed our interview guide accordingly (it is provided in the appendix of Article 2), ensured that we had the informed consent of our interviewees, and guaranteed interviewees their anonymity. When collecting social media data, I ensured the data collected was meant to be publicly available, I restricted the type and amount of data collected, and, when analysing the data, I ensured it would be completely anonymised. This is why we do not analyse the content of posts, for example. However, the division of labour that we have followed reproduces to a large extent problematic structures of knowledge production, where my Ugandan colleague conducted most of the interviews and I, based in Norway, was responsible for the collection of social media data (boyd and Crawford 2012; Schoon et al. 2020). This division of labour was balanced by the fact that I was able to join my colleague for some of the interviews and that we were able to spend time together to develop our collaboration. It also stemmed from pragmatism: opportunities for travel were limited in the context of the pandemic, and I had the necessary access to the computational skills and data sources (particularly Facebook's CrowdTangle).

In fact, collecting data from Twitter and Facebook involves a second type of ethical considerations. For Twitter, I relied on its (free) Academic API, a service now defunct (Stokel-Walker 2023). For data from Facebook Pages, I relied on CrowdTangle, a service to which I was granted (free) access by Facebook, as the research project fit its criteria (CrowdTangle Team 2021). However, data from both sources represent corporate data, that is, data compiled and stored by corporate entities for other purposes than research (Locatelli et al. 2020). As Article 2 makes clear, there are limits to the kind of inference that can be made based on this data when studying users based in African countries. Ethically, I was able to access both sources of data after an application process. Particularly in the case of Facebook's CrowdTangle platform, I

was granted access because I am studying an election – one of the five research topics Facebook allows. Therefore, even if I requested access after having developed my research question and design, one can also consider that research based on these types of data is not entirely independent (Puschmann 2019). And while I have not been contacted by either Twitter or CrowdTangle regarding the topic I research, I encountered technical issues on the CrowdTangle platform, which meant that in the end, about half of the data had to be collected manually, as this specific issue was not part of their priorities. And of course, I was fortunate enough that I was granted access, as this is not always the case.

Conclusions

In this concluding chapter, I will first highlight the main findings the four articles, as they relate to my two lines of enquiry. Then, I will identify the main contributions of the dissertation. Finally, I will discuss potential avenues my doctoral work opens for future research and for policy.

Overall findings

Each article in the dissertation stands alone in terms of theory, research design, and results. In the following chapter, I will therefore not discuss the findings from each article in depth. Instead, I will proceed to show how taken together, they shed light on the two lines of enquiry that have driven my scientific work.

Implications of state control of social media for the exercise of freedom of information and expression

In the first line of enquiry, I rely on two very different studies, each focusing on the different, but interlocking rights of information and expression. Article 1 investigates citizens' exercise of the right to information on social media. Article 2, with its focus on parliamentary candidates' experience of the 2021 campaign in Uganda, concentrates on the freedom of expression exercised by candidates to electoral office.

In Article 1, I find that citizens of states that rely on social media shutdowns use social media for news more than citizens of states that do not. Additionally, I find that the phenomenon is significantly more pronounced for older citizens compared to younger citizens. As I discuss in the article, the research design used does not make it possible to test the causal relationship. However, I control for other control mechanisms, and for the level of restriction of freedom of expression and information more generally. This lends support to the direction of the relationship, meaning that it is state's control of social media that affects citizens' use of social media to get news.

Turning to Ugandan parliamentary candidates' use of social media, we find, in Article 2, that social media offer a range of opportunities for both pro-regime and opposition candidates. Control mechanisms deployed by the regime unsurprisingly benefit pro-regime candidates, however, these candidates do also criticize the use of social media shutdowns and disinformation campaigns by the regime. These findings are country- and case-specific, as they are based on the study of an electoral campaign conducted under pandemic-related restrictions on rallies that provided incentives for candidates to rely on social media to campaign more than usual. However, the case makes it possible to develop a theory of the range of opportunities social media offer to parliamentary candidates in authoritarian regimes, as they were more to the forefront than usual in this exceptional context.

Taken together, these two articles show that both citizens and candidates are aware of at least some of the control mechanisms states deploy online and they adapt accordingly. While Article 1 does not offer temporal evidence that citizens adopt circumvention tools when facing social media shutdowns or that they use social media for news more after shutdowns are over, Article 2 does show the important role circumvention tools play in both candidates' and citizens' use of social media. In fact, it seems that shutdowns in particular, far from turning citizens and candidates away from social media as a space to exercise their freedom of information, instead provide incentives to adopt the informational use of social media. However, Article 1 also finds signs that citizens might be aware of state online surveillance, a control mechanism that is expected to be covert, and that surveillance is linked to a lower use of social media for news.

A second finding in this line of enquiry is that scholars interested in the political uses of social media need to question the notions of 'digital divide' and 'digital native'. Indeed, Article 1 finds that older citizens use social media for news more than younger citizens, when the state shuts down social media. Along a similar line, the interviews in Article 2 reveal that although candidates assume that the regime shuts down social

media to control young people, it is unclear to them who they actually reach through social media – as, while rural areas are less covered by the internet and cellular networks, poor people in urban areas also have low levels of internet access, due to cost. These findings show that social media should not be considered as a tool for information and expression overwhelmingly in the hands of young and urban citizens. Indeed, some rural areas are underserved, and other scholars have shown how this is a strategic choice in authoritarian regimes (Weidmann et al. 2016). But the cost of access can also be manipulated by the state to exclude poorer citizens – as I show in Article 3 – and those people are also often young.

Overall, my dissertation highlights that online control mechanisms can increase the place of social media in the exercise of citizens' freedom of information (Article 1), but that, in the context of elections, they limit candidates' freedom of expression by conditioning who they can reach (Article 2). It opens new avenues of investigation, particularly related to commonly held assumptions that social media are a tool for young and urban people. Issues related to access are not only geographic, but they are also economic.

Regulation and repression of online freedoms

The second line of enquiry I follow in my dissertation is concerned with the online control mechanisms deployed in response to global challenges, that is, issues that are recognised as problematic across regime type and across continents. Two issues are investigated: taxation of online activities (Article 3) and hate speech, misinformation, and disinformation (Article 4). Here, I approach online control mechanisms as a form of regulation and attempt to disentangle when regulation is a form of repression.

In Article 3, I show that it is difficult to neatly separate economic incentives to tax online activities from incentives to control citizens' online activities. The comparison of Benin and Uganda on the one hand and of Nigeria and Rwanda on the other shows that economic incentives play an important part in the tax solution each state adopts. However, these economic incentives are also balanced by the level of mobilisation

against the tax and by the other types of control mechanisms deployed by the state. That is, for Rwanda, a more authoritarian state, its economic strategy of becoming a hub for information and communication technologies, and its reliance on social media surveillance can explain that no specific taxation was implemented. By contrast, Uganda faces more pressure to collect tax revenue, and the state already limits access to internet and social media, which might explain the state's choice to first tax social media and then, when the tax proved ineffective, replace the tax by an indirect tax on internet data. More democratic Benin repealed its social media tax following mass mobilisation and introduced a lower tax on internet data. Nigeria, a state dependent on natural resources, introduced a tax that targets the profits of online service companies, and has so far refrained from implementing its tax on internet data. These findings make it possible to advance the theory that taxation of online activities depends on both economic and political factors.

Article 4 finds that the type of control mechanism debated in news media across African countries varies depending on the level of freedom of expression citizens enjoy, and the extent to which legislative institutions constrain the executive. States with lower levels of freedom of expression seem to rely on technical mechanisms (for example, internet shutdowns). Turning to legal mechanisms – that is, discussing bills or legal acts to limit or punish the spread of hate speech, misinformation, and disinformation – states where legislative institutions exercise more constraints on the executive see less public debate of such legal mechanisms. This finding shows that online control mechanisms – including those based on legislation – tend to be deployed repressively, at least when targeting hate speech, disinformation, and misinformation.

This line of enquiry emphasises the importance of recognising that African states do need to regulate online activities, as they face challenges similar to those faced by other countries across the world. Both articles highlight that so far, more authoritarian regimes tend to select policies that also repress citizens' rights, either in the form of specific taxation, or in terms of regulation of hate speech, disinformation, and

misinformation. However, by considering both the needs to regulate and the incentives to repress, the two articles together make an important contribution: they show that online control mechanisms should be considered in the context of the challenges states face. State capacity is an important factor of policy making, and more repressive control mechanisms are also often more easily implemented than mechanisms that also protect fundamental freedom.

Main contributions

My doctoral research contributes to the existing scholarships on online control mechanisms and on the political use of social media by showing that online control mechanisms can be forms of repression as well as forms of regulation, based on insights from the African continent. It sheds light on the implications of the use of online control mechanisms for the exercise of freedoms of information and expression by citizens and legislative candidates. It also demonstrates the importance of considering that both authoritarian and democratic states can face similar challenges with regard to online activities, and that these should also be taken into account when researching the role and implications of online control mechanisms for citizens' use of social media and the internet.

More specifically, my research offers theoretical, methodological, and empirical contributions. Theoretically, it develops an understanding of the opportunity structure of using social media for electoral campaigns in authoritarian regimes (Article 2), thereby contributing to the emerging scholarship on the use of social media in electoral campaigns – a scholarship that has so far not considered how the type of regime might influence the affordances of social media for electoral campaigning. It also proposes a theory of the main drivers behind the implementation of different forms of taxation of online activities (in Article 3). This second theoretical contribution brings into dialogue two strands of scholarship that so far seem to have developed separately: that of investigating taxation of online activities from a political economy perspective, and

that of considering this kind of taxation from a human rights perspective. These two theoretical contributions are developed using an exploratory approach and need to be investigated further, as I will discuss in the next section.

Methodologically, my dissertation adopts a mixed methods approach to explore the role of social media in politics. If the dissertation as a whole combines methods to analyse different types of data, Article 2 is the best example of how different methods can be used to overcome practical challenges and to alleviate the limits of a single method. In that article, interviewing both winning and losing candidates to the 2021 parliamentary elections in Uganda was challenging, especially as losing candidates were difficult to reach 15 months after the end of the campaign. Here, collecting social media data for the Facebook Pages and Twitter profiles used by our interviewees and their two main opponents during the campaign makes it possible to complement the interview data. Reversely, interviews also revealed that the social media service candidates used the most was WhatsApp – a service for which we could not collect data. By using mixed methods, my co-author and I are able to provide a rich description of how candidates used social media in the campaign, and we show how important it is for research to consider the place of specific social media platforms in the overall political environment.

Empirically, I make two types of contribution. First, the two quantitative articles – Article 1 and Article 4 – open new areas of research on online control mechanisms. The surprising results of Article 1, on social media shutdowns being linked to an increase in informational use of social media across age groups, but that the increase is significantly higher among older cohorts, are an important empirical contribution to the field. These results highlight the need for theory development around the role age might play in political uses of social media, particularly in countries with a large youth population. Indeed, theory of youth online political activities has so far not included the comparative group – older cohorts. Article 4 also opens new avenues of research, as findings that legislation is discussed as a way to limit the spread of hate speech,

disinformation, and misinformation in states where legislative constraints on the executive are lower emphasise that authoritarian states as well as democratic states should be considered in academic and policy discussions on content regulation. The second type of empirical contribution resides in the rich descriptions provided by Articles 2 and 3. Both articles rely on exploratory case studies and rich descriptions to develop theory. These descriptions are in themselves an important contribution to the literature on online control mechanisms and the respective fields each article engages with. Indeed, studies of the use of social media in electoral campaigns and of taxation of online activities rarely engage with the literature on online control mechanisms.

Avenues for future research and policy

I have used a mostly exploratory and inductive approach to make the contributions mentioned above. Therefore, further research is needed to strengthen these contributions, in three respects.

First, there is a need to better understand the effects of online control mechanisms on citizens' and candidates' use of social media across countries and platforms. While Articles 1 and 2 do not adopt causal research designs, they do expand on the evidence from the growing body of experimental and quasi-experimental research that has successfully identified the effects of specific online control mechanisms on the use of a specific platform (M. E. Roberts 2020; Boxell and Steinert-Threlkeld 2022; Pan and Siegel 2020; Pan and Roberts 2020; Stoycheff et al. 2019). They do so by considering different types of control mechanisms and, in the case of Article 1, across the African continent. However, where they present findings that can be generalised across social media platforms (Articles 1 & 2), and across the continent (Article 1), they cannot – and do not – make a causal argument. Future efforts should focus on identifying potential causal mechanisms beyond specific cases, and on identifying how resilience can be fostered among citizens (M. E. Roberts 2020). Additionally, there is a need for identification strategies to develop scholarly understanding of how aware citizens are

of different control mechanisms. This would strengthen research on the effects of such control mechanisms, as the conditions under which they affect citizens or strengthen the state could be better determined.

Second, further research is needed to understand when online regulation is actually repression. As Articles 3 and 4 show, authoritarian regimes often justify the use of online control mechanisms as a form of regulation, when in fact they repress online freedoms. Both articles show how difficult it is to identify the extent to which specific control mechanisms are meant as repression or regulation. Additional efforts to identify when legislation controlling online activities can be a form of regulation or repression would complement currently available research on online control mechanisms. Additionally, they would contribute to a global understanding of the authoritarian practices that can be deployed beyond authoritarian states (Glasius and Michaelsen 2018), and of their consequences for fundamental freedoms.

Third, the exploratory and descriptive approach I have used has led me to sketch theories regarding a) the opportunity structure of social media use during electoral campaign in authoritarian regimes, and b) the conditions under which states adopt tax policies that repress online freedoms. These theories were developed based on case studies, and they now need to be further expanded and tested at a larger scale. This would provide important insights regarding how online control mechanisms structure the exercise of political rights online. Additionally, future research could fruitfully evaluate the effects of taxation on online political participation across countries. It would thereby expand earlier findings beyond the Ugandan case (Boxell and Steinert-Threlkeld 2022), and contribute to the broader research agenda on the effects of online controls on citizens' use, and on citizens' resilience (M. E. Roberts 2020).

The findings from my dissertation also have implications for policy. Overall, they show the limits of authoritarian practices targeting citizens' online activities. Therefore, policy implications are aimed at enhancing citizens' fundamental rights and freedoms, and target international actors in the field of democratisation, as well as civil society

actors. In short, I do not provide a manual on how authoritarian regimes can deploy online control mechanisms to survive.

First, my findings highlight the need for policymakers to take into account the constraints authoritarian states apply to the online environment: this is true in the global arena, when multistakeholder solutions to hate speech, disinformation, and misinformation are discussed (Garbe, Selvik, and Lemaire 2021; De Gregorio and Stremlau 2021), as well as when solutions to taxing digital activities are discussed (Hearson 2021). It is also true at the level of development aid donors, when they consider funding interventions aimed at enhancing freedom of expression (Lemaire 2023) or taxation and good governance. Second, it is necessary for civil society organisations to continue working on digital literacy and advocating for internet affordability, targeting both younger and older, rural, and urban citizens (T. Roberts and Bosch 2021, 112–13). Findings also highlight the important role circumvention tools such as VPNs continue to play in citizens' exercise of freedoms of information and expression. They should therefore be a part of digital literacy interventions.

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Articles

Article 1

Original Research Article

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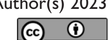
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Online censorship and young people's use of social media to get news

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Abstract

The increasing adoption of social media across Africa has raised hopes that they represent a new locus of youth political agency. However, as social media has become more ubiquitous, so has its control by African regimes. How do these controls affect young people's use of social media for information? This article approaches online controls based on how overt – that is, visible and directly experienced by citizens – they are. It shows that overt forms of controls, such as social media shutdowns, are associated with a higher informational use of social media. Surprisingly, the association is stronger for older citizens. The article makes two important contributions. First, it points to the need for research to develop a better understanding of citizens' perception of online controls. Second, its findings show that theories of youth citizenship should include the comparative group – older citizens.

Keywords

Youth, young people, social media, news, censorship, surveillance

Introduction

African states, like others, have deployed a series of strategies to attempt to control online activities through censorship and, to a lesser extent, through manipulation and surveillance. Meanwhile, social media are still seen as a locus of youth political agency, where young citizens can discuss and mobilise around political issues. However, little is known about how strategies of online control affect young Africans' use of social media to access news.

Online media, including social media, are important sources of independent information, compared to other mass media such as radio, television, or the press. African social media users are better informed and take part in informal political activities more, including protests, in particular in regimes where traditional media are not free (Bailard, 2012; Karakaya and Glazier, 2019). Instead of being heavily centralised and easily controllable by authorities, like other

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media, information on social media can be produced, accessed, and shared by anyone. Social media represent a space of agency for young people, offering new opportunities for young people to mobilise, protest, and thus influence politics (Iwilade, 2013). However, case studies focusing on how young African people use social media for politics have not investigated whether young social media users differ from other, older users.

Moreover, states have developed strategies to exercise control over digital media, and use them to maintain their stability (Gunitsky, 2015), even though controlling what goes on the internet remains very difficult and costly (Roberts, 2020: 409). A large body of scholarship has studied and categorised different ways to control digital media. It is however so far unclear how effective these strategies are at controlling young citizens' online activities (Keremoğlu and Weidmann, 2020; Roberts, 2020). Case studies focusing on China have shown that specific controls can prompt citizens to use the internet more and to access independent information sources online (Hobbs and Roberts, 2018; Pan and Roberts, 2020). While scholarship shows that African states deploy online control strategies such as shutdowns or surveillance (Freyburg and Garbe, 2018; Marchant and Stremlau, 2020), little is known of their effect on citizens' use of social media.

Even if internet use remains comparatively low across Africa, the continent is the last one to experience constant, meaningful user growth. Coupled with the continent's large youth population, this makes it paramount to understand how online controls affect citizens, and particularly the young, before they become habituated to online controls. Today's young citizens are indeed discovering political activities online as well as offline. If neither environment is conducive to open access to and discussion of news, then there is little hope for a democratic future.

In this article, I explore how regimes' controls of social media affect African citizens' use of social media for information, and whether young citizens are affected differently than older citizens. States' controls of social media are operationalised using four variables from the Digital Society Project. Cross-national survey data from the Afrobarometer are used to explore the relationship between African citizens' use of social media to access news and states' control strategies. Multilevel logistic regressions show that citizens of African countries that implement more overt forms of online control (such as social media shutdowns) use social media for news more, while citizens of countries that monitor social media more use social media less for news. This highlights the need to build a better understanding of how citizens perceive social media controls. Surprisingly, the analysis shows that the positive association between social media shutdowns and informational use of social media is stronger for older people, against expectations that young people are more likely to turn more to social media for news once the state has introduced overt measures of censorship. This study thus highlights that theories about youth citizenship need to include the comparative group – older citizens.

The next section presents what we know of the role social media play in African youth's news consumption. The two following sections review earlier scholarship on online controls and introduce the potential effects of such controls on citizens' online behaviour. I then formulate hypotheses, before presenting the data and methodology for a first test. The last two sections highlight results and discuss them.

Youth, news, and social media in Africa

How to define youth in Africa varies widely from country to country, and even over time (Philipps, 2018). The concept of youth in Africa covers a set of socioeconomic conditions, and young African people are 'young' when stuck between childhood and adulthood, remaining dependent upon their families due to difficulties in gaining employment and settling down (Resnick and Casale, 2014). However, increased connectivity via social media implies a hybrid experience, combining local

marginalisation with a more global experience (Iwilade, 2013). Looking into a more formal definition of what constitutes ‘youth’, the African Union defines young citizens as those between 18 and 35. Although member states do not systematically implement those cut-off points, with some using other cut-off ages such as 25 or 29, the definition encompassing the ages between 18 and 35 does account for the broader concept of youth presented above (Resnick and Casale, 2014).

Turning to the use of social media, scholarship has relied on case studies and focused only on young people. Indeed, young people are generally considered to be early adopters of social media (Lane et al., 2023) and to be those who use social media the most (Kahne et al., 2013). There is, however, a lack of research investigating social media use from a comparative perspective across countries in Africa on the one hand (Emmer and Kunst, 2018) and between younger and older citizens on the other.

Across Africa, internet access has increased, from a little over 2% using the internet in 2005 to 24.4% in 2018 (ITU, 2018: 14), and so has the use of social media (Pew Research, 2018: 3). While these figures remain low compared to other continents, social media are important tools for young African activists, and are used in campaigns and protests across the continent (Gukurume, 2017; Otiono, 2021). Young people who use social media and the internet are better informed than those who do not – in Tanzania (Bailard, 2012). Using social media helps with access to information and fosters political discussion – in Kenya and Zimbabwe (Bosch et al., 2020), particularly among urban youth – in Mozambique (Tsandzana, 2018). Research investigating young people’s uses of social media across the African continent has thus shown they play an empowering role for young Africans, enabling them to access information, discuss politics and mobilise for protests.

However, African regimes do attempt to control social media, for example by disrupting access to the internet or to specific social media services during elections (Freyburg and Garbe, 2018) or protests (Falisse and Nkengurutse, 2019; Iwilade, 2013). The slowing down of services has also been used as a control mechanism (Marchant and Stremlau, 2020). The cost of social media and internet has also been used as a means to deter citizens, by raising taxes on mobile internet subscriptions or by implementing social media-specific taxes (Bergère, 2020). Internet and social media users are also under surveillance, with evidence that some African countries have bought software enabling them to monitor their citizens’ online activities and have passed legislation for that purpose (Duncan, 2018; Galava, 2019).

How states can control social media

Controlling social media is, in part, about controlling the internet. Social media are indeed enabled by and dependent on internet access, regardless of how access to the internet itself is ensured. Scholarship investigating how governments control the internet and social media has identified a wide range of tools that states can and do use to control online activities. Such tools include restrictions deployed via technology, like shutting down internet access or filtering online content and making it impossible to reach specific websites or specific social media posts. Early on, research highlighted these as first-generation controls, and later as online restrictions (Deibert, 2015: 66–69; Sanovich et al., 2018). A second type of tool governments deploy relies on offline means, such as legislation limiting online activity, taxation of access to the internet or social media, or even arrests of online activists. Such tools have been categorised as ‘second generation’, offline restriction, or, based on how they affect users, creating fear or friction (Deibert, 2015: 66–69; Roberts, 2020: 403–404; Sanovich et al., 2018). States have also developed their online surveillance capacity, which scholars have viewed as a ‘second generation’ control (Deibert, 2015: 67). Finally, states can directly produce content, flooding citizens with disinformation, both deceiving them and making it more difficult to access content from the opposition (Roberts, 2020: 403–404; Sanovich et al., 2018).

Scholarship concerned with the African continent has so far used the lens of shutdowns to understand online controls. That concept sees its meaning fluctuate, from networks being disrupted to including other forms of controls like access to specific services being cut off, slowing down the speed of the internet, and implementing taxes on mobile internet or on the use of specific services (Marchant and Stremlau, 2020). Reliance on the concept of shutdowns to describe online controls on the African continent reflects the discourse of exclusion found in other research areas. This continent-specific approach to online controls covers the same techniques as research investigating online controls in other geographies. It limits the analysis to censorship and does not account for other aspects, such as manipulation and surveillance.

Authoritarian regimes do face the challenge that the control mechanisms described above can be circumvented, for example using specific software such as virtual private networks (VPN). 'Perfect control' is not attainable, and 'effective control', regardless of the specific tool, is what matters for governments (Boas, 2006: 373–374). Indeed, governments combine a range of these tools rather than relying exclusively on any one of them (Gunitsky, 2015), but little is known about how online censorship, manipulation, and surveillance affect citizens' online activities.

Backlash or chilling effect?

Case studies of specific forms of controls such as surveillance (Stoycheff et al., 2019) or the abrupt shutdown of services (Pan and Roberts, 2020) identify potential effects. The first identified effect, backlash, sees citizens increase the very online activities that the state attempts to control, while the second, chilling effects, sees citizens refrain from certain activities when facing censorship or surveillance efforts (Roberts, 2020: 406). Both effects assume that citizens are aware of the online controls.

In fact, some forms of online controls are overt, that is, both visible and directly experienced by citizens. These directly impact internet use, as when networks or services are shut down. Such overt forms of control can lead to backlash: blocking a popular service (Instagram) led users to learn how to circumvent such filtering, which then led to their adoption of other blocked services, such as Facebook (Hobbs and Roberts, 2018). Similarly, in Burundi, disrupting WhatsApp led to an increase in downloads of circumvention tools (Falisse and Nkengurutse, 2019: 181). Using circumvention tools in turn leads citizens to access new information sources (Pan and Roberts, 2020). It is important to note that in these cases, the control mechanism is publicly visible and directly experienced by citizens (Roberts, 2020: 408).

Other social media controls are extremely difficult to detect and attribute to specific actors, like online surveillance, the use of automatically generated posts (or paid-for posts, as in China), state-sponsored distributed denial of service attacks, or filtering news items on controversial topics (King et al., 2017; Sanovich et al., 2018). The latter example has enabled the Chinese regime to limit what citizens access and share without them being aware of it (Roberts, 2020). Such covert controls limit what type of news citizens see, but not their ability to get news. Citizens are largely unaware of them, provided they remain subtle. This would be the equivalent to what Huang (2015) calls 'soft propaganda' (p. 435). Such social media manipulation is unlikely to affect citizens' behaviour if it remains hidden. While the user who sees her post censored will be aware of it, it is difficult to evaluate if the citizenry more generally is aware of such government censorship (Roberts, 2020: 409).

The same tool can also be visible if propaganda posts are too obvious. This leads to a different effect: citizens' awareness of propaganda efforts can reinforce their perception that the regime is strong and stable. This signalling exercise is used by the Chinese regime to deter citizens, in particular young people, from challenging it (Huang, 2015: 432). Similar chilling effects are observed

when users are made aware they are under surveillance during experiments (Stoycheff et al., 2019), or when famous users are arrested (Pan and Siegel, 2020). However, such chilling effects have also been identified under conditions of high political contention (Roberts, 2020: 406).

In sum, case studies have shown that overt online controls can have a backlash effect, whereby citizens increase their online activities, while less visible forms of controls can have a chilling effect – if citizens are aware of their existence – in which case citizens limit their activities. These effects have, however, been identified using case studies that focus on a specific social media application, without accounting for potential differences between younger and older citizens.

Young people, visible online controls, and informational use of social media

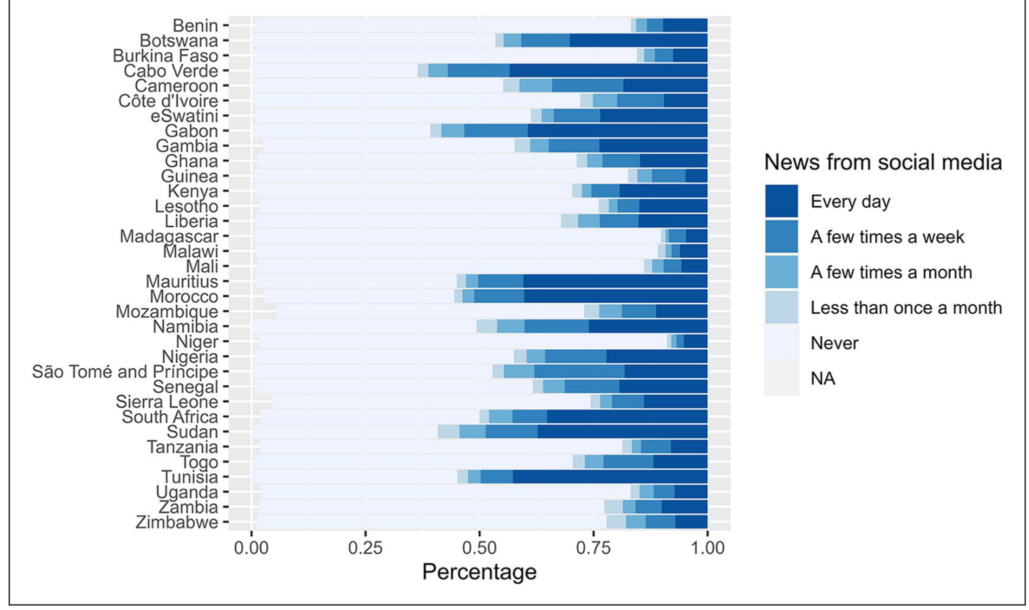
Following the backlash theory presented above, if controls are publicly visible and directly experienced by citizens, they can lead to increased political use of internet and social media (Roberts, 2020: 408). Such overt controls could include shutting down social media during elections (Freyburg and Garbe, 2018). Regimes implementing them can be seen as signalling their weakness: i.e. they are not capable of effectively and subtly controlling online content and see such content as threatening. This leads to *H1) overt social media controls are positively associated with using social media for news.* Two mechanisms can be at play here. Citizens adopt the use of circumvention tools such as VPNs, as was the case in China, following the shutdown of Instagram there (Hobbs and Roberts, 2018), or in Burundi, following the disruption of WhatsApp (Falisse and Nkengurutse, 2019: 181). Shutdowns can be temporary, as in Burundi. In such cases, a second mechanism can be at play: once social media become available again, citizens turn to them to get the news more than before or start using them for news. As less visible forms of social media controls are difficult to observe and identify (King et al., 2017), citizens are less likely to be aware of the extent to which social media are under surveillance or filtered, and so I do not expect that they would use social media for news differently when such controls are implemented.

Social media appear as an important facilitator of young people's political activities in studies concerned with young Africans' online practices (Gukurume, 2017; Otiono, 2021), including for accessing news (Bosch et al., 2020). Thus, one wonders if online controls affect young people differently. Scholarship interested in state repression highlights how young people are more rebellious than older citizens, playing an important role in protest movements, and leading states to repress more (Nordås and Davenport, 2013: 929). Linking findings from this strand of literature to that on citizens' reactions to online controls, it seems that when implementing overt controls, regimes signal that they see online content as subversive. This could thus increase young citizens' interest. Young people are also expected to be more technologically savvy and more rebellious than older people, thus more able to adapt and use circumvention tools. This leads to the hypothesis that *H2) the positive relationship between overt controls and the use of social media for news is stronger for younger people*.

Data and method

These two hypotheses are investigated through multilevel logistic regressions based on data on African citizens' informational use of social media from the Afrobarometer (2019) and data on social media shutdowns from the Digital Society Project (Mechkova et al., 2020). This design does not make it possible to investigate the mechanisms at play between state censorship and informational use of social media, since the data used here do not include a time dimension.

Figure 1. Informational use of social media by country.



Source: Afrobarometer, round 7. Question wording: 'How often do you get news from the following sources? Social media such as Facebook or Twitter.'

I use the seventh round of the Afrobarometer (2019), which surveyed a representative sample of citizens from 34 countries across Africa between September 2016 and August 2018. The main dependent variable is based on question Q12E, 'How often do you get news from the following sources? Social media such as Facebook or Twitter.' Respondents answered on a five-point Likert scale, from 'Never' (coded 1) to 'Every day' (coded 5), where the midpoint is 'A few times a month' (coded 3). Figure 1 offers an overview of responses by country. Most respondents never use social media for news, which is unsurprising if one considers the relatively low levels of internet access observed across the continent (ITU, 2018). This ordinal measure is dichotomised, where respondents who report getting news from social media at least a few times a month ($q12e > 2$) are considered to be getting news from social media. This reflects the diverse ways more marginalised populations connect to social media, such as sharing devices or getting signal only occasionally (Mabweazara, 2021; Schoon et al., 2020). Age is included as a main variable of interest, since I expect visible online controls to moderate that relationship, making it stronger (Mean age = 37, median age = 34, minimum age = 18, maximum age = 106). Its quadratic term is included to control for the shape of the curve.

Overt control of social media is operationalised at the country level, using data from the Digital Society Project (DSP). It follows the methodology of the Varieties of Democracy project, based on expert coding (Mechkova et al., 2020). Its variable for 'social media shutdown in practice' represents a visible, directly experienced form of online controls, applied to social media.[1] It is based on experts' answer to the question 'How often does the government shut down access to social media platforms?' The possible answers range from 'extremely often' (coded 0) to 'never, or almost never' (coded 4). The indicator is then built based on the aggregated values attributed by at least four experts and follows a z distribution, from -5 (most controlled – for example, most shutdowns)

Table 1. Social media controls.

Statistic	*N*	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Social media shutdown	34	-0.399	1.017	-1.6820	-1.168	0.306	2.553
Social media filtering	34	-0.35	0.904	-1.867	-0.948	0.198	2.211
Social media monitoring	34	-0.067	1.045	-2.142	-0.674	0.508	1.799
Propaganda	34	-0.095	0.887	-1.967	-0.815	0.637	1.798

Source: Digital Society Project. Variables have been reversed from original, so that positive values reflect more control, while negative values reflect less control.

to +5 (least controlled). Thus, the main independent variable does not represent a single shutdown event, but rather a measure of whether social media were shut down by the government during the year.

As states usually combine different forms of social media controls (Morozov, 2011), measures for filtering of social media, surveillance of social media, and the use of social media by the state for domestic propaganda are included as control variables. These are the DSP's variables: 'social media censorship', defined as 'deleting or filtering specific posts for political reasons',[2] 'social media monitoring', and 'government dissemination of false information domestic'. The latter is defined as the use of social media by the government or its agents to 'disseminate misleading or viewpoints or false information to influence its own population' and represents states' use of social media for propaganda. Propaganda is only included as a control variable, since theory highlights how propaganda can be 'hard' (intended to be overt) or 'soft' (and covert) (Huang, 2015) and since the DSP data does not differentiate between the two.

The four measures of social media controls are included for the year when the Afrobarometer survey was administered. They have been reversed for the analysis so that higher, positive values represent more control, while lower, negative values represent less control. A summary of these variables is presented in Table 1. The full wording of the variables from the Digital Society Project is included in the Appendix. While the Digital Society Project also offers measures of internet shutdown and internet filtering, these are not used here, as filtering the internet arguably encompasses shutting down social media, as does shutting down the internet.

At the country level, I control for the state of press freedom, since internet and social media are particularly important news sources in contexts where offline information is restricted (Karakaya and Glazier, 2019). The Varieties of Democracy's index of 'freedom of expression and alternative source of information' is used for that purpose (M = 0.75, SD = 0.17) (Coppedge et al., 2021). As shutdowns are linked to elections (Freyburg and Garbe, 2018), I code countries experiencing at least one national election during the year when the Afrobarometer was administered 1, others as 0, based on data on elections from Vdem (M = 0.23, SD = 0.42). Following others investigating the uses of online media (Nisbet et al., 2012), I also include the proportion of a country's population with access to the internet provided by the International Telecommunication Union (ITU) (M = 30.80, SD = 18.06) for the year of the survey (World Bank, 2021). Each country reports this measure to the ITU, based on household surveys (ITU, 2020: 82).

At the individual level, I include control variables for gender, whether respondents are urban or rural, their level of living conditions (M = 2.74, SD = 1.25, range = 1–4), and their level of education (M = 2.47, SD = 0.97, range = 1–4). I also include indicators for the use of other news sources: the radio (M = 3.59, SD = 1.58, range = 1–5), television (M = 2.98, SD = 1.79, range = 1–5), and newspapers (M = 1.83, SD = 1.32, range = 1–5). Additionally, I control for how often respondents discuss politics, as a measure of political interest (M = 1.786, SD = 0.713, range = 1–3). For a complete

description of all variables, see Tables A and B in the Appendix. Finally, as I am investigating the relationship between a form of repression and a form of political use of social media, I also control for whether respondents believe the Afrobarometer's enumerator is sent by the government (coded 1) or is independent (coded 0). This helps to control for the fact that respondents in more authoritarian countries might disguise their preferences when answering survey questions, especially ones about their political activities (Tannenberg, 2022).

To test the relationship between social media shutdowns and young citizens' informational use of social media, I rely on a series of multilevel logistic regressions, since the dependent variable (using social media for news) is at the individual level, while the independent variable (shutdown of social media) is measured at the country level. Indeed, multilevel models account for the fact that individuals are clustered within a country and enable interacting country-level variables with individual-level variables. Models are fitted using the *glmer* function of the R package lme4 (Bates et al., 2015).

Results

First, an empty model is run, showing that about 17% of the variance in citizens' informational use of social media can be attributed to differences between countries and about 83% to individual factors (ICC = 0.167). Then, four models are run, to test each hypothesis with different ways of specifying age. None of the models present multicollinearity issues, with mean VIF ranging from 1.2 (models using age groups) to 1.4 (models using age as a numerical variable). Results are presented in Table 2, while odd ratios are included in Figure B of the Appendix.

Model 1 testing the first hypothesis is fitted by adding the main independent and control variables. All numerical variables at the individual and at the country level are centred around the grand mean and standardised to facilitate interpretation, while the individual-level variables are used as controls (Hox et al., 2018: 48). Focusing on social media shutdown, the coefficient is positive, and significant (coefficient: 0.24, $p < 0.05$), showing that increased levels of shutdown by the government are linked to the increased use of social media to get news. This finding supports Hypothesis 1). Social media monitoring is negatively and significantly associated with using social media for news (coefficient: −0.33, $p < 0.01$), indicating that citizens of countries that implement more surveillance use social media for information less. While social media monitoring was included here to control for the fact that regimes combine different forms of online controls, this result is still surprising. The two other forms of controls, filtering and propaganda, are not significant.

To evaluate whether social media shutdowns moderate the relationship between age and informational use of social media, increasing the strength of the negative relationship identified in model 1, a second model is run, interacting age and its quadratic term with social media shutdown. All numerical variables are grand-mean centred and standardised. Following best practice, a random slope is included for the individual-level variables in the interactions: age and age^2 (Heisig and Schaeffer, 2019: 263). The interaction term between social media shutdown and age is positive and significant (coefficient: 0.11, $p < 0.05$). This seems to indicate that older citizens in countries experiencing social media shutdown use social media for news more, contrary to Hypothesis 2).

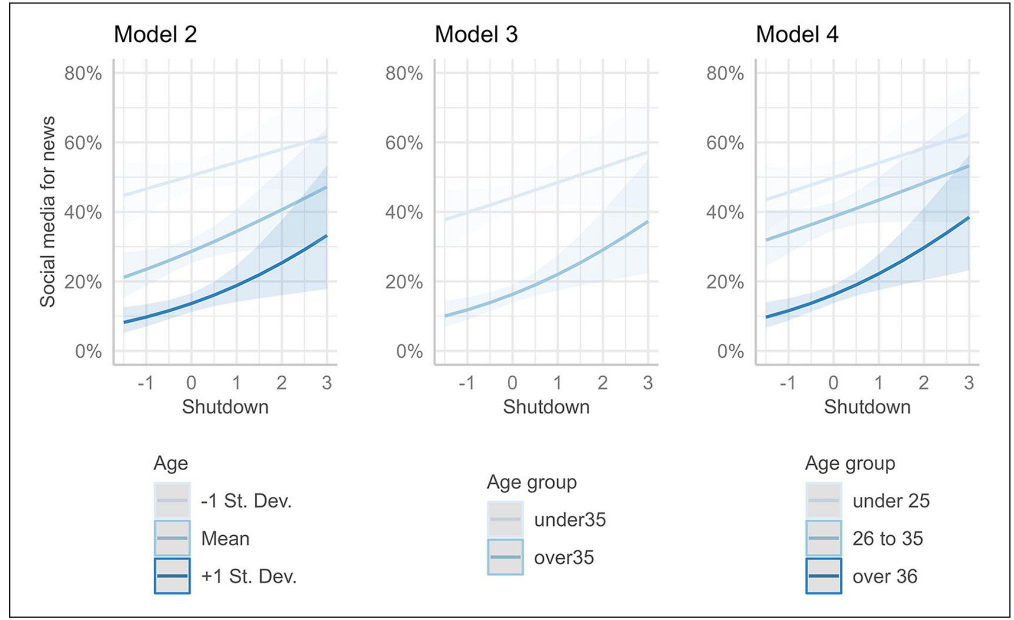
To further explore the interaction between social media shutdowns and youth, two more models are fitted, using age groups instead of age. In model 3, age is operationalised as a dummy variable, following the African Union definition of youth as all respondents between 18 and 35 – so adults are all respondents over 35. In model 4, three age groups are specified: 18 to 25, 26 to 35, and above 35 to reflect more commonly used definitions of youth. In both model 3 and model 4, random slopes are specified for age group. In model 3, the interaction term between shutdowns and the age group above 35 is positive and significant, highlighting that the relationship between

Table 2. Multilevel logistic regressions.

Predictors	Model 1	Model 2	Model 3	Model 4
	β (SE)	β (SE)	β (SE)	β (SE)
(Intercept)	-0.97 (0.08) ***	-0.97 (0.09) ***	-0.30 (0.09) **	-0.07 (0.09)
Shutdown	0.24 (0.11) *	0.28 (0.12) *	0.18 (0.11)	0.17 (0.11)
Filtering	0.10 (0.11)	0.12 (0.12)	0.10 (0.11)	0.06 (0.11)
Monitoring	-0.33 (0.10) **	-0.35 (0.10) **	-0.34 (0.10) **	-0.33 (0.10) **
Propaganda	-0.03 (0.10)	-0.01 (0.10)	-0.03 (0.10)	-0.04 (0.10)
Age	-0.95 (0.02) ***	-0.93 (0.05) ***		
Age^2	-0.04 (0.02) *	-0.01 (0.02)		
Age [over 35]			-1.40 (0.08) ***	
Age [26 to 35]				-0.46 (0.05) ***
Age [over 36]				-1.64 (0.10) ***
Education	0.92 (0.02) ***	0.91 (0.02) ***	0.94 (0.02) ***	0.93 (0.02) ***
Living conditions	0.16 (0.01) ***	0.16 (0.01) ***	0.16 (0.01) ***	0.15 (0.01) ***
Rural	-0.55 (0.03) ***	-0.55 (0.03) ***	-0.53 (0.03) ***	-0.53 (0.03) ***
Gender [Female]	-0.39 (0.03) ***	-0.37 (0.03) ***	-0.33 (0.03) ***	-0.33 (0.03) ***
Radio	0.01 (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)
TV	0.60 (0.02) ***	0.60 (0.02) ***	0.59 (0.02) ***	0.59 (0.02) ***
Newspaper	0.49 (0.02) ***	0.50 (0.02) ***	0.47 (0.02) ***	0.48 (0.02) ***
Discuss politics	0.18 (0.01) ***	0.18 (0.01) ***	0.17 (0.01) ***	0.18 (0.01) ***
Survey sponsor [gvt]	-0.19 (0.03) ***	-0.19 (0.03) ***	-0.17 (0.03) ***	-0.17 (0.03) ***
% Internet users	0.36 (0.08) ***	0.44 (0.08) ***	0.37 (0.08) ***	0.38 (0.08) ***
Elections	0.27 (0.12) *	0.28 (0.12) *	0.26 (0.12) *	0.26 (0.12) *
Free Exp. Alt. Info	0.07 (0.10)	0.09 (0.10)	0.08 (0.10)	0.04 (0.10)
Shutdown x age		0.11 (0.05) *		
Shutdown x age2		-0.01 (0.02)		
Shutdown x age group [over 35]			0.20 (0.07) *	
Shutdown x age group [26 to 35]				0.03 (0.05)
Shutdown x age group [over 36]				0.22 (0.10) *
Random effects				
Country (variance)	0.17	0.23	0.18	0.18
Age (variance)		0.08		
Age2 (variance)		0.00		
Age [over 35] (var.)			0.15	
Age [26 to 35] (var.)				0.06
Age [over 36] (var.)				0.29
ICC	0.05	0.08	0.05	0.05
N country	34	34	34	34
Observations	44282	44282	44282	44282
AIC	32901.726	32699.896	33684.591	33492.392

All variables apart from the binary variables are grand-mean centred and standardised. All models fitted using the package lme4 (Bates et al., 2015). *P*-values obtained using the m-l-1 rule (Elff et al., 2021).
*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Figure 2. Marginal effects of interaction term on using social media for news for different age specifications.



Marginal effects are calculated and plotted using the R package 'ggeffects' (Lüdecke et al., 2021), based on model 3. In the model and above plots, all variables are grand-mean centred and standardised.

shutdown and informational use of social media is stronger for adults. Model 4 supports this, as the only age group for which the interaction with shutdown is positive is the group over 35. While the interaction is also positive for the group 26 to 35, it is not significant.

To facilitate interpretation, the marginal effects of the interaction term in each model are plotted in Figure 2 (Brambor et al., 2006). Each curve represents the effect of shutdowns on informational use of social media for the mean age, and for one standard deviation below and above the mean age (model 2) or by age group (model 3 and model 4). For model 2 (left panel), the slope of the curve for the standard deviation above the mean age is significantly steeper than the slope of the curve of the mean age, while the slope of the curve for the standard deviation below the mean age is less steep than that of the mean age. When age groups are considered (model 3 and model 4), the slopes of the curves for groups of citizens that are over 35 are significantly steeper than those of the curves of the two youth groups (18 to 35 for model 3, middle panel, and 18 to 25 and 26 to 35 for model 4, right panel).

As robustness checks, models including GDP per capita as a control variable (models 5 and 6) and including random effects for age and education (model 7 and 8) are run (Table C, Appendix). In the models without the interaction term (model 5 and model 7), shutdowns are significant at the 0.1 level, while results remain robust when the interaction term is included.

Finally, models including internet shutdown are run (models 9 and 10, Table D, Appendix). Here, the coefficient for internet shutdown is not significant, while results are otherwise robust. Note however the high mean variance inflation factor (mean ViF = 1.7). In models 11 and 12 in the same table, internet shutdown is included *instead* of social media shutdown. Neither internet shutdown nor its interaction with age are significant. Rather than jeopardise the main results, this

confirms that although internet shutdown implies social media are inaccessible, social media shutdowns can also occur outside of internet shutdowns. This is also reflected by the fact that the social media shutdown variable varies much more between countries than the internet shutdown variable.

Discussion and conclusion

The investigation of the relationship between age, social media shutdowns, and the use of social media for news in Africa suggests that (a) those citizens whose governments implement social media shutdowns use social media for news more, and that (b) social media shutdowns seem to strengthen the relationship between age and informational use of social media, indicating that older citizens turn to social media for news even more than younger citizens in countries where the government shuts down social media. However, the methodology employed does not allow a conclusion about the existence of a causal relationship. More research is needed to better understand this relationship, including in-depth case studies identifying the mechanisms at play among younger and older citizens.

This study represents a first attempt at understanding the relationship between states' online control strategies and citizens' online behaviour in a broad sense, beyond evaluating the effect of a specific control mechanism in a specific country. It offers a first indication that overt controls, here operationalised by social media shutdowns, might lead to a form of backlash. In countries where governments shut down social media, citizens are more likely to turn to social media for information. The case of the January 2021 elections in Uganda exemplifies this: access to social media, and later to the internet, was blocked ahead of election day. Access to the internet was restored a few days later, partial access to social media was restored on 10 February 2021, but Facebook still remains blocked – and Ugandans rely heavily on VPNs to use Facebook (Athumani, 2021). While there is no space to further analyse the case here, it is in line with earlier research focusing on specific cases in Africa (Falisse and Nkengurutse, 2019) and with more experimental research conducted in other parts of the world (Hobbs and Roberts, 2018; Pan and Siegel, 2020). Overall, this supports interpreting the present findings as pointing to a plausible causal relationship.

Contrary to expectations based on studies highlighting that social media foster the agency of young citizens in particular (Bailard, 2012; Otiono, 2021), social media shutdowns are linked to higher informational use of social media for older people to a significantly greater extent than for younger people. Higher levels of social media shutdowns are also linked to higher informational use of social media for young people, albeit not significantly. This is consistent with the fact that 'digital natives can be strangers to digital technologies' (Adjin-Tettey, 2020), and that across the African continent access to social media remains too costly for many (Chiweshe, 2017: 143). Circumventing social media controls requires costly tools, such as VPNs. It might also be the case that since the adoption rate of social media is higher among younger citizens, social media shutdowns are related to larger increases in users among older cohorts, as these had not previously adopted social media. Even though I control for the percentage of internet users in the models to mitigate this, the measure is itself an estimate reported by each country, since not all internet users use social media, or not necessarily to access news.

Another limitation is that the measure for social media shutdowns used is based on expert-coded data describing whether the government shuts down social media, and not on specific events, while there is no baseline data for the informational use of social media before governments implemented shutdowns. So, an alternative explanation is that governments that see a broader section of their population getting the news from social media attempt to control them more. This explanation would be supported if the variables controlling for other forms of social media controls, such as

filtering, monitoring, and propaganda, were positive and significant. Only one of these, monitoring, is significant, but the coefficient is negative, indicating that citizens whose government uses monitoring techniques use social media for information less. So, instead, the latter could be read as a sign of the 'chilling effect' of surveillance observed in earlier experimental research (Stoycheff et al., 2019). In that experimental research, participants are specifically made aware that they might be subject to surveillance. Thus, even though social media monitoring is neither immediately visible to users, nor directly experienced, the present significant results indicate that citizens of countries that implement social media monitoring are likely aware that it exists.

These findings, combined with earlier scholarship showing that the concept of awareness is central to identifying the potential resilience of citizens (Roberts, 2020) or the chilling effects produced by surveillance (Stoycheff et al., 2019), raise questions: how do citizens perceive different forms of social media controls? Are they aware of the strategies adopted by their governments? Survey data on how aware citizens are of existing social media controls would help answer this question, especially in combination with expert-coded data. This would strengthen our understanding of how citizens perceive different social media controls, and of their differential effect on citizens' behaviour.

In this study, I am interested in the informational use of social media in the context of the overall news landscape. The question I use to investigate the use of social media for news might reflect a different role played by social media in the news landscape. Indeed, respondents might report on their use of social media to get the news, but they might also be recalling being incidentally exposed to the news on social media. However, the fact that the question of getting news from social media follows other more typical news sources likely limits this risk. While I control for the use of other sources of information, I cannot observe whether social media replace other news sources in citizens' news diets. I also control for freedom of expression and alternative sources of information, ensuring that social media controls are considered within the broader media censorship and freedom context.

Finally, social media play a broad role in the information environment and in political life, being used to share news, to express one's opinion, to discuss politics, or to mobilise politically. Online controls might affect how citizens conduct these various activities very differently. The present study only operationalises online controls as four distinct forms of control, while the proposed theory is much richer. The range of tools available to regimes is much wider, and the ways citizen perceive those tools remain to be explored. This would enable a better understanding of the role social media play in political life, beyond considering social media through the lens of youth activists facing repressive regimes or as an alternative source of information in constrained media contexts.

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Supplemental material

Supplemental material for this article is available online.

Notes

1. Note that the Digital Society Project also offers measures of states' capacity to implement these controls. As I am interested in the relationship between online controls and citizens' behaviour, I only use measures of practices.
2. The measure of social media filtering ranges from 'the government simply blocking social media platforms' to 'the government does not censor political social media content'. Even though the theoretical highest level of social media filtering is very similar to social media shutdown, I do not consider this an issue as the maximum value of the variable in the dataset is well below the theoretical maximum of 5 (see Table 1). The variable is renamed as 'social media filtering' for the remainder of the paper.

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Supplemental Material to 'Online censorship and youth use of social media for information'

Digital Society Project's variables

Government social media shut down in practice (v2smgovsm)
Question: How often does the government shut down access to social media platforms?

0: Extremely often. It is a regular practice for the government to shut down access to social media.
1: Often. The government shuts down access to social media numerous times this year.
2: Sometimes. The government shuts down access to social media several times this year.
3: Rarely. There have been a few occasions throughout the year when the government shuts down access to social media.
4: Never, or almost never. The government does not interfere with the access to social media, except in the cases mentioned in the clarifications section.

Scale: Ordinal, converted to interval by the measurement model.
Cross-coder aggregation: Bayesian item response theory measurement model (see V-Dem Methodology)

Government social media monitoring (v2smgovsmmon)
Question: How comprehensive is the surveillance of political content in social media by the government or its agents?

0: Extremely comprehensive. The government surveils virtually all content on social media.
1: Mostly comprehensive. The government surveils most content on social media, with comprehensive monitoring of most key political issues.
2: Somewhat comprehensive. The government does not universally surveil social media but can be expected to surveil key political issues about half the time.
3: Limited. The government only surveils political content on social media on a limited basis.
4: Not at all, or almost not at all. The government does not surveil political content on social media, with the exceptions mentioned in the clarifications section.

Scale: Ordinal, converted to interval by the measurement model.
Cross-coder aggregation: Bayesian item response theory measurement model (see V-Dem Methodology).

Government social media censorship in practice (v2smgovsmcenprc)
Question: To what degree does the government censor political content (i.e., deleting or filtering specific posts for political reasons) on social media in practice?

0: The government simply blocks all social media platforms.
1: The government successfully censors all social media with political content.
2: The government successfully censors a significant portion of political content on social media, though not all of it.
3: The government only censors social media with political content that deals with especially sensitive issues.
4: The government does not censor political social media content, with the exceptions mentioned in the clarifications section.

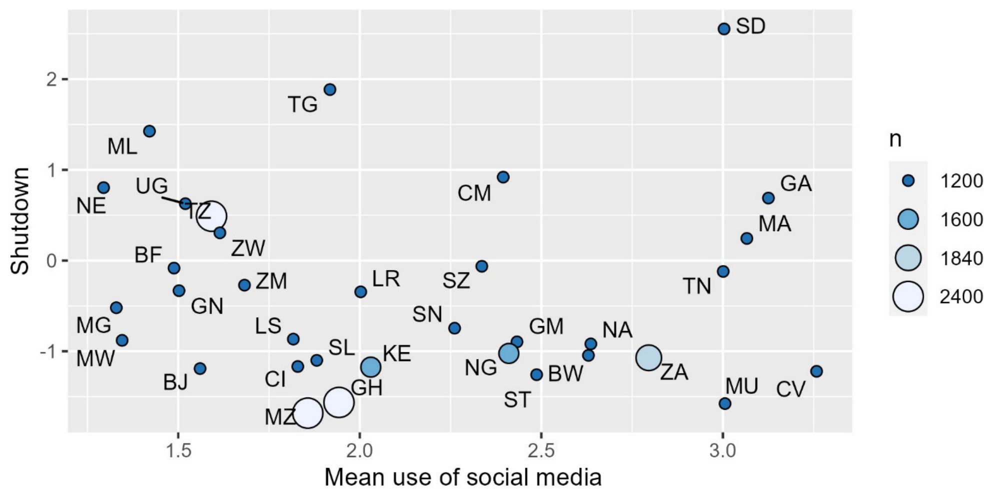
Scale: Ordinal, converted to interval by the measurement model.
Cross-coder aggregation: Bayesian item response theory measurement model (see V-Dem Methodology).

Government dissemination of false information domestic (C) (v2smgovdom)
Question: How often do the government and its agents use social media to disseminate misleading viewpoints or false information to influence its own population?

0: Extremely often. The government disseminates false information on all key political issues.
1: Often. The government disseminates false information on many key political issues.
2: About half the time. The government disseminates false information on some key political issues, but not others.
3: Rarely. The government disseminates false information on only a few key political issues.
4: Never, or almost never. The government never disseminates false information on key political issues.

Scale: Ordinal, converted to interval by the measurement model.
Cross-coder aggregation: Bayesian item response theory measurement model (see V-Dem Methodology).

Figure A Mean use of social media by country and social media shutdown level



Source: Afrobarometer round 7 (2019) and Digital Society Project (Vdem 11.1).

Table A Description of country-level variables

Variable	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max	Source
Social Media Shutdown	34	-0.399	1.017	-1.682	-1.168	0.306	2.553	Digital Society Project (DSP) via Vdem
Social Media Filtering	34	-0.35	0.904	-1.867	-0.948	0.198	2.211	
Social Media Monitoring	34	-0.067	1.045	-2.142	-0.674	0.508	1.799	
Social Media Propaganda	34	-0.095	0.887	-1.967	-0.815	0.637	1.798	
Internet Shutdown	34	-0.34	1.063	-1.741	-1.15	0.448	1.985	
Free Exp. Alt. Info	34	0.748	0.167	0.165	0.649	0.859	0.951	Vdem
Election	34	0.229	0.420	0	0	0	1	
Internet penetration	34	30.796	18.058	5.25	13.00	46.00	64.804	ITU via World Bank
GDP per capita	34	2288.671	2373.940	315.778	736.6	2111.0	10484.91	World Bank

Table B Description of individual-level variables

Age	N	Mean	Median	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
	45,777	37.144	34	14,936	18	25	46	106

Living Conditions	N	Very bad	Fairly bad	Neither good nor bad	Fairly good	Very good
	45,687	20.9%	25.16%	19.51%	27.82	6.59%

Education	N	No formal education	Primary	Secondary	Post secondary
	45,544	19.62%	28.35%	37.1%	14.94%

News from…	N	Never	< 1 /month	A few times / month	A few times /week	Every day
Radio	45,755	21.89%	4.81%	8.44%	22.53	42.32%
TV	45,664	40.18%	6.12%	5.1%	16.6%	35%
Newspaper	45,466	66.44%	8%	8.78%	9.92%	6.87%
Social media	45,202	66.18%	2.53%	3.64%	8.67%	18.98%

Discuss politics	N	Never	Occasionally	Frequently
	45,590	38.39%	44.6%	17.01%

Survey sponsor	N	Independent	Government
	45,566	65.61%	34.39%

Source: Afrobarometer, round 7 (2019).

Figure B Odd ratios for main models

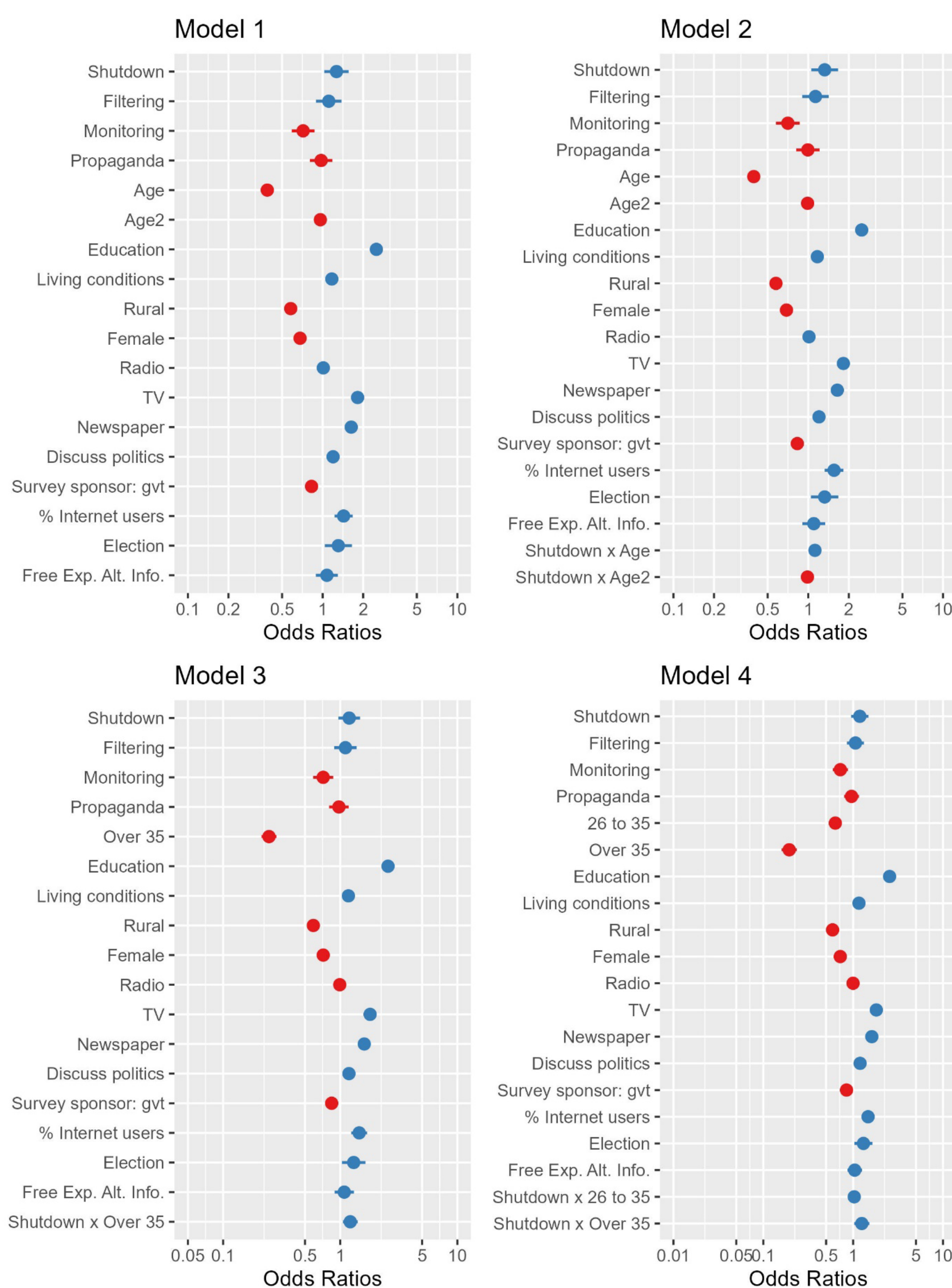


Table C Alternative model specifications: GDP and additional random effects

	Model 5	Model 6	Model 7	Model 8
Predictors	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
(Intercept)	-0.97 (0.08) ***	-0.97 (0.09) ***	-0.99 (0.1) ***	-1.00 (0.10) ***
Shutdown	0.21 (0.11).	0.25 (0.12) *	0.21 (0.11).	0.29 (0.12) *
Filtering	0.12 (0.11)	0.15 (0.12)	0.14 (0.12)	0.14 (0.12)
Monitoring	-0.33 (0.10) **	-0.34 (0.10) **	-0.36 (0.11) **	-0.36 (0.11) **
Propaganda	-0.01 (0.10)	0.01 (0.10)	-0.01 (0.10)	-0.01 (0.10)
Age	-0.95 (0.02) ***	-0.93 (0.05) ***	-0.93 (0.06) ***	-0.93 (0.05) ***
Age2	-0.04 (0.02) *	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Education	0.92 (0.02) ***	0.91 (0.02) ***	0.96 (0.04) ***	0.96 (0.04) ***
Living conditions	0.16 (0.01) ***	0.16 (0.01) ***	0.15 (0.01) ***	0.15 (0.01) ***
Rural	-0.55 (0.03) ***	-0.55 (0.03) ***	-0.54(0.03) ***	-0.54 (0.03) ***
Gender [Female]	-0.39 (0.03) ***	-0.37 (0.03) ***	-0.37 (0.03) ***	-0.37 (0.03) ***
Radio	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
TV	0.60 (0.02) ***	0.60 (0.02) ***	0.60 (0.02) ***	0.60 (0.02) ***
Newspaper	0.49 (0.02) ***	0.50 (0.02) ***	0.50 (0.02) ***	0.50 (0.02) ***
Discuss politics	0.18 (0.01) ***	0.18 (0.01) ***	0.18 (0.01) ***	0.18 (0.01) ***
Survey sponsor [gvt]	-0.19 (0.03) ***	-0.19 (0.03) ***	-0.18 (0.03) ***	-0.18 (0.03) ***
% Internet users	0.43 (0.12) **	0.51 (0.13) **	0.47 (0.08) ***	0.47 (0.08) ***
Elections	0.27 (0.12) *	0.28 (0.12) *	0.29 (0.12) *	0.29 (0.12) *
Free Exp. Alt. Info	0.09 (0.10)	0.12 (0.10)	0.09 (0.10)	0.09 (0.10)
GDP per capita	-0.09 (0.12)	-0.08 (0.12)		
Shutdown x Age		0.11 (0.05) *		0.11 (0.05) *
Shutdown x Age2		-0.01 (0.02)		-0.01 (0.02)
Random effects				
Country (variance)	0.17	0.22	0.27	0.26
Age (variance)		0.09	0.10	0.09
Age2 (variance)		0.00	0.00	0.00
Education (variance)			0.04	0.04
ICC	0.05	0.08	0.11	0.11
N country	34	34	34	34
Observations	44282	44282	44282	44282
AIC	32903.174	32701.470	32627.219	32626.770

. p<0.1 * p<0.05 ** p<0.01 *** p<0.001

All variables apart from the binary variables are grand mean centred and standardized. All models fitted using the package lme4 (Bates et al. 2022). P-values obtained using the m-l-1 rule (Elff et al. 2021).

Table D Adding internet shutdowns

	Model 9	**Model 10**	**Model 11**	**Model 12**
	Internet shutdown added to models		Internet shutdown **as alternative to** social media shutdown	
Predictors	*β (SE)*	*β (SE)*	*β (SE)*	*β (SE)*
(Intercept)	-0.97 (0.08) ***	-0.97 (0.09) ***	-0.96 (0.09) ***	-0.96 (0.10) ***
Internet shutdown	-0.12 (0.13)	-0.15 (0.13)	0.09 (0.09)	0.11 (0.11)
Shutdown	0.34 (0.15) *	0.40 (0.16) *		
Filtering	0.12 (0.11)	0.15 (0.12)	0.17 (0.12)	0.21 (0.12)
Monitoring	-0.35 (0.10) **	-0.36 (0.10) **	-0.30 (0.10) **	-0.31(0.11) **
Propaganda	-0.03 (0.10)	-0.01 (0.10)	0.02 (0.10)	0.05 (0.10)
Age	-0.95 (0.02) ***	-0.93 (0.05) ***	-0.95 (0.02) ***	-0.93 (0.06) ***
Age2	-0.04 (0.02) *	-0.01 (0.02)	-0.04 (0.02) *	-0.01 (0.02)
Education	0.92 (0.02) ***	0.91 (0.02) ***	0.92 (0.02) ***	0.91 (0.02) ***
Living conditions	0.16 (0.01) ***	0.16 (0.01) ***	0.16 (0.01) ***	0.16 (0.01) ***
Rural	-0.55 (0.03) ***	-0.55 (0.03) ***	-0.55(0.03) ***	-0.55 (0.03) ***
Gender [Female]	-0.39 (0.03) ***	-0.37 (0.03) ***	-0.39 (0.03) ***	-0.37 (0.03) ***
Radio	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
TV	0.60 (0.02) ***	0.60 (0.02) ***	0.60 (0.02) ***	0.60 (0.02) ***
Newspaper	0.49 (0.02) ***	0.50 (0.02) ***	0.49 (0.02) ***	0.50 (0.02) ***
Discuss politics	0.18 (0.01) ***	0.18 (0.01) ***	0.18 (0.01) ***	0.18 (0.01) ***
Survey sponsor [gvt]	-0.19 (0.03) ***	-0.19 (0.03) ***	-0.19 (0.03) ***	-0.19 (0.03) ***
% Internet users	0.36 (0.12) ***	0.44 (0.08) ***	0.36 (0.08) ***	0.48 (0.09) ***
Elections	0.28 (0.12) *	0.29 (0.12) *	0.26 (0.12) *	0.28 (0.12) *
Free Exp. Alt. Info	0.08 (0.10)	0.11 (0.10)	0.06 (0.10)	0.11 (0.10)
Shutdown x Age		0.11 (0.05) *		
Shutdown x Age2		-0.01 (0.02)		
Internet shutdown x Age				0.10 (0.05)
Internet shutdown x Age2				-0.00 (0.02)
Random effects				
Country (variance)	0.17	0.22	0.19	0.26
Age (variance)		0.09		0.09
Age2 (variance)		0.00		0.00
ICC	0.05	0.08	0.06	0.09
N country	34	34	34	34
Observations	44282	44282	44282	44282
AIC	32902.836	32700.730	32905.529	32703.498

. p<0.1 * p<0.05 ** p<0.01 *** p<0.001

All variables apart from the binary variables are grand mean centred and standardized. All models fitted using the package lme4 (Bates et al. 2022). P-values obtained using the m-l-1 rule (Elff et al. 2021).

Article 2

Article 3

Article 4

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How African countries respond to fake news and hate speech

Lisa Garbe, Lisa-Marie Selvik & Pauline Lemaire

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How African countries respond to fake news and hate speech

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ABSTRACT

While scholars have already identified and discussed some of the most urgent problems in content moderation in the Global North, fewer scholars have paid attention to content regulation in the Global South, and notably Africa. In the absence of content moderation by Western tech giants themselves, African countries appear to have shifted their focus towards state-centric approaches to regulating content. We argue that those approaches are largely informed by a regime's motivation to repress media freedom as well as institutional constraints on the executive. We use structural topic modelling on a corpus of news articles worldwide ($N = 7'787$) mentioning hate speech and fake news in 47 African countries to estimate the salience of discussions of legal and technological approaches to content regulation. We find that, in particular, discussions of technological strategies are more salient in regimes with little respect for media freedom and fewer legislative constraints. Overall, our findings suggest that the state is the dominant actor in shaping content regulation across African countries and point to the need for a better understanding of how regime-specific characteristics shape regulatory decisions.

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Content regulation; fake news; hate speech; Africa; structural topic modelling

1. Introduction

Online platforms gained enormous traction in political and social discourse, with platforms like Facebook evolving into transnational companies that are 'unmatched in their global reach and wealth' (Gorwa, 2019, p. 860). Social media platforms in particular have been blamed for poor efforts to moderate content in many instances around the world, failing to protect users from foreign influence during elections in the USA and France (Walker et al., 2019, p. 1532) or to adequately moderate hate speech in Ethiopia inciting violent ethnic protest (Gilbert, 2020). 'We take misinformation seriously,' Facebook CEO Mark Zuckerberg (2016) wrote just weeks after the 2016 elections in the USA. In the years since, the question of how to counteract the damage done by 'fake news' has become a pressing issue both for technology companies and governments across the

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globe. Indeed, there is a growing debate about how to adequately regulate online content predominantly taking place in Europe and North America (Iosifidis & Andrews, 2020).

Yet, how are fake news and hate speech regulated across African countries? In this paper, we use news coverage of fake news and hate speech in Africa to analyse how regulatory strategies are framed, and how these frames are predicted by different regime characteristics. In essence, our analysis of 7′787 news articles covering 47 African countries suggests that in the absence of proactive content moderation by the platforms, discussions regarding the regulation of fake news and hate speech mostly centre on state-centric strategies.

Figure 1 underlines the salience of ‘fake news’, ‘hate speech’, ‘misinformation’, and ‘disinformation’ in news coverage of African countries. The trend over the last five years suggests that these issues have gained increasing importance in public discourse. The enormous spread of misinformation related to the COVID-19 pandemic on Facebook in South Africa and Nigeria (Africa Check, 2020; Ahinkorah et al., 2020, p. 2) further underlines this trend. The fact that both humans and bots are used in several African countries to spread government-propaganda and discredit public dissent online (Bradshaw & Howard, 2019) highlights the challenges related to limiting hate speech and fake news in African contexts. Indeed, in more authoritarian contexts, domestic governments themselves seek to manipulate both information and discourse to ensure their regime’s survival.

How African countries respond to fake news and hate speech is a highly relevant question, especially in the absence of content moderation by Western tech giants. While platforms have started to engage in content moderation around the world, they appear comparatively inactive on the African continent. In 2019, upon request from governments, courts, civil society organizations, and ‘members of the Facebook community’ (Facebook, n.d.), Facebook removed content from its platform in several thousands of instances in countries like Pakistan ($N = 7′960$), Mexico ($N = 6′946$), Russia ($N =$

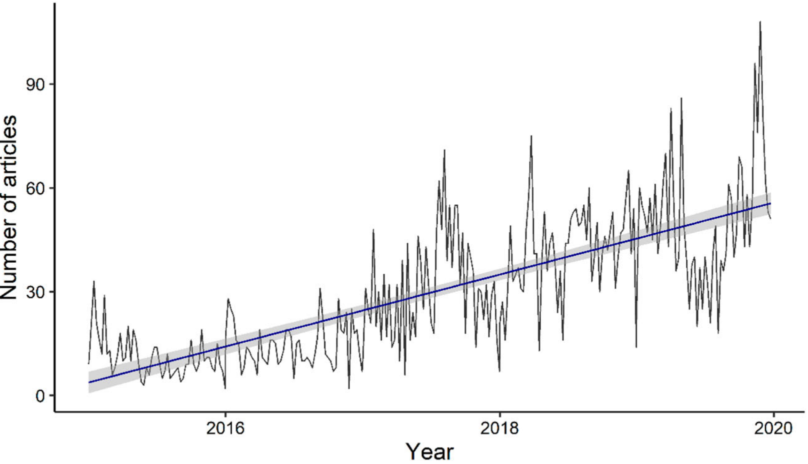

Figure 1. Number of articles including the search terms, 2015-2019.

Note: Total number of news articles including the terms “fake news”, “hate speech”, “misinformation”, or “disinformation”, per week between 01.01.2015 and 31.12.2019 ($N = 7′787$).

2′958), or Germany ($N = 2'182$), but it hardly removed any content in Africa. In fact, Morocco had the highest number of content removals, with $N = 6$ (Facebook, n.d.). Twitter's transparency reports suggest similar figures for African countries (Twitter, n.d.). The lack of content moderation in African countries seems particularly counterintuitive given the vast use of social media platforms, such as Facebook, on the African continent (e.g., Bosch et al., 2020; Nothias, 2020).

Theoretically, we build on Lessig (1999) and Boas (2006) framework of the regulation of code as well as recent scholarship on regime survival to explain how regime-specific characteristics shape the prevalence of legal and technological discussions about online content regulation. Empirically, our results underline the importance of regime characteristics to understand debates about online content regulation. Technological approaches to content regulation such as blocking or censoring online content are more commonly discussed in regimes that rely on the repression of media and in which the executive's actions are less constrained by legislatures. Legal approaches to content regulation, such as legislation passed by parliament, in particular the criminalization of hate speech, are more commonly discussed in countries respecting media and press freedom, yet not necessarily in countries with higher institutional constraints on the executive. Overall, our findings suggest that regime-specific characteristics pave the way for different strategies to regulate content, some of which may have profound consequences for the freedom of expression online.

We proceed with a theoretical section in which we combine insights from internet governance and comparative politics to formulate expectations about the prevalence of technological and legal regulation in public discourse. Subsequently, we present our data and explain how we employ structural topic modelling to identify regulatory frames in our body of collected texts. We then present results from regression analyses and discuss these findings in light of recent regulatory trends in Africa.

2. Theory

Recent scholarly efforts seek to understand determinants and effects of governments' attempts to control online spaces using censorship (Hellmeier, 2016), internet shutdowns (Hassanpour, 2014; Freyburg & Garbe, 2018; Rydzak et al., 2020) or online surveillance (Michaelsen, 2018). However, these studies do not take into account the legitimate need for governments to address, prevent and punish the spread of hate speech and fake news. Crucially, the aim and motivation of such regulation can be legitimate as long as it addresses citizens' needs (Helm & Nasu, 2021). By connecting insights from scholarship on internet governance and regime survival, our aim is to explain how variation in (1) regimes' motivations to control Information and Communication Technologies (ICT) and in (2) institutional constraints on the adoption of regulation result in differences in the framing of regulatory strategies addressing fake news and hate speech.

We assume that regulation of hate speech and fake news covered in news reports can be seen as regulatory frames (Gilardi et al., 2021, p. 23) that represent different perspectives on regulation. Following DiMaggio et al. (2013), we consider that news reports offer a useful mirror of societal debates, both because they report on issues when these are under consideration by political institutions, and because they reflect debates among the informed public. Furthermore, by considering not only African but also global

news reports, we overcome potential biases in the way regulation is framed in more illiberal countries. We assess how well news reports reflect actual regulatory strategies using information from *Freedom on the Net* reports, annually released by Freedom House (2015, 2016, 2017, 2018, 2019, 2020) that cover legal and technological aspects of internet regulation in 16 African countries (see Methods section; Appendix D).

2.1. Legal versus technological approaches controlling online content

Lessig (1999) distinguishes, broadly speaking, between institutional and architectural means (or *legal* and *technological* means as we will call them during the remainder of this paper) to regulate online space (cf. Boas, 2006, p. 4f.). According to Lessig (2006, pp. 124–125), states can control the technological architecture of the internet through executive decisions, thus influencing or restricting the production of and access to specific content. He (2006, pp. 136–37) argues that technological approaches enable states to regulate online content without having to suffer any political consequence. Legal approaches to content regulation are the predominant institutional strategy to shape access to and production of online content (Lessig, 2006, p. 130), including both the formulation of legislation in the form of bills, laws, and acts as well as the judicial review of existing legislation by courts.

Applying this distinction to how governments seek to regulate online content, we argue that the main difference between technological and legal regulation is that technological strategies are an *ex-ante* approach to prevent the production of online content in the first place, while legal strategies are mostly *ex-post*, removing and/or punishing harmful content after it was produced or shared (Frieden, 2015). These two approaches are not mutually exclusive and are, in fact, often employed in combination with one another.

2.2. Motivations for controlling online content

We acknowledge that a differentiated understanding of regime type is needed when studying politics in Africa. One important and useful distinction with regards to a government's motivations for controlling the flow of information and communication, is the degree to which a political regime is relying on people's informed vote and a viable opposition as sources of its legitimacy. Most African regimes qualify as 'electoral regimes' (Schedler, 2002, p. 36), meaning they hold elections and tolerate some competition but also violate minimal democratic norms so severely and systematically that they cannot be classified as full-fledged democracies. In countries in which the ruler is not (re-)determined by means of free and fair elections, the government usually relies on a whole 'menu of manipulation' to stay in power (Schedler, 2002). This includes the control of media and civil society actors because a strong and well-informed civil society 'can hold governments accountable beyond elections' (Mechkova et al., 2019, p. 42). Traditionally, in order to control information and communication, authoritarian rulers rely on manipulation of public discourse through the control of media outlets (Kellam & Stein, 2016) or heavy restrictions on civil society (Christensen & Weinstein, 2013).

In the digital age, internet and social media provide both civil society and media actors with new means to access and share information (Breuer et al., 2015; Eltantawy & Wiest, 2011). Authoritarian rulers might therefore require new regulatory strategies to also

control the flow of internet-based information and communication. In particular, they need to overcome the challenge posed by some of the decentralized and low-cost features of the internet that facilitate the organization of collective action without formal organization (Bennett & Segerberg, 2012). From a regulatory perspective, authoritarian regimes should hence be inclined to use preventive measures to keep civil society and media actors from putting pressure on the incumbent by using ICT for mobilization purposes (Dresden & Howard, 2015; Goetz & Jenkins, 2005, p. 20). We therefore expect that those regimes that traditionally rely on the repression of media and press freedom are more likely to employ technological ex-ante strategies that prevent the production and sharing of content in the first place. This is likely to affect how regulating online hate speech and fake news is framed in media reports:

H1a: With increasing levels of press and media freedom, the salience of technological regulatory frames decreases.

H1b: With increasing levels of press and media freedom, the salience of legal regulatory frames increases.

2.3. Institutional constraints to controlling online content

The extent to which authoritarian regimes can impose means of regulation that prevent the creation of digital content should not only depend on their tendency to repress press and media freedom in general but also on institutional constraints. We argue that authoritarian regimes can apply more preventive measures of regulation without facing the need for approval by the legislature or the review by the judiciary. They should therefore be more inclined to use technological means of regulation. In turn, in regimes in which the executive faces more constraints by other branches of power, discussions about legal approaches to content regulation should be more prominent.

The separation of powers aims to prevent a government's abuse of power (Rose-Ackerman, 1996). In many authoritarian regimes, institutions such as legislatures or courts serve as a way to co-opt the opposition rather than provide de facto oversight (Gandhi, 2008; Rakner & van de Walle, 2009; Shen-Bayh, 2018). It is therefore important to focus on the *de facto* capacity of such institutions to constrain executive decisions and hence the government's capacity to regulate online content. Legislatures can challenge a government through non-confidence votes for example (Mechkova et al., 2019). This capacity might be even stronger when opposition actors are represented in the legislature (Herron & Boyko, 2015). Some African legislatures have become powerful institutions 'in terms of checking the executive, contributing to the processes of policy-making, and indeed as a monitor of policy implementation' (Bolarinwa, 2015, p. 20). Independent legislatures are important actors in Africa 'assessing proposed legislation, drafting amendments, […] asking questions, attending committee and plenary meetings, participating in debates or voting' (Nijzink et al., 2006, p. 315), all of which should be reflected in broader societal debates about different steps in the process of legislation. High courts have the possibility to sanction government actions. Examples from Africa highlight their capacity to challenge even fundamental government decisions such as amendments to the constitution to overcome presidential term limits (Vondoepp, 2005).

In a country with independent legislatures and high courts, which effectively constrain the government, the executive is thus more limited in its ability to regulate fake news and hate speech. Ad hoc technological regulation to prevent the circulation of fake news and hate speech appears to be more challenging in such an environment compared to contexts without institutional constraints, as highlighted by an example from Ethiopia. In response to violent protest and the circulation of fake news, the Ethiopian government repeatedly shut down internet access in part of the country. As outlined by Abraha (2017, p. 302) this strategy 'usually take[s] place in the absence of any specific legislative framework'. We hence argue that discussions about legal strategies to regulate content are more prevalent in regimes where the government is de facto constrained by legislatures and high courts:

H2a: With increasing levels of constraint by legislatures and courts, the salience of legal regulatory frames increases.

H2b: With increasing levels of constraint by legislatures and courts the salience of technological regulatory frames decreases.

3. Methods

We assess legal and technological regulatory frames by analysing how regulation of hate speech and fake news are reported and discussed in news coverage of Africa. Importantly, news items come from both African and non-African publishers. We include news items from non-African publishers as reporting on politically contested issues like misinformation and hate speech might be scarce or biased in more authoritarian countries where news outlets are often owned by government authorities (Stier, 2015).

Still, domestic African media outlets are prominent in our sample (like Nigerian Vanguard, The Punch, and The Sun, with 17% of the news stories combined) or African reproduction of media content (like AllAfrica with 13% of the news stories). In contrast to analysing actual regulatory advances, news reporting can provide a sense of debates surrounding regulatory strategies pursued by governments and may provide an indication of regulation even before a law has been formally adopted (DiMaggio et al., 2013).

3.1. Corpus

Our data consists of 7′787 English-language news articles from a wide range of news outlets ($N = 380$), covering both digital and digitalized printed press, in 47 African countries. These articles are sourced from Factiva, containing the terms 'hate speech', 'fake news', 'misinformation' and/or 'disinformation' as well as terms related to online activity in the title or article published between 2015 and 2019. The Dow Jones Factiva database is a digital archive of global news content which is frequently used by scholars analysing media reporting on African countries (e.g., Bunce, 2016; Obijiofor & MacKinnon, 2016). Appendix A provides details of the full Factiva search query, which in total produced 22′457 news stories. To ensure that our corpus only consists of news stories discussing fake news and hate speech in online contexts, we subset the full corpus of news stories, only including articles that mention pre-defined words for online aspects. For each article in the final corpus, we only keep those paragraphs in which our key online terms are mentioned.[1] Table 1 provides an overview of the final corpus of 7′787 news stories.

3.2. Structural topic model

In order to analyse how regulatory strategies are framed, and to test our hypotheses about how these frames are predicted by different regime characteristics, we apply structural topic modelling (STM) (Roberts et al., 2019). We first estimate topic models ranging from 10 to 50 topics per model using the *stm* package in R (Roberts et al., 2019). We choose the 35-topic model as the most meaningful in terms of topic quality, based on quantitative measures for exclusivity and semantic coherence, and qualitative evaluation of the topics' interpretability (see Appendix B). Because the STM analysis relies on the probabilistic topic model technique Latent Dirichlet Allocation (see Blei, 2012), a technique which uses word counts and not the order of words, it is up to the researcher to infer meaning from the words and topics that appear, rather than assert it (Grimmer & Stewart, 2013, p. 272).

Based on the words in each topic and a close reading of the twenty most representative articles, we identify two topics as indicators for the framing of technological and legal approaches to content regulation. Representative articles can be found using the *findThoughts* function of the *stm* package, which provides documents highly associated with particular topics (Roberts et al., 2019, p. 14). To validate our interpretation and labelling of the selected topics, four human coders read and manually coded a sample of the most representative texts for each topic. The coders' agreement with the assignment of the structural topic model is around 70–75 percent (see Appendix C).

We further assess how well the identified topics for 'legal' and 'technological' approaches to content regulation in news coverage capture actual regulatory steps undertaken by African governments (see Appendix F). Specifically, we compare our country-year mean topic proportions with data from the *Freedom on the Net* reports (Freedom House, 2015, 2016, 2017, 2018, 2019, 2020), first through a t-test and then by investigating four cases more qualitatively. According to the results, news reports provide a fair indication of different legal and technological regulations by African governments For the remainder of this study, we use the expected proportion of each topic as dependent variable.

Table 1. Description of the textual corpus.

Pre-defined words for online aspects	'online', 'digital', 'Internet', 'web', 'social media', 'Facebook', 'Twitter', 'Google', 'YouTube', 'WhatsApp', 'Instagram'	
Number of news stories	7'787	
Countries in sample	47	
Texts per regime type	0: autocracy	339
	1: electoral autocracy	2'011
	2: electoral democracy	5'293
	3: democracy	144
Texts per year of publication	2019	2'632
	2018	2'157
	2017	1'645
	2016	762
	2015	591

Note. The corpus consisting of news stories on 'hate speech', 'fake news', 'misinformation' and/or 'disinformation' is subset to English news stories in which one or more paragraphs mention the pre-defined words for online aspects listed above. Regime type is coded by V-Dem's categorical regimes of the world measure (v2x_regime) following Lührmann et al. (2017).

3.3. Covariates

To predict the expected proportion of each topic, we use three different indicators from the Varieties of Democracy (V-Dem) project, version 10 (Coppedge et al., 2020). First, we use an aggregated index to assess media and press freedom (*v2x_freexp_altinf*) that ranges from 0 to 1 assessing the extent to which citizens are able to 'make an informed choice based on at least some minimal possibilities for collective deliberation' (Teorell et al., 2019). Second, following Mechkova et al. (2019), we use two different indicators to assess *de facto* rather than *de jure* accountability mechanisms through legislatures (*v2xlg_legcon*) and high courts (*v2x_jucon*) both of which range from 0 to 1. For both indicators, higher values indicate more freedom and more constraints on governments, respectively. In addition, we include a variable on state ownership of the telecom sector per country and year to control for a government's capacity to block internet access (Freyburg & Garbe, 2018). Specifically, the variable indicates the proportion of the telecom sector that is majority state-owned. Here, data comes from the Telecommunications Ownership and Control Dataset (Freyburg et al., 2021).

3.4. Methods

To estimate the effects of press and media freedom and institutional constraints on the proportion of the three selected topics, we use Linear Mixed Models (LMM; Baayen, 2008) and include country as random intercepts to acknowledge that the articles are nested in countries and time fixed effects. We use the logarithm of the proportion of topics as the distribution of these variables is right-skewed. All predictors are standardized. After fitting the model, we check whether the assumptions of normally distributed and homogeneous residuals are fulfilled. Appropriate tests indicate no substantial deviations from these assumptions. Finally, collinearity determined for a standard linear model without random effects, appeared to be no major issue (maximum Variance Inflation Factor: 5; Field, 2009).

4. Results

We identify two topics that reflect the two dominant state-centric regulatory strategies technological and legal approaches: Topic 31, which we label 'technological approaches', represents regulatory frames of governments using technological means to block, manipulate, or censor specific online content; and Topic 5, which we label 'legal approaches', reflects legislative strategies to regulate the production of fake news and hate speech. We illustrate how each of those topics reflects different types of regulatory strategies with excerpts from representative news articles from the corpus Table 2.

4.1. Technological approaches

Topic 31 appears to be related to more technological approaches to content regulation, with terms including 'shutdown', 'access', 'blackout', and 'block'. Both representative articles below point to the problem that fake news and hate speech might often be used as a pretence to prevent opposition actors from accessing specific content or sharing

Table 2. Topics related to state-centric online regulation in news coverage

Topic	Interpretation	Keywords
31	Technological approaches	Ethiopian, ethiopia, sudan, zimbabw, shutdown, addi, shut, mugab, protest, zimbabwean, ababa, burundi, mnangagwa, access, sudanes, uganda, prime, abiy, cut, blackout, unrest, block, mobil, diaspora, reform, harar, restrict, cpj, moyo, colour, activist, burundian, amid, fuel, congo, countri, govern, ahm, tax, disrupt
5	Legal approaches	Legisl, cyber, law, cybercrim, bill, draft, blogger, provis, protect, fine, regul, crimin, tanzania, bulli, amend, offenc, crime, act, kenya, propos, enforc, penalti, onlin, fraud, pornographi, kenyan, requir, comput, pass, provid, communic, appli, board, prohibit, legal, film, fee, enact, illeg, applic

Note: The selected topics presented by the 40 most frequent and exclusive words (*frex* terms). Appendix C provides an overview of all 35 topics and their labels.

information. One article exemplifies how a government, here the Ethiopian government, uses the blocking of specific websites as a means to prevent the spread of ‘rumours’:

> ‘Amid reports of violent clashes that have led to at least 15 deaths, the Ethiopian government has partially blocked internet access […]. The government has justified such action in the past as a response to unverified reports and rumors, noting that social media become flooded with unconfirmed claims and misinformation when violence erupts.’ (Solomon, 2017)

Another representative article focusing on government blocking in Cameroon underlines the preventive character of such measures:

> ‘[Cameroon] endured at least two Internet cuts since January last year with government saying the blackouts were among ways of preventing the spread of hate speech and fake news as the regime tried to control misinformation by separatists groups in the Northwest and Southwest.’ (The Citizen, 2018)

4.2. Legal approaches

Topic 5 seems to be concerned mostly with legal processes, as shown by the combination of terms like ‘legisl[ation]’, ‘bill’, ‘regul[ation]’, ‘fine’ or ‘prosecut[ion]’. A closer look at a representative article exemplifies that this topic embraces news coverage of specific legislation such as in Kenya:

> Kenyan President Uhuru Kenyatta signed a lengthy new Bill into law, criminalising cybercrimes including fake news […] The clause says if a person ‘intentionally publishes false, misleading or fictitious data or misinforms with intent that the data shall be considered or acted upon as authentic,’ they can be fined up to 5 000 000 shilling (nearly R620 000 [43′865 USD]) or imprisoned for up to two years. (Mail & Guardian, 2018)

Before Kenyatta signed the Bill, there were demands to have Parliament review the law to make sure that it does not violate the right to media freedom and expression. Similar laws or proposed laws are discussed in news articles covering Nigeria (Adegbo, 2019), Botswana (The Botswana Gazette, 2017), or Ethiopia (Ethiopian News Agency, 2019), all of which focus on criminalizing the publication of fake news or hate speech and holding to account the individual. In few cases, articles also point to legal approaches that would make it possible to hold internet service providers (ISPs) liable who fail to moderate content appropriately as indicated by a bill discussed in South Africa (Eloff, 2019).

4.3. The influence of media freedom and institutional constraints on regulation

We use our topics 'technological approaches' and 'legal approaches' as dependent variables and estimate the effect of a country's press and media freedom as well as institutional constraints on the expected proportion of each of these topics. Figure 2 depicts the results; more detailed results from the linear mixed models can be found in Appendix D.

First, results from the linear mixed models reveal a differential impact of a country's level of press and media freedom on the expected reporting of technological and legal approaches to regulation. Increasing levels of press and media freedom are associated with decreasing levels of technological regulatory frames (B = −0.55, SE = 0.09). This supports Hypothesis 1a that countries traditionally relying on the repression of press and media are more likely to appear in frames related to technological strategies of content regulation. Furthermore, press and media freedom is positively associated with legal frames (B = 0.17, SE = 0.09), supporting Hypothesis 1b that countries respecting press and media freedom are more likely to be associated with legal strategies of content regulation.

Second, institutional constraints vary in their effects on the expected proportion of technological and legal frames. Legislative constraints are associated negatively with the expected proportion of technological frames (B = −0.44, SE = 0.08) whereas judicial

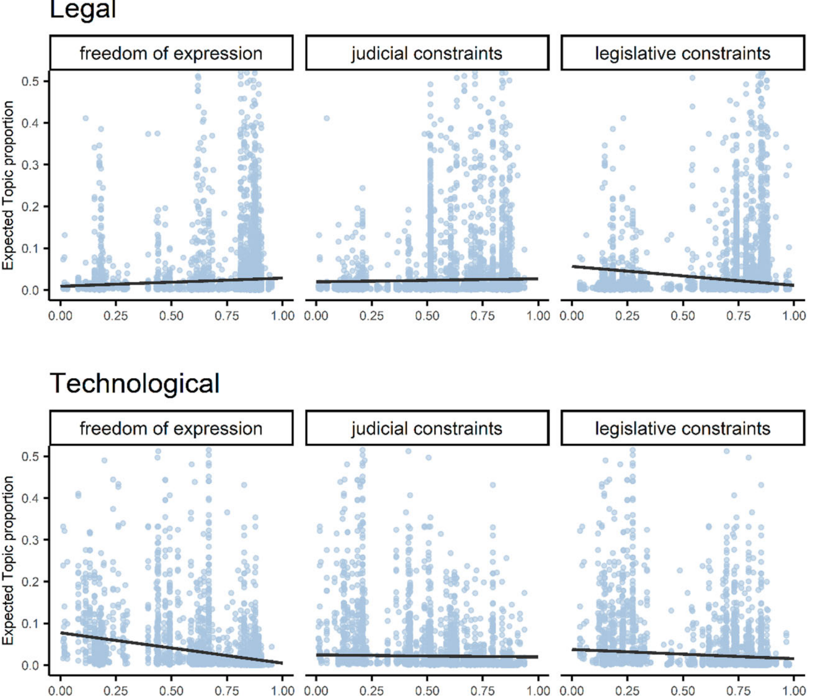

Figure 2. Marginal effects of covariates on expected topic proportions.

Note: Marginal effects are calculated using the ggpredict() function (Lüdecke, 2021); points indicate the expected topic proportion per text; in contrast to the statistical models (see Appendix D), the marginal effects are calculated using models in which the variables are not logarithmized and/or standardized to facilitate interpretation.

constraints are positively associated with the expected proportion of technological frames (B = 0.27, SE = 0.08). Overall, this suggests that only legislative but not judicial constraints are negatively associated with frames of technological regulation and lends mixed support for Hypothesis 2b. Furthermore, legislative constraints are negatively associated with legal frames (B = −0.37, SE = 0.09), whereas judicial constraints are positively associated with legal frames (B = 0.17, SE = 0.08). Overall, this provides mixed support for Hypothesis 2a, suggesting that in contrast to judicial constraints, legislative constraints are not necessarily associated with the reporting of legal strategies.

4.4. Discussion & limitations

Our investigation suggests that both traditional restrictions on press and media freedom as well as institutional constraints influence the salience of different regulatory strategies as reported in news outlets. Given that our indicators for different regulatory strategies are informed by computer-assisted text analysis rather than in-depth analysis of all articles in the corpus, we discuss our findings in light of country-specific examples.

The salience of regulatory frames of technological approaches to address fake news and hate speech appears to be higher in countries that traditionally restrict press and media freedom and that are less constrained by legislative institutions. This is also reflected by the growing trend across authoritarian African rulers to block internet access during elections (Freyburg & Garbe, 2018; Garbe, 2020). Indeed, our findings suggest that those rulers who have strong incentives to prevent the production and spread of content – often because it is considered potentially harmful to the regime – are more likely to use technological means to restrict access to and production of online content. Our findings further suggest that strong legislative constraints on the executive might prevent governments from using technological means of blocking. On the other hand, our findings indicate that regimes with strong(er) judicial constraints on the executive may still revert to technological strategies of content regulation. This is exemplified by the shutdown of social media in Zimbabwe amid protests in 2019 which was later challenged by Zimbabwe's high court (Asiedu, 2020). Given that governments who seek to fundamentally restrict access to and production of content online often do so in response to pressing political issues, *ex-post* judicial review of such measures might not deter governments from doing so. While some observers recognize the legitimate aim to contain the spread of fake news (Madebo, 2020), there is also widespread concern about the potential harm of such preventive measures in over-censoring potentially important information such as news related to Covid-19 (Nanfuka, 2019).

Our findings further indicate that legal approaches to regulating fake news or hate speech, i.e., media coverage of the introduction of bills, laws, and acts, are not more prevalent in those regimes with strong legislative constraints. This may reflect the increasing importance of law-making as a political tool of power consolidation and illiberal practices, also known as 'autocratic legalism' (Scheppele, 2018, p. 548). In fact, many African rulers started introducing legislation on the production and spread of content online. Kenya's Computer Misuse and Cybercrime Act, for instance, criminalizes the 'publication of false information in print, broadcast, data or over a computer system' (2018, Art 22, 23) and also explicitly refers to the publication of 'hate speech'. Digital human rights defenders have observed many of the changes in the

legal landscape in both authoritarian and democratic countries with worry. Regulations specifically criminalizing online content that is regarded as misinformation or hate speech are often 'inherently vague, and […] create a space for abuse of the law to censor speech' (Taye, 2020). While Helm and Nasu (2021) argue that criminal sanctions can be an effective way to counter hate speech, they underline that it is necessary to find an appropriate balance between censoring information and respecting freedom of expression. In addition to bills criminalizing the publication or spread of fake news, authoritarian regimes also seem to develop more indirect means of legislation that can be described as *ex ante* measures to prevent the production of fake news and hate speech. For instance, Tanzania, Lesotho, and Uganda, all introduced laws that indirectly prevent people from sharing content online either through fees on social media use itself or fees that are required from online bloggers (Karombo, 2020). Overall, our STM approach is limited in grasping more nuanced types of legislation and further qualitative work is needed to better understand how regimes differ in their legislative approach to regulating fake news and hate speech and to what extent legislatures affect this process. In addition, the increasing use of bots by African governments can also be seen as regulatory strategy in itself requiring more fine-grained approaches to investigate differences across countries (Nanfuka, 2019).

We acknowledge that there might be non-state solutions to regulation as, for instance, reflected in Topic 14 (see Appendix C). While governments appear to be the most prevalent actors emerging from our analysis of media coverage on hate speech and fake news in Africa, news reporting also points to other approaches, such as bottom-up initiatives to improve fact-checking skills, to regulate fake news and hate speech. This might reflect the fact that, facing increasing pressure on fundamental rights, civil society in Africa is advocating for online platforms to meaningfully invest in content moderation in Africa and collaborate with local civil society (Owono, 2020; Dube et al., 2020).

Finally, we want to highlight three limitations of our study. First, our approach using news coverage of African countries enabled us to assess the public discourse surrounding the regulation of fake news and hate speech. This has the advantage that we also include discussions about the regulation of fake news and hate speech, often before they translate into actual legislation. However, it is unclear to what extent news reports reflect actual regulation across African countries. As our validation highlights, news reports provide a good indication of technological approaches to regulate fake news (see Appendix D). Yet, it is less clear how well news reports reflect legal approaches to content regulation. The fact that most data sources on African legislation do not directly assess the extent to which legislation regulating the digital space is meant to address fake news, makes it difficult to validate the fit of news reports. Empirical studies comparing actual laws explicitly addressing fake news as well as technological manipulation of online activity beyond shutdowns are hence encouraged. Second, our sample is biased towards large African countries and countries with a high degree of digitalized press, like South Africa and Nigeria, which represent up to 20 and 40 percent in our sample respectively. As both are prominent and dominant countries on the continent, however, we can assume that they are important actors in both driving and shaping discussions on how online content should be regulated. Third, the salience of the two strategies is subject to variation over time (see Appendix F) and highlights that especially legal frames have only recently gained importance in the African context.

5. Conclusion

Our study contributes to the growing discussion on content regulation in two ways. Theoretically, we add to the understanding of online regulation by showing that regime-specific characteristics can alter a government's choice of different regulatory strategies. Empirically, we find that public discourse on online content regulation in Africa points to the relevance of technological and legal strategies pursued by governments. Discourse on technological approaches to content regulation is more prominent in coverage of countries with lower levels of media and press freedom and legislative constraints. Our analysis further suggests that legal frames are more dominant in coverage of countries with judicial constraints, but not in coverage of countries with more legislative constraints. More qualitative insights suggest that criminalization is among the dominant legal strategies. While criminal regulation can be an effective strategy to counter hate speech and fake news, Helm and Nasu (2021, p. 327) also warn about the potential for abuse of laws to supress dissent in more authoritarian regimes.

Overall, our analysis points to the central actors when it comes to content regulation in Africa: African governments. While theory has so far tended to either follow Lessig (1999, 2006) and focus on content regulation in democracies, or to focus on censorship in authoritarian regimes (Stoycheff et al., 2020; Keremoğlu & Weidmann, 2020), our analysis demonstrates that these issues cannot always be easily separated. News reporting on African countries underlines that all regimes face issues of fake news and hate speech and seek to find solutions to manage them. While technological strategies to address fake news and hate speech (including shutting down internet and blocking specific content) appear to be more prominent in regimes with low respect for media and press freedom and fewer institutional constraints, our results indicate that the same regimes may also revert to more legal means to regulate content. Not only technological but also legal strategies of content regulation may have severe implications for freedom of speech (Helm & Nasu, 2021), especially, but not only, in countries facing weak institutional constraints. Overall, our paper highlights that the regulation of fake news and hate speech are also pressing issues beyond the Western world. In turn, the current prevalence of state regulation addressing problems of fake news and hate speech points to a need to strive for multi-stakeholder approaches across continents.

Note

1. In preparing for the textual analysis, the body of textual data was properly pre-processed, white space, punctuation, and so-called 'stopwords' (the, is, are, etc.) were removed, as well as the search terms we used to delimit our body of texts (Benoit et al., 2018). Our full script for importing, preprocessing and analysing the corpus is available on GitHub: https://github.com/lisagarbe/ContentRegulationAfrica.

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Author contributions

All authors contributed equally to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

Data availability statement

The data that support the findings of this study are available from the Factiva Global News Monitoring & Search. Restrictions apply to the availability of these data, which were used under license for this study. R scripts for data preparation and analysis are available from the authors in the Github repository https://github.com/lisagarbe/ContentRegulationAfrica

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Appendices

Appendix A. Sampling of news stories and resulting text corpus

Table A1 provides an overview of the search query made in Factiva.

Table A1. Factiva search query

Category	**Search settings**
Text	("misinformation" OR "disinformation" OR "fake news" OR "hate speech")
Date	01/01/2015 to 25/10/2020
Source	All Publications
Author	All Authors
Company	All Companies
Subject	Economic News Or Political/General News
Industry	All Industries
Region	Africa
Language	English Or French
Results Found	22’457
Timestamp	17 November 2020

The collected data was subset to 7’787 English-language news stories, published between 2015 and 2019, and containing one or more paragraphs including the words ‘online’, ‘digital’, ‘Internet’, ‘web’, ‘social media’, ‘Facebook’, ‘Twitter’, ‘Google’, ‘YouTube’, ‘WhatsApp’, and/or ‘Instagram’. The final text corpus consists of news stories from 380 news outlets. Table A2 provides an overview of the 50 most prominent news outlets.

Table A2. Prominent news outlets

	Publisher	Number of news stories (N)
1	AllAfrica, Inc.	667
2	Vanguard Media Limited	623
3	Independent Online	568
4	Times Media (Pty) Ltd	377
5	All Africa Global Media	366
6	Punch Nigeria Limited	343
7	The Sun Publishing Ltd.	334
8	Leaders & Company Limited	192

9	CQ-Roll Call, Inc.	187
10	The British Broadcasting Corporation	182
11	African Newspapers of Nigeria Limited	175
12	Independent Newspapers Ltd. (Nigeria)	160
13	Guardian Newspapers Limited	156
14	Radio Africa Group	146
15	Media Trust Limited	142
16	Premium Times Services Limited	134
17	On the Shelf Trading 44 (Pty) Limited, trading as Daily Mail and Guardian	109
18	Multimedia Investments Ltd	91
19	Nation Media Group Limited	91
20	Alpha Media Holdings Pvt. Ltd.	84
21	Ghana News Agency	84
22	Vintage Press Limited	83
23	Al Jazeera International	80
24	TNA Media (Pty) Ltd.	71
25	Business Day Media Ltd.	68
26	Independent Communications Network Limited	66
27	Agence France-Presse	57
28	Frontpage Africa	54
29	News Agency of Nigeria	52
30	The New York Times Company	52
31	Herald House	51
32	The Associated Press	46
33	Cynomedia Africa SARL	45
34	Normans Media Ltd	43
35	Morocco World News	41
36	Washington Post	37
37	Thomson Reuters (Markets) LLC	33
38	The Will News Media	32
39	Dow Jones & Company, Inc.	30
40	Cable News Network LP.	28
41	New Times Corporation	28
42	U.S. Government	27
43	Agence de Presse Africaine	25
44	Bendel Newspapers Company Limited (BNCL)	24
45	New Vision Printing & Publishing Company Limited	24
46	News UK & Ireland Limited	24
47	Ventures Africa	24
48	Business news co.	23
49	The Standard Group Limited	23
50	Peoples Media Ltd	22

Appendix B. Model tests and topic quality

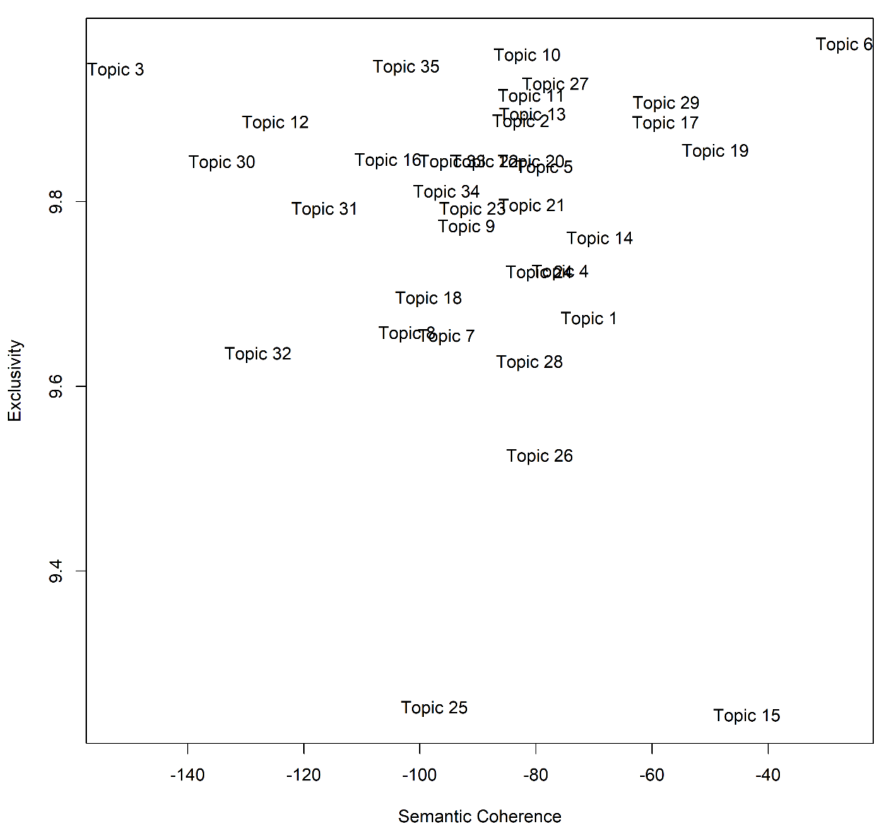
The Structural Topic Modelling (STM) method assumes a fixed user-specified number of topics. In order to choose an appropriate number of topics for a given corpus, we ran several model evaluations and topic quality tests. First, the function *searchK* in the *stm* package (Roberts et al., 2019) offers a data-driven approach to selecting the number of topics (K). The function calculates a range of quantities of interest, such as semantic coherence, held-out log-likelihood, residuals and lower bound (Roberts et al., 2019, p. 12). We compare the results of several STMs, including 10, 15, 20, 25, 30, 35, 40, 45, and 50 topics, to inform the final number of topics chosen for the analysis. According to the model estimations, 30 to 40 topics appear to be a good number of topics, due to an increase in semantic coherence and the slow-down of the decrease of held-out likelihood, that even slightly reverses when passing 40 topics. In other words, the gain in topic interpretability and the model's predictive performance becomes smaller when increasing the number of topics beyond 40.[1]

Second, we manually examine different topic models (K = 30–40), analysing the most probable (*prob terms*) and frequent and exclusive words (*frex terms*) (Lucas et al., 2015, p. 19), as well as representative texts (texts with the highest proportions for each topic).

Finally, we validate our selection of the 35-topic model using a topic quality check for the 35 topics, with regard to how interpretable the topics are. There are two ways of measuring topic 'interpretability', namely exclusivity and semantic coherence (Roberts et al. 2019, p. 11–12). *Exclusivity* measures how distinctive the top words are

[1] The held-out likelihood is an estimation of the probability of words appearing within a document when those words have been removed from the document in the estimation step and helps assess the model's prediction performance (Roberts et al., 2019, p. 34).

to a particular topic; i.e. how much each topic has its own vocabulary not used by other topics. A certain amount of exclusivity to the topics is preferable. For measures of exclusivity, larger or smaller values indicate whether the topic is unique (high value) or broad (low value). *Semantic coherence* measures the consistency of the words used within a particular topic. If a topic is semantically coherent, we expect that the words making up a topic often co-occur in the same document. Larger values indicate that a topic is more consistent, whereas low values can imply that the topic may be composed of sub-topics.



Appendix C. Full topic model and interpretation of selected topics

Table C1 provides an overview of the 35 topics presented by the 40 most frequent and exclusive words (*frex* terms) as well as a label designated by the authors.

Table C1. Topics based on the structural topic model

Topic	Interpretation	Keywords
1	Training and awareness	train, particip, ensur, profession, challeng, ethic, develop, programm, literaci, improv, communic, opportun, practition, build, stakehold, engag, skill, workshop, initi, organis, collabor, practic, ict, journal, theme, manag, polici, organ, inclus, sustain, societi, strengthen, safeti, import, enabl, impact, empow, educ, key, partner
2	Counter-terrorism	polic, armi, militari, soldier, command, forc, attack, arrest, arm, offic, suspect, ministri, spokesman, troop, oper, defenc, center, mp, mose, kill, ukrain, vehicl, kuria, situat, foreign, terrorist, weapon, personnel, wrote, recruit, director, tuesday, terror, friday, secur, russian, statement, enemi, alleg, shell
3	Celebrity attention	kogi, bayelsa, genocid, famili, music, rwanda, hail, celebr, visit, song, deport, withdraw, measl, columnist, rwandan, behind, blast, follow, concert, peter, fan, musician, ignor, john, appear, princ, save, scare, travel, park, canada, period, anniversari, businessman, seeker, dare, st, ceremoni, usa, column
4	Video and photo sharing	video, pictur, imag, youtub, photo, clip, viral, show, photograph, footag, star, encount, shock, scene, film, shot, caught, death, stori, dead, aliv, woman, viewer, upload, graphic, singer, incid, version, accid, claim, hospit, taken, caption, share, driver, angri, watch, dress, shop, tweet
5	**Legal approaches**	legisl, cyber, law, cybercrim, bill, draft, blogger, provis, protect, fine, regul, crimin, tanzania, bulli, amend, offenc, crime, act, kenya, propos, enforc, penalti, onlin, fraud, pornographi, kenyan, requir, comput, pass, provid, communic, appli, board, prohibit, legal, film, fee, enact, illeg, applic
6	-	>, <, data-ad-cli, data-ad-slot, adsbygoogl, ca-pub-7167863529667065, ca-pub-7532470883667401, data-ad-format, =, display:block, display:inline-block, figcapt, in, 280px, 336px, class, ca-pub-4899651957500650, data-ad-layout, in-articl, ca-pub-7429385817508822, wp-caption,

		aligncent, width, wp-caption-text, auto, style, alignnon, height, 300px, figur, fluid, autorelax, id, 412px, 250px, ca-pub-7124364482977810, gna, fayos, pension, clear
7	Economic aspects	per, market, $, cent, billion, oil, invest, debt, sector, bank, price, infrastructur, trade, dollar, industri, project, gas, india, payment, plant, electr, european, economi, chemic, product, rate, transport, contract, budget, fund, ltd, growth, cash, investor, energi, eu, china, job, august, loan
8	Gendered aspects	women, insid, girl, femal, men, counsel, hotel, gap, babi, male, safe, vulner, risk, termin, miss, ngo, insur, dark, model, explain, audit, engin, touch, islamist, percentag, gender, airport, mask, hacker, intellig, routin, woman, flight, beat, organis, mother, room, lure, approach, isol
9	Nigeria 1	buhari, muhammadu, osinbajo, jonathan, presid, vice, mr, obasanjo, lai, resign, mrs, moham, saraki, adesina, goodluck, wed, femi, yemi, aisha, aid, former, handl, prof, tom, villa, wife, alhaji, dr, advis, lie, minist, specul, return, sack, certif, vacat, assur, london, rumour, presidenti
10	Elections	elect, elector, candid, inec, poll, vote, campaign, voter, parti, ahead, kenyatta, politician, presidenti, kenya, result, odinga, uhuru, raila, ballot, observ, contest, opposit, kenyan, polit, win, process, disinform, victori, rig, rice, conduct, commiss, fair, outcom, jubile, deploy, forthcom, smear, influenc, general
11	Industry and innovation	ghana, futur, global, consum, world, new, chang, technolog, age, busi, advertis, industri, transform, emerg, contin, revenu, becom, generat, smart, tradit, speed, growth, shift, player, model, ghanaian, cost, innov, rapid, ai, grow, evolv, profit, advanc, fast, competit, advent, virtual, revolut, digit
12	Religious violence	pastor, church, boko, haram, herdsmen, mosqu, igbo, fulani, northern, christian, youth, kaduna, god, religi, faith, bishop, islam, preach, cathol, muslim, insurg, jesus, prayer, food, cleric, kill, killer, southern, pray, anderson, religion, pope, massacr, yoruba, christ, leader, ethnic, laud, apostl, south-east
13	Freedom of speech	hate, speech, incit, track, hatr, violenc, monitor, propag, warn, ethnic, express, ncic, danger, tribal, inflammatori, constitut, threaten, perpetr, freedom, peac, tackl, cohes, divis, right, particular, free, undermin, notabl, instig,

		societi, tension, prevent, citad, intoler, kaparo, enench, condemn, civil, action, franci
14	Web security and risks	googl, fact-check, site, app, search, help, identifi, tool, click, check, network, share, survey, chat, updat, smartphon, phone, map, can, messag, applic, filter, +, spot, interact, user, platform, algorithm, devic, reduc, tip, use, detect, third-parti, contact, pleas, research, addit, connect, download
15	Political disinformation	propaganda, often, bot, disinform, role, amplifi, narrat, troll, discours, strategi, influenc, tend, conflict, extrem, sectarian, convers, mainstream, polit, extremist, audienc, popul, play, engag, exampl, landscap, democraci, debat, becom, middl, crucial, opinion, spring, thus, increas, factor, level, impact, larg, voic, emot
16	Health	student, vaccin, school, health, parent, univers, ebola, children, diseas, medic, teach, scienc, hiv, patient, colleg, educ, mental, lectur, care, teacher, sex, cancer, virus, kid, sexual, child, young, cure, campus, librari, learn, doctor, studi, curriculum, professor, pupil, research, hospit, academ, treatment
17	Fact-checking	fake, news, fals, spread, verifi, circul, mislead, mainstream, hoax, stori, credibl, sourc, rumour, reader, fabric, authent, truth, misinform, check, item, panic, bbc, dissemin, deliber, inform, true, unverifi, media, fact, journal, fiction, malici, lie, rumor, vigil, phenomenon, prolifer, sensat, confus, factual
18	Cameroon	anglophon, cameroon, soyinka, hide, cameroonian, separatist, biya, crisi, octob, region, diplomat, radicalis, secessionist, violent, movement, strike, paul, nobel, english-speak, demand, uniti, measur, lt, west, februari, teacher, wole, demonstr, la, extrem, le, decemb, march, interview, de, januari, audio, stage, popul, malaysia
19	Nigeria 2	social, media, regul, bill, falsehood, platform, curb, space, use, moham, abus, gag, irrespons, especi, manipul, dissemin, sponsor, propos, govern, musa, nuj, menac, urg, activ, pass, anti-soci, usag, therefor, lai, misus, control, curtail, media.th, caution, guild, promot, attempt, must, inform, nigerian
20	Qatar-Gulf crisis	qatar, saudi, qatari, arabia, emir, uae, hack, gargash, gulf, arab, anwar, qatar-gulf, blockad, reuter, offici, stoke, quot, afp, agenc, affair, bahrain, foreign, washington, doha, interior, dissent, diplomat, link, crisi, thursday,

		account, unblock, cairo, state-run, recognit, qatar-bas, egypt, visa, unit, minist
21	USA	trump, `, cnn, et, clinton, u., obama, russia, donald, russian, hillari, american, korea, republican, isi, air, putin, s, conspiraci, fbi, correspond, meddl, fox, york, mueller, syria, realli, conserv, washington, theori, newshour, thank, troll, barack, tonight, gun, north, tweet, iran, korean
22	Egypt	egyptian, egypt, freedom, journalist, activist, jail, press, prison, block, sentenc, harass, sisi, detain, critic, arrest, human, right, outlet, defend, al, jazeera, censorship, silenc, charg, express, abba, intimid, imprison, dissent, cairo, criticis, crackdown, author, abdel, resolut, restrict, detent, repress, council, fathi
23	Cambridge Analytica scandal	cambridg, analytica, zuckerberg, compani, data, firm, ceo, privaci, tech, giant, advertis, user, mark, scandal, ad, breach, app, remov, british, million, target, hire, founder, delet, germani, largest, scrutini, wyli, mine, approxim, india, execut, lawmak, contract, harvest, influenc, moder, regul, softwar, algorithm
24	Personal accounts	ago, money, man, friend, father, saw, got, king, start, son, came, never, realiz, went, rememb, daughter, lost, soon, die, day, life, happi, year, back, last, brother, laugh, becam, surpris, ask, name, pay, send, beauti, met, marri, wonder, dream, rage, comedian
25	Religion and artistic expression	book, charli, cartoon, writer, concept, scholar, prophet, pattern, muslim, e, art, sentiment, word, l, mass, enjoy, hurt, definit, resist, histor, vicious, religion, contemporari, franc, t, novel, radic, centuri, dictionari, muhammad, french, cultur, ideal, android, idea, o, inspir, solidar, america, histori
26	Political opposition	wine, kanu, poverti, ugandan, biafra, museveni, bobi, leadership, democraci, corrupt, uganda, ipob, unemploy, power, elit, nnamdi, bail, rule, histori, oppress, democrat, elder, indigen, insecur, yoruba, opposit, beyond, poor, principl, feder, militari, intervent, hang, agit, tribe, leader, war, manifest, pollut, yoweri
27	National broadcasting	ht, permiss, premium, liberia, liberian, publish, nbc, content, frontpag, servic, morocco, broadcast, digit, moroccan, weah, prior, migrat, malawi, lesotho, rewritten, punch, redistribut, written, analogu, time, info, reserv, reproduc, licens, materi, counti, corpor, age, el, switch,

		whole, signal, oct, boycott, without
28	Workplace issues	court, comment, employe, apolog, complaint, gay, employ, apologis, case, page, equal, defam, judgment, judg, post, sahrc, remark, bridg, charg, flag, guilti, lawyer, chines, file, justic, remov, derogatori, defamatori, insult, unfair, constitut, offend, legal, homosexu, disciplinari, retract, hear, kuria, dismiss, src
29	-	thing, know, go, think, lot, get, someth, happen, just, hope, kind, see, much, want, alway, talk, realli, us, everi, sure, way, like, put, believ, can, let, good, anyth, even, bad, actual, tell, peopl, done, someon, look, come, hard, whatev, everyth
30	Humanitarian aspects	pic.twitter.com, libya, cape, town, septemb, migrant, citi, libyan, water, resid, refuge, somali, un, committe, de, da, provinc, april, eastern, tripoli, humanitarian, municip, mayor, document, deleg, eskom, western, ms, rescu, brief, mps, rain, aid, worker, somalia, arriv, die, strike, europ, jame
31	**Technological approaches**	ethiopian, ethiopia, sudan, zimbabw, shutdown, addi, shut, mugab, protest, zimbabwean, ababa, burundi, mnangagwa, access, sudanes, uganda, prime, abiy, cut, blackout, unrest, block, mobil, diaspora, reform, harar, restrict, cpj, moyo, color, activist, burundian, amid, fuel, congo, countri, govern, ahm, tax, disrupt
32	South Africa 1	mkhweban, gupta, eff, gordhan, zuma, malema, anc, protector, potting, ramaphosa, bell, sar, captur, magashul, rogu, cyril, busisiw, jacob, inquiri, investig, monopoli, julius, evid, pravin, alleg, zondo, affidavit, deputi, find, corrupt, financ, premier, capit, cabinet, fighter, rand, maverick, intellig, former, mail
33	South Africa 2	sparrow, racism, black, south, penni, monkey, racist, african, jew, xenophob, racial, sa, xenophobia, white, johannesburg, apartheid, beach, africa, estat, durban, khumalo, |, jewish, race, cliff, rant, hitler, mandela, kwazulu-nat, gauteng, outrag, agent, rhode, pretoria, beachgoer, indian, incid, spark, holocaust, discrimin
34	Nigeria 3	apc, pdp, https://www.sunnewsonline.com, governor, efcc, sun, amaechi, http://sunnewsonline.com, nigeria, lago, ekiti, river, fg, delta, dss, atiku, kano, abuja, edo, gov, tinubu, oshiomhol, ogun, senat, http://thenationonlineng.net, niger, nan, wike, nigerian, governorship, anambra, chairman, assembl, plateau, bello,

		el-rufai, abia, abdullahi, chieftain, ebonyi
35	Traditional media	radio, newspap, station, tv, televis, daili, english, channel, report, text, sierra, privately-own, print, leon, comtex, decemb, editor, air, articl, magazin, palestinian, fm, tunisia, list, standard, interview, nairobi, editori, deni, local, gmt, paper, entitl, isra, zambia, coverag, jan, via, broadcast, onlin

Note. Topic 5 and Topic 31 are the topics selected as dependent variables for the analyses

Validity of topic labelling

The topics estimated by the STMs are exclusively based on word counts and therefore require human interpretation to infer meaning (Grimmer & Stewart, 2013, p. 272). Following suggestions by Debortoli et al. (2016; see also Fischer-Pressler et al., 2019), we use the most frequent terms and the 20 texts with the highest topic proportion per topic, to assign a label to each topic. Based on this qualitative inspection of the topics, we chose Topic 5 and Topic 31 as suitable indicators for 'legal' and 'technological' approaches to regulate fake news.

To validate our procedure, four human coders received a short description of the two selected topics, Topic 5 on 'legal approaches' and Topic 31 on 'technological approaches', plus a randomly chosen topic (Topic 17 on 'fact-checking'). The coders were tasked to read 30 news articles with a high topic proportion, 10 for each topic, without knowing to which topic they belonged, and assign them to the topics based on the topic description. Two of the authors coded blind to the selection of texts, prepared by the third author. In addition, two further coders, fully blind to the study's theoretical expectations and results, coded the texts as well. The results are reported in Table C2 below.

Topic descriptions:

Topic A: Topic 5 labelled ‘legal approaches’

The topic A covers legislation, including drafting, enacting, or enforcing bills, laws, and regulations, that seek to address fake news and hate speech. Different government bodies, such as telecommunications regulators, can be involved in the legislative process and different legal entities and different criminal acts can be addressed by the laws.

Topic B: Topic 17 labelled ‘fact-checking’

The topic B describes the falsehood of fake news and ways of countering misinformation and disinformation by fact-checking. This could be either by good journalistic practice or by raising awareness and encourage readers to be critical of information and sources presented to them.

Topic C Topic 31 labelled ‘technological approaches’

The topic C describes technological forms of countering hate speech and fake news such as blocking, censoring, or throttling access to specific websites or entire networks, often during politically contentious periods. In such cases, governments often justify their decision to block internet access by referring to hate speech or fake news whereas civil society actors condemn such actions as unproportionate and repressive.

Table C2 provides an overview of the coders’ agreement with the topics based on the structural topic model.

Table C2. Results from the coding

	Topic A: Legal approaches	**Topic B: Fact-checking**	**Topic C: Technological approaches**
Coder 1	60 %	100 %	70 %
Coder 2	60 %	100 %	70 %
Author 1	70 %	90 %	80 %
Author 2	100 %	100 %	70 %
Coder agreement	72,5 %	97,5 %	72,5 %

Appendix D. Validation of Topic 5 and Topic 31

To validate our assumption that news reports provide an indication of legal and technological approaches to regulating fake news, we use data from the *Freedom on the Net* reports (2015, 2016a, 2017, 2018a, 2019a, 2020). Reports are released every year by Freedom House, and include 16 African countries over our period of interest (2015 – 2019). Many aspects of internet freedom are covered by the reports, including internet shutdowns or censorship, and whether legislation regulating online space is being drafted, discussed in parliament, or passed. Each report covers the 12-month period from 1 June of a year to 31 May of the following year.

Reading through each report, we coded each country-year according to the following rules:

- For each year (1 January – 31 December),
- If *Freedom on the Net* reports the blocking of internet, social media, or circumvention tools (e.g. Virtual Private Networks - VPN) on at least one occasion for political reasons, we code the country-year with 1 for 'Technological approaches'; else the country-year is coded with 0.
- If *Freedom on the Net* reports new legislation or regulation as being planned, drafted, discussed in parliament, passed, implemented, or repealed by the courts, we code the country-year with 1 for 'Legal approaches'; else the country-year is coded with 0.

We then triangulate the data from the *Freedom on the Net* reports with data from Topic 31 ('technological approaches') and Topic 5 ('legal approaches') from our STM.

Specifically, we take the logged mean topic proportion for Topic 5 and Topic 31 for each country-year covered by our corpus and then group the means based on data from *Freedom on the Net*. For the mean topic proportion of Topic 31 ('Technological approaches'), the difference in means is significant for the two groups coded based on *Freedom on the Net* reports ($t(70) = -4.08$, $p<0.01$), and hence, appears to reflect the technological regulation used by states as reported by *Freedom on the Net* well. For the mean topic proportion of Topic 5 ('Legal approaches'), the difference in means is only moderate for the two groups coded based on *Freedom on the Net* reports ($t(70) = -1.28$, $p = 0.2$). This may, in part, be explained by the fact that *Freedom on the Net* reports cover any regulation related to internet use, whereas our data only covers news reports that relate to fake news and hate speech.

To better understand how well data from the STM reflect specific regulatory strategies, we triangulate data based on *Freedom on the Net* with data from the two topics more qualitatively. We select two cases with the highest mean topic proportion for technological (Sudan 2019) and legal approaches (Zambia 2018) to regulation, and two cases with lowest mean topic proportion for technological (Tunisia 2016) and legal approaches (Angola 2016).[2] Table D1 provides an overview of the cases. Overall, the qualitative inspection suggests that the news reports provide a fair indication of regulatory steps undertaken by African governments.

[2] For some country-year cases with a lower or higher topic proportion score, no *Freedom on the Net* report were available. Hence, we took the cases with the lowest/highest topic proportion score, for which *Freedom on the Net* reports were available.

Table D1. Overview of cases

Case	Mean topic proportion	*Freedom on the Net* report	News items based on STM
Zambia 2018	Topic 5: high (27 %)	Cybercrimes Bill Social media tax	1. Mumbere, 2018 2. Telecompaper, 2018a 3. Chawe, 2018 4. Telecompaper, 2018b
Sudan 2019	Topic 31: high (20%)	Blocking of social media and internet platforms	1. Zhang, 2019 2. Feldstein, 2019 3. Bior, 2019 4. Salih & Beaumont, 2019 5. AllAfrica, 2019 6. Asian News International, 2019
Angola 2018	Topic 5: low (< 1 %)	Coded with 0	none
Tunisia 2016	Topic 31: low (< 1%)	Coded with 0	none

Zambia 2018

Following Zambia's 2018 *Freedom on the Net* report, the Zambian government introduced a Cybersecurity and Cybercrimes bill in April 2018 which was approved for review in August 2018. The bill criminalizes "any electronic communication, with the intent to coerce, intimidate, harass, or cause substantial emotional distress to a person" (Freedom House, 2018b) with critics afraid of its use to crackdown on legitimate expression online (ibid.). The introduction of this law is reflected in two of the five news items with the highest topic proportion of Topic 5. Both news items reflect the government discourse surrounding the Cybercrimes bill. That is, the government claims the bill aims to "promote responsible use of digital platforms and safeguard users of electronic platforms" (Mumbere, 2018) as "cyber bulling, fake news and fraud were becoming common in Zambia" (Telecompaper, 2018a). In addition to the Cybersecurity and Cybercrimes bill, the *Freedom on Net* report highlights the government's announcement to introduce a new tax on web-based communications platforms such as

Twitter or Facebook (Freedom House, 2018b). This announcement is critically discussed in two of the five news items with the highest topic proportion of Topic 5, both of which underline its negative impact on freedom of speech (Chawe, 2018; Telecompaper, 2018b).

Sudan 2019

According to the *Freedom of the Net* report for Sudan in 2019, the government implemented both the blocking of social media platforms and full internet shutdowns in parts of the country in relation to protests and political upheaval, termed the Sudanese revolution (2018–2019). Blocking was recurrent throughout 2019, "starting with internet service providers (ISPs) blocking WhatsApp, Facebook, Twitter, Periscope, and Instagram from December 21, 2018 through February 26, 2019", resuming again in April "a day after hundreds of thousands of protesters marched to the army headquarters in Khartoum" (Freedom House, 2019b). These events are also covered in the news reports in our corpus, in which Sudan-2019 is ranking high on Topic 31. Many news items with a high topic proportion of Topic 31 come from foreign news sources reporting on the political events and highlighting the problem of physical violence and online censorship by the government (Zhang, 2019; Feldstein, 2019), but also how activists were "circumventing the restrictions and rally others to protest peacefully" (AllAfrica, 2019; Bior, 2019).

Angola 2018

Following the *Freedom on the Net* Report for Angola in 2018, the government did not introduce any new regulations in 2018 (Freedom House, 2018c). While the government

had introduced a set of new media laws in 2017 that could be "invoked to restrict free speech [until the end of 2018] they do not appear to have been abused" (ibid.). The absence of new regulation is mirrored by the low proportion of Topic 5 in news articles covering Angola in 2018. Neither of the only two news items covering Angola in 2018 are mentioning legal regulation tackling fake news or hate speech.

Tunisia 2016

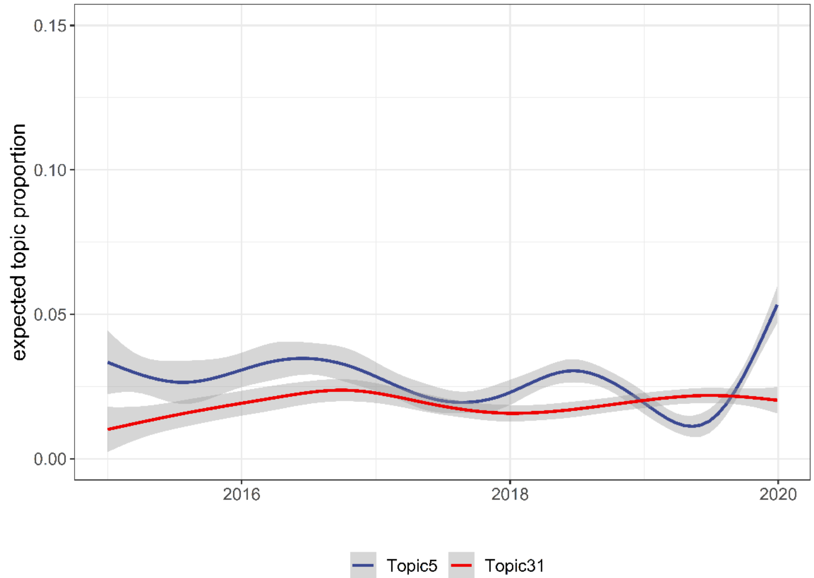
The *Freedom on the Net* report for Tunisia in 2016 reports no "instances of politically motivated blocking" (Freedom House, 2016) in 2016 and no "incidents of cyberattacks perpetrated by the government to silence ICT users" (ibid.). This is also reflected in the news items covering Tunisia in 2016, none of which refers to the blocking or censorship of digital media.

Appendix E**.** Results from Linear Mixed Models

	Legal approaches	**Technological approaches**
media & press freedom	0.17 (0.09)*	-0.55 (0.09)***
Legislative constraints	-0.37 (0.09)***	-0.44 (0.08)***
Judicial constraints	0.17 (0.08)*	0.27 (0.08)***
Share of state-owned ISPs	0.02 (0.06)	0.06 (0.08)
(Intercept)	-5.51 (0.15)***	-4.69 (0.07)***
Num. obs.	7787	7787
Num. obs. (country)	47	47

Note. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; all models include random country intercepts and time-fixed effects

Appendix F. Expected topic proportions over time



Note. Expected proportion of technological (Topic 31) and legal (Topic 5) approaches between 01.01.2015 and 31.12.2019; values on the y-axis are only displayed from 0 to 0.15.

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