

A Multilevel Model of Mobile Media Use and Public Support for Press Freedom in Africa

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This article presents analysis of a multilevel model of country- and individual-level factors that influence citizens' support for press freedom in 34 African nations. The goal is to understand how mobile media use and attitudes about the press are related to demand for press freedom in a region with fast growth of mobile bandwidth infrastructure, and to contribute to a clearer explanation of how citizen attitudes are related to external evaluations of press freedom and public demand for press freedom. Findings indicate significant relationships among mobile media use for informational purposes and citizen perceptions of press freedom supply in predicting public demand for press freedom. Results also support a growing body of literature about press freedom in Africa, contributing to literature that has shown citizen evaluations of press freedom to be revealed as a nuanced concept with variations across countries based on cultural values, government framework, and journalistic culture.

Keywords: mobile media, press freedom, political engagement, civic engagement, Africa, mobile communication

As mobile media proliferates and penetrates more than 90% of many countries around the world (International Telecommunication Union [ITU], 2021), communication scholars have increasingly turned their focus to the myriad ways in which accessing information on mobile devices is related to different outputs of political and civic engagement (Martin, 2014; Park & Gil de Zúñiga, 2021).

About a decade ago, researchers were similarly focused on understanding the democratic implications of the Internet, examining how Internet use and penetration were related to demand for concepts such as democracy and press freedom around the world (Nisbet & Stoycheff, 2013; Nisbet, Stoycheff, & Pearce, 2012). Those studies' conclusions found consistent, positive linkages, but cautioned against the lack of equitable distribution of home Internet around the world, especially with the relatively slow diffusion of home broadband in many hard-to-reach locations (Stoycheff & Nisbet, 2014).

Mobile media scholarship focused on democratic outcomes thus far has reason for optimism in that area compared with studies that have focused on home Internet because of elements of lower cost, portability, and more rapid and intense development of mobile infrastructure around the world in general

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(ITU, 2021). One regional example of interest is Africa, where urban/rural home Internet gaps exist (72% urban versus 38% rural) and fixed home broadband covers only about 1% of the populace, but where mobile penetration and connectivity have increased dramatically from 2013 to 2021 with an estimated 82% of residents with mobile phones and 77% with 3G or 4G networks (ITU, 2021).

It is within this context of mobile infrastructure's rapid global development, the increasing speed of access to digital information, and the growing focus on developing and burgeoning democratic systems across the continent that scholars have begun to pay more attention to the intersection of issues of mobile media and press freedom as preconditions or corequisites of democracy in Africa. Such studies have examined legislative and journalistic routine determinants of press freedom in Ghana (Martin, 2020), the manner in which Ugandans view the complicated relationship between independent press and government (Sobel Cohen & McIntyre, 2020), and how cultural factors contribute to a sophisticated understanding of citizen attitudes about press freedom dependent on the host of factors encouraging or thwarting democratic development in their countries (Sobel Cohen, 2022).

Using this framework, this article analyzes a cross-national survey to examine the relationship of citizen perceptions of press freedom supply and demand, and in turn those concepts' relationships with mobile-broadband penetration and informational uses of mobile media, across 34 African countries. The goal is to understand how mobile media use and attitudes about the press are related to demands for press freedom, considered a key indicator of public interest and attention to democratic development (Nisbet & Stoycheff, 2013). The article also seeks further conceptual development to help clarify how citizen attitudes are related to external evaluations of press freedom and democracy, which are often Western focused, and have been found to perhaps be less adequate to understanding an African nation's press freedom climate than closer examinations of its citizens' perceptions (Sobel Cohen, 2022).

Mobile Media, Democracy, and Press Freedom

Research has shown that the Internet's diffusion and media use encourage citizen desire for indicators of stronger democracy by allowing citizens to experience democratic norms, values, and practices such as free expression, with multiple studies finding empirical support for these conceptual relationships specific to Africa (Mattes & Bratton, 2007; Nisbet, 2008; Stoycheff & Nisbet, 2014). As media use has increasingly moved online all around the world, several studies in the past decade have indicated that individual Internet use is consistently associated with increased citizen interest and desire for democratic governance, and that this relationship varies by context depending on macrolevel democratic indicators per country (Boulianne, 2020; Nisbet et al., 2012).

Conventional explanations of African politics and media have demonstrated that citizens' political opinions are mostly derived from long-standing cultural values or relative positions in social structures (Kasoma, 1995); however, Mattes and Bratton (2007) found that respondents in their study of 12 sub-Saharan nations learned about the content of democracy by becoming aware of public affairs and learned about the consequences of democracy through direct experience and, most indirectly, through national political legacies. This multiple-step flow, from awareness to knowledge derived from the news to

development of attitudes related to democracy, has gained an added layer of importance in relation to the mobile media infrastructure's rapid expansion in Africa in the past decade (Chang, Jeon, & Shamba, 2020).

Mobile media's expansion in Africa has created new opportunities for citizens to access news and for news organizations to hold government and official sources more accountable for their policies and actions (Olaniyan & Akpojivi, 2021). However, while inroads have been made in the adoption of mobile phone usage for informational purposes, research has not shown fundamental changes in either structures of political power in the region or ways in which citizens may challenge authority (Tettey, 2017).

Thus, further insight is needed to understand how individual-level variations in mobile media usage in Africa may be related to country-level variations in democratic outcomes, including preconditions for successful democracy such as broad-based support for press freedom, building off the theoretical framework used in related studies such as Nisbet and Stoycheff (2013). Kasoma (1995) found independent media's role in democracy to be paramount as a prerequisite or corequisite for developing democracies in Africa in the years before mobile media's rapid expansion. A better and more updated explanation is needed for how these relationships compare with other regions of the world that have received more frequent research attention (Kalyango, 2011). The overarching theoretical framework explored in this study therefore investigates how rapid penetration of mobile infrastructure and increased mobile media usage influence how respondents think about journalism in their countries and how subsequent attitudes about press freedom may vary by country in relation to other external indicators of democracy.

Aspects of how people receive news and their views on press freedom that underpin their attitudes about democracy are especially important to highlight in developing democracies or countries where elements of democracy have shown stagnancy or a lack of complete commitment to democratic institutions (Mutsvairo, 2019). For example, The Economist's Global Democracy Index (2021) defines "flawed democracies" as nations where elections are fair and free and basic civil liberties are honored but with issues that remain, such as media freedom infringement and minor suppression of political opposition. Similarly, the index defines "hybrid regimes" as nations with regular electoral frauds preventing fair and free democracies. Pinto (2008) found that factors such as public opinion shifts, economic fluctuations, organizational strategies, and government media relations could help or hinder press freedom in developing democracies.

More recently, scholars have turned attention to the proliferation and penetration of mobile media, finding that use of mobile phones for informational and expressive purposes is positively linked with engagement in civic affairs (Chan, Lee, & Chen, 2016), political knowledge (Ohme, 2020), and political participation (Gill & Rojas, 2021; Martin, 2014; Yamamoto & Nah, 2018).

Specific to mobile media use and press freedom, scholars have found that higher levels of press freedom strengthened the relationship between mobile media use and political knowledge (Park & Gil de Zúñiga, 2021) while higher levels of press freedom played a moderating role in how digital news use influenced increased political participation (Ahmed & Cho, 2019). Tettey (2017) characterizes the rise of mobile phones as key to the "changing ecology" of political engagement and citizen participation in public life in Ghana, while Jamil and Appiah-Adjei (2019) caution that Ghana's burgeoning mobile environment,

though potentially liberating, has also given rise to acceleration of misinformation and fake-news sharing that threatens press freedom.

Close scholarly attention to these variations by country and culture are specifically important in a continent with such great press freedom and mobile media use variance as Africa. Kalyango (2011) demonstrated the variance in how eight different eastern and southern African nations influence media accountability reporting and public opinion based on constitutional governance and manipulation of the rule of law. Hanusch and Uppal (2015) explored the tension between watchdog and developmental journalism's role orientations and the effects of those differing approaches further across seven Global South countries and found that the roles were not necessarily mutually exclusive, and instead reflected a complex formula of Western journalistic ideals and developmental journalism when study journalists there defined their roles. Mellado and colleagues (2017) refer to this mixture as the hybridization of journalistic cultures and call for closer attention to specific attributes that define characteristics of journalism roles and performance.

Recently, Márquez-Ramírez and colleagues (2020) examined journalism's role orientations in 18 African countries and found variations in the adoption of normative roles of watchdog journalism, depending on the sociopolitical situation of those countries. They found that an interventionist approach to journalism was more likely found in democracies with traditionally partisan journalistic cultures or experiencing sociopolitical crisis, while the more conventional "detached" journalism style (marked by indicators such as more intense scrutiny of power) was more present in stable or "flawed" democratic regimes. The mixture of journalistic goals and outcomes was also present in a survey study in Botswana, Ethiopia, Tanzania, and Sierra Leone that found journalists more committed to a development role of aiding government efforts rather than serving in a watchdog adversarial role (Kalyango et al., 2017). Similar results were found about the intricate mixture of roles and attitudes in studies of journalists in Uganda (Mwesige, 2004) and South Africa (Rodny-Gumede, 2014).

Other recent studies have examined specific press freedom conditions in African countries such as Uganda and Ghana, and found complicated interpretations of how respondent journalists view independent press in relation to government (Martin, 2020; Sobel Cohen & McIntyre, 2020). Sobel Cohen (2022) investigated how respondents in 10 African nations viewed press freedom and compared this with the influence of global press freedom ranking metrics, finding cultural differences in citizen beliefs but no clear connection between individual perceptions and external rankings of press freedom.

As Sobel Cohen (2020) noted, press freedom remains a relatively underdeveloped communication concept that has been mostly studied at the macrolevel of institutional indicators of absence of government restrictions on independent journalism. Scholars have linked "press freedom" in this sense more closely to media's contributions toward democratic and socioeconomic development associated with public use and access to media for self-governance (Becker, Vlad, & Nusser, 2007; Graber, 2017). Nguyen, Valadkhani, Nguyen, and Wake (2021) found that loss of press freedom via indicators such as censorship and press rights carried long-term economic consequences. Sobel and McIntyre (2019) highlighted the context-dependent nature of press freedom in Rwanda by offering new insights into development media theory that

unpack journalists' motivations of social change situated in the historical context of political conditions that gave rise to existing media systems.

Among external evaluators of press freedom, Becker and colleagues (2007) found that four major independent international organizations (International Research and Exchanges Board, Reporters Without Borders, Committee to Protect Journalists, and Freedom House) use similar methodologies to assess the concept, which has been welcomed by international democracy advocates to hold accountable governments that make guarantees in legal documents but fail to support press freedom in practice. However, studies by Sobel and McIntyre (2019) and Sobel Cohen (2022) have concluded that future studies should expand and diversify press freedom measures to expand on empirical evidence of what is known about press freedom, especially in developing and young democracies.

It also has been noted that most press freedom studies have focused on Western democracies, using Western indicators with much room for improvement for developing tools to analyze countries in the Global South and contributing to more diverse conceptualizations of press freedom (Becker et al., 2007; Sobel Cohen, 2022). One of the few empirical studies in this regard found cultural and political variables confounding straightforward perceptions of press freedom in Muslim-majority countries (Dastgeer & Stewart, 2021). Another analysis of press freedom in Africa found press freedom a highly "contested" concept across countries (Fiedler & Frère, 2018). In Nigeria, Adedokun, Ademuyiwa, and Oyeboade (2021) found independent, social-media-driven journalism surging as a possible salvaging source of press freedom. This complicated push-and-pull of accountability journalism's relationship with democratic advancement in Africa was noted by Kasoma (1995), who found consistent credit across journalistic cultures on the continent that independent media contributed to the public opinion challenging dictatorial powers and that independent press was leveraged by challengers of dominant parties as a means of introducing contrasting political views into the public discourse.

Taking such insights into account, this examination of mobile media's relationship with press freedom supply and demand is derived from the multilevel model predicting citizen demand for democracy applied by Nisbet and colleagues (2012). They found that Internet use was associated with greater citizen commitment to democratic governance across several African and Asian nations. They also discovered that the relationship between democracy demand and Internet use was the strongest in countries with the most Internet users and broadband access. In sum, they found access and adoption to informational uses of the Internet to be one of the strongest predictors of whether information technology could play a meaningful role in supporting democratic development through its impact on citizen attitudes.

Relatedly, Nisbet and Stoycheff (2013) used a multilevel model of supply and demand for press freedom to examine national media systems and citizen attitudes, finding greater emphasis on individual-level factors in predicting supply and demand for press freedom compared with institutional variables. Stoycheff and Nisbet (2014) concluded with a call for more focus on the penetration of information communication technologies (ICTs) and the nuanced dimensions of democratic governance, including freedom of expression, to better support their findings about the positive associations of technology bandwidth and democracy.

In line with these lines of research on mobile media use's role in civics and politics, examinations of information technology use and press freedom in Africa, and previous multilevel models for assessing the relationships of new technology and democratic indicators as measured by citizen attitudes (Nisbet & Stoycheff, 2013; Nisbet et al., 2012), the following hypotheses are posed.

H1: Mobile media use frequency will be positively associated with citizen demand for press freedom.

H2: Perceived supply of press freedom will be positively associated with citizen demand for press freedom.

Nisbet and colleagues (2012) also found that macrolevel indicators of supply of press freedom were not significantly associated with individual-level citizen demand for democracy. Instead, the relationships among the Internet, democracy, and citizen attitudes were more nuanced. This finding was supported by Sobel Cohen (2022), who found no clear relationship between citizen beliefs and global rankings of press freedom. Related studies examining citizen and journalist attitudes about press freedom in African countries have also called for further investigation of more cultural specificity in assessing press performance and rights (Martin, 2020; Sobel Cohen & McIntyre, 2020). Following this line of study, the expectation is that citizen perceptions of press freedom supply will have a stronger influence on attitudes about press freedom than the influence of external institutional rankings.

H3: External press freedom rankings are not significantly associated with perceived demand for press freedom after moderation by perceived press supply.

Building off these hypotheses examining cross-country and within-country differences, the final area of investigation turns to comparing individual-level differences in attitudes about press freedom in African nations where press freedom and democracy are generally well established and highly rated compared with attitudes about press freedom in African countries that have lower indicators of democracy. Toward this end, Sobel Cohen (2022) found a broad range of support for press freedom across respondents from 10 African countries, ranging from 57.9% strong agreement that media should be free to report on any topic without government interference in Malawi and 48.3% in Uganda to lows of 16.3% in Côte d'Ivoire and 20.7% in Mali. Delving deeper into specific countries, in the Democratic Republic of the Congo, Rwanda, and Burundi, press freedom has been found to be a fluid concept influenced at various times by developments in politics, economics, and technology (Fiedler & Frère, 2018).

Regarding the countries in focus for analysis in the present study, South Africa has developed a relatively free independent press with private ownership in the past four decades but retains challenges to proper enforcement of policies such as access to public information and the ruling party of government (Kalyango, 2011). The past two decades have seen a range of press-supportive initiatives in Ghana, which has resulted in external observers declaring Ghana's media as pluralistic, vibrant, and free despite legal and practical constraints such as the lack of an effectual right to information law and the presence of a range of self-censorship measures because of potential civil libel penalties (Martin, 2020). Appiah-Adjei (2020) found that Cape Verde in the past decade had witnessed structural reform and increased access for independent media to improve the press freedom climate. On the other end of the press freedom spectrum, journalists in countries such as Sudan,

Eswatini, and Cameroon have found significant challenges to reporting on corruption because of restrictions imposed by authoritarian regimes that limit access to government information and yield control of documentation of public expenditures to the hands of ruling governments (Hamid, Mohammed, & Ahmad, 2019).

In Ghana, scholars have found a level of incompatibility between normative Western democratic goals reflected in government policy and Ghanaian cultural values that include complicated attitudes about the role of the press in a relatively new democratic society (Akpojivi, 2018). Related findings show journalists in Ghana perceive themselves as straddling normative Western press freedom roles of accountability and social responsibility while incorporating unique elements of their culture in their work as they attempt to serve as an independent check on power (Martin, 2020). Similarly, the press freedom landscape in Uganda has been found to be one of unique contradictions, with one of the most free and active media systems in Central and East Africa but with an array of legal and extralegal mechanisms that limit free expression in practice, including critical reporting on government (Sobel Cohen & McIntyre, 2020).

Considering literature that indicates that citizen perceptions and attitudes about press freedom vary culturally from one African nation to the next, a research question is posed to investigate how individual-level responses vary across countries found to have high internal and external indicators of press freedom.

RQ1: How do individual attitudes about press freedom vary across selected countries (Cape Verde, Ghana, and South Africa) with strong internal and external evaluations of press freedom and democracy?

RQ2: How do individual attitudes about press freedom vary across selected countries (Cameroon, Eswatini, and Sudan) with weaker internal and external evaluations of press freedom and democracy?

Methodology

Analysis was conducted on secondary data collected by the 2017–2018 Afrobarometer Round 7 survey, which produced a cross-national data set of face-to-face interviews based on national probability samples with 45,823 survey respondents across 34 countries (Afrobarometer, 2022).¹ From 2017 to 2020, Africa saw 21% growth in 4G networks, but 23% of the population remains without access to a mobile-broadband network (ITU, 2021), making it a desirable locus for investigating how mobile media use and press freedom are related and vary across national contexts.

¹ For complete detailed methodology and more information, see Afrobarometer (2022). Countries and respondent numbers: Benin 1,200; Botswana 1,198; Burkina Faso 1,200; Cape Verde 1,200; Cameroon 1,202; Côte d'Ivoire 1,200; Eswatini 1,200; Gabon 1,199; Gambia 1,200; Ghana 2,400; Guinea 1,194; Kenya 1,599; Lesotho 1,200; Liberia 1,200; Madagascar 1,200; Malawi 1,200; Mali 1,200; Mauritius 1,200; Morocco 1,200; Mozambique 2,392; Namibia 1,200; Niger 1,200; Nigeria 1,600; Sao Tome and Principe 1,200; Senegal 1,200; Sierra Leone 1,200; South Africa, 1,840; Sudan 1,200; Tanzania 2,400; Togo 1,200; Tunisia 1,199; Uganda 1,200; Zambia 1,200; Zimbabwe 1,200.

For multilevel analysis, measures were coded at the country and individual levels. Three variables comprised country-level indicators, adapted from previous studies of democracy and press freedom (Nisbet & Stoycheff, 2013; Nisbet et al., 2012): Freedom House's democracy scores for civil and political liberties, the United Nations' Human Development Index (UN HDI), and the ITU's mobile-broadband penetration statistics.

Freedom's House's annual ratings of civil and political liberties range from 1 (high) to 7 (low). Measures from 2018 were selected to coincide with survey data and were combined and reverse-coded for a combined score ranging from 3 to 14 ($M = 9.51$, $SD = 2.8$). The second country-level indicator was the UN HDI from 2018, which assesses a country's total socioeconomic development based on variables such as standard of living, education, and public health. These three dimensions were averaged for a score from 0 (low) to 1 (high). The use of democracy scores and HDI as controls aimed to maintain independence of analysis of the relationship between mobile-broadband penetration and citizen demand for press freedom.

Mobile-broadband penetration assessed access and usage of mobile media and was measured as a composite of ITU's assessment percentage of the population using mobile broadband ($M = 66.3\%$, $SD = 16.5$) and mobile bandwidth (Mbs) per mobile device user ($M = 43,585$, $SD = 76,744$). These measures were standardized and merged into an additive index ($r = 0.71$, $p < .01$).

Individual-level indicators included controls for sociodemographic variables of gender (male = 1, 49.9% male), age ($M = 38.1$, $SD = 15.1$), urban or rural residence (urban = 1, $M = 42.8\%$), and education (9-point scale from no formal education to postgraduate education, $M = 3.7$, $SD = 1.72$). Other controls assessed political interest ($M = 2.7$, $SD = 1.0$); interpersonal trust of friends, family, and neighbors ($M = 6.2$, $SD = 1.6$); evaluation of personal economic situation; and evaluation of national economic situation.

Mobile media use frequency was measured by asking how often respondents used a mobile phone for information on a 5-point scale (0 = never, 1 = less than once a month, 2 = a few times a month, 3 = a few times a week, 4 = every day; $M = 3.36$, $SD = 1.37$).

For the key independent variable of perceived press freedom supply, respondents were asked four questions on a 4-point scale (1 = strongly disagree to 4 = strongly agree) about perceptions of journalism's role in their country, which were combined into an index ($r = 0.72$). Respondents were asked whether news media should constantly investigate and report on government mistakes and corruption, how effective the news media are at revealing government mistakes, whether there was too much reporting on negative events like government mistakes and corruption (reverse-coded), and whether news media abuse their freedom by printing or saying things they know are not true (reverse-coded).

The dependent variable of perceived demand for press freedom was measured by four questions on 4-point scales (1 = strongly disagree to 4 = strongly agree) that were combined into an index ($r = 0.69$). Respondents were asked whether government should be able to ban an organization that goes against its policies (reverse-coded), whether media should have the right to publish any views and ideas without being controlled by the government, whether government should have the right to prevent media from publishing things that it considers harmful to society (reverse-coded), and whether citizens in their country could think openly and criticize the government. The combination of press-focused and free-expression variables follows

Nisbet and Stoycheff's (2013) approach of combining oral and written traditions of press freedom as a measurement of citizen demand.

To analyze the data, a multilevel analysis comparing within- and between-country associations was conducted using a model comprising multiple hierarchical linear regression models (Nisbet et al., 2012). Variance explained in the press freedom demand was investigated at the country and individual levels of analysis. Variance of some individual-level predictors fluctuated across countries to account for random effects to produce conservative estimates. All variables were added with group-centered mean.

To analyze RQ1, three countries that were highest among African nations included in the 2018 Freedom House democracy rankings were selected for further analysis: Ghana (23rd globally), South Africa (28th), and Cape Verde (29th). In addition to being the three highest-ranking countries in the 2018 Freedom House democracy index, these countries produced three of the highest means when calculating the index of demand for press freedom (Ghana $M = 3.10$, $SD = 1.71$; South Africa $M = 2.55$, $SD = 1.60$; Cape Verde $M = 2.58$, $SD = 1.40$), which provides for closer examination of variations on citizen attitudes about press freedom in nations where the concept has internally and externally been assessed as recognized and relatively successful.

To analyze RQ2, three countries included in the survey that ranked lowest among African nations included in the 2018 Freedom House democracy rankings were selected for further analysis: Cameroon (174th globally), Eswatini (184th), and Sudan (198th). Freedom House rates all three nations as "not free" in its democracy report. These three countries also produced three of the lowest means when calculating the index of demand for press freedom (Cameroon $M = 1.04$, $SD = 1.01$; Eswatini $M = 0.76$, $SD = .44$; Sudan $M = 0.35$, $SD = 0.30$), which provides for closer examination of variations on citizen attitudes about press freedom in nations where the concept has internally and externally been assessed as largely unrealized or unsuccessful.

Findings

To begin statistical analysis, a one-way analysis of variance (ANOVA) model consisting of no predictor variables established evidence of variation in demand for democracy across countries with about 11% of variance in individual respondents' demand for democracy accounted for by country-level factors (intraclass correlation coefficient [ICC] = .011). With the remaining 89% of variance attributable to individual variations, a second model including predictor variables, such as demographic and other controls, was estimated and explained at about 8.2% of first-level variance.

Moving to focus on the variables at the center of H1-3, Table 1 displays the results of two multilevel models, one-way ANOVAs predicting perceived demand for press freedom across 34 African nations. The column for Model 1 shows results of hypothesis testing for H1 focused on mobile media use frequency as a predictor of perceived demand for press freedom. This first model includes controls for sociodemographic variables (gender, age, education, urban or rural residence), social and political variables (political interest, interpersonal trust, personal economic situation, and national economic situation), and the key independent variable for H1.

Older, male, more educated, urban residents with higher levels of political interest were significantly more likely to express higher demand for press freedom. As predicted in H1, mobile media use frequency was a statistically significant predictor and the strongest independent variable predicting demand for press freedom in the first model. Daily or weekly users were statistically more likely to demand more press freedom, holding other individual- and country-level variables constant. At the country level of analysis, ITU's mobile penetration index was found to be a significant predictor of demand for press freedom, while Freedom House's democracy rating index was a relatively weaker predictor.

Table 1. Multilevel Model Predicting Citizen Demand for Press Freedom.

	Model 1	Model 2
	<i>b (SE)¹</i>	<i>b (SE)</i>
Intercept	10.48*** (.12)	10.44*** (.10)
Age	0.01*** (.00)	0.01*** (.00)
Gender (male)	0.21*** (.03)	0.20*** (.03)
Education	0.18*** (.02)	0.18*** (.02)
Urban resident	0.16*** (.04)	0.16*** (.04)
Political interest	0.05*** (.01)	0.05*** (.01)
Personal economic situation	0.02 (.02)	0.02 (.02)
National economic situation	0.02 (.02)	0.02 (.02)
Mobile media frequency	0.19*** (.03)	0.20*** (.03)
Democracy rating	0.04* (.03)	0.03 (.03)
HDI	0.99 (.76)	1.03 (.80)
Mobile penetration	0.18*** (.04)	0.18*** (.03)
Perceived press freedom supply	—	0.22*** (.05)
Random effects		
Country level	0.28***	0.27***
Individual level	3.20	3.19
Percentage between-country variance	11.6	10.3
Percentage within-country variance	8.3	8.7

¹Unstandardized coefficients with robust standard errors in parenthesis.

* $p < .10$; *** $p < .001$.

Model 2 in Table 1 displays the multilevel model predicting demand for press freedom with the addition of perceived supply of press freedom, which is the variable at focus in H2 and H3. Again, in this second model, age, gender, education, urban residence, and political interest retain statistical significance at the individual level, along with frequency of mobile media use. H2 is supported with evidence of perceived supply of press freedom as the strongest statistically significant predictor in the model. H3 is additionally supported with evidence that perceived supply of press freedom moderates the influence of the Freedom House democracy rating, which did not retain statistical significance in the second model.

To analyze RQ1, a second set of three ANOVAs estimated citizen demand for press freedom in Ghana, South Africa, and Cape Verde (see Table 2). This estimate removed variables compared across countries in Table 1 since external indicators within the countries were constant. In Table 2, patterns of statistical significance are similar to the cross-country comparison of 34 African countries in Table 1. In both cases, perceived supply of press freedom and mobile media use frequency are significant positive indicators predicting demand for press freedom. The same pattern of demographics favoring older, male, more educated, urban residents with higher levels of political interest is consistent.

Across the three countries in Table 2, higher levels of mobile media use correlate with more support for supply of press freedom, and the increase in those variables helps explain a bit more variance in individual-level attitudes about demand for press freedom in Ghana than in South Africa and Cape Verde. In all cases, these independent variables are more influential in predicting demand for press freedom compared with other sociodemographic and political interest indicators. There is a small but perceptible pattern based on relative frequency of mobile media use for information and for individual-level perceptions of press freedom supply within the country.

Table 2. ANOVA Model Predicting Citizen Demand for Press Freedom.

N	Ghana 2,400 <i>b (SE)</i>¹	South Africa 1,840 <i>b (SE)</i>	Cape Verde 1,200 <i>b (SE)</i>
Age	0.13** (.04)	0.12** (.05)	0.11** (.04)
Gender (male)	0.21*** (.03)	0.20*** (.04)	0.21*** (.05)
Education	0.18*** (.02)	0.17*** (.04)	0.16*** (.04)
Urban resident	0.18*** (.04)	0.19*** (.04)	0.15*** (.03)
Political interest	0.08*** (.03)	0.09*** (.04)	0.07*** (.02)
Personal economic	0.01 (.01)	0.02 (.02)	0.03 (.02)
National economic	0.01 (.01)	0.02 (.02)	0.05 (.04)
Mobile media freq.	0.29*** (.04)	0.25*** (.06)	0.24*** (.05)
Press freedom supply	0.33*** (.08)	0.30*** (.07)	0.28*** (.09)
Variance explained	19.4	18.9	18.4

¹Unstandardized coefficients with robust standard errors in parenthesis.

** $p < .01$. *** $p < .001$.

A comparison of Tables 1 and 2 shows that in the three countries (Table 2) in which external and internal metrics point to a relatively high supply and demand for press freedom, citizen attitudes about press freedom and their individual mobile media use for informational purposes are the strongest predictors of support for demand for press freedom, indicating a mutually reaffirming relationship between mobile media use and attitudes about press freedom.

To analyze RQ2, a third set of three ANOVAs estimated citizen demand for press freedom in Cameroon, Eswatini, and Sudan (see Table 3). This estimate removed variables compared across the 34 African countries in Table 1 because external indicators within each country were constant. In Table 3, patterns of statistical significance are roughly similar to the cross-country comparison of the 34 countries in

Table 1 and the three countries with more press freedom in Table 2. In all cases, perceived supply of press freedom and mobile media use frequency are significant positive indicators predicting demand for press freedom although mobile media use is consistently more significant as a predictor in Table 3 for freedom-lower countries. The same pattern of demographics favoring older, male, more educated, urban residents with higher levels of political interest is consistent across all three tables.

Table 3. ANOVA Model Predicting Citizen Demand for Press Freedom.

N	Cameroon 1,202 <i>b (SE)</i>¹	Eswatini 1,200 <i>b (SE)</i>	Sudan 1,200 <i>b (SE)</i>
Age	0.10** (.04)	0.11** (0.04)	0.09** (.04)
Gender (male)	0.15*** (.03)	0.13*** (0.03)	0.17*** (.03)
Education	0.12*** (.02)	0.14*** (.03)	0.15*** (.04)
Urban resident	0.17*** (.04)	0.17*** (.04)	0.13*** (.03)
Political interest	0.06** (.03)	0.06** (.03)	0.07** (.03)
Personal economic	0.05 (.01)	0.03 (.02)	0.04 (.02)
National economic	0.05 (.01)	0.02 (.02)	0.05 (.03)
Mobile media freq.	0.18*** (.05)	0.16*** (.06)	0.16*** (.06)
Press freedom supply	0.10** (.04)	0.12*** (.05)	0.09*** (.04)
Variance explained	17.4	18.2	16.9

¹Unstandardized coefficients with robust standard errors in parentheses.

** $p < .01$. *** $p < .001$.

Across the three countries in Table 3, higher levels of mobile media use correlated with more support for supply of press freedom, and the increase in those variables helped explain a bit more variance in individual-level attitudes about demand for press freedom in Eswatini compared with Cameroon and Sudan. In all cases, these independent variables are relatively more influential in predicting demand for press freedom compared with other sociodemographic and political interest indicators, with the exception of urban residency.

A comparison of Table 3 and Table 2 shows that press freedom supply is more important in predicting press freedom demand in countries with relatively stronger democratic markers than in countries at the lower end of the scale. However, at both ends of the spectrum, individual mobile media use for informational purposes is a consistently strong predictor of support for demand for press freedom, indicating mutually reaffirming relationships between mobile media use and attitudes about press freedom that hold steady regardless of the democratic environment within a country analyzed.

Discussion

These findings demonstrate how country- and individual-level variables of democracy and media use are significantly positively related to demand for press freedom, thus the current study builds on similar methodologies, empirical results, and conceptual insights of studies from the past decade while updating this theoretical framework for the realities of a mobile media world (Nisbet & Stoycheff, 2013; Nisbet et al.,

2012; Stoycheff & Nisbet, 2014). In this case, mobile media usage frequency for informational purposes and mobile media broadband penetration were two important predictors of demand for press freedom across 34 African countries, holding constant variations on numerous country-specific contextual factors and individual fluctuations. These findings contribute to literature showing positive effects of mobile media use for informational purposes on a range of civic and democratic outcomes such as knowledge and participation (Chan et al., 2016; Gill & Rojas, 2021; Ohme, 2020; Yamamoto & Nah, 2018). The relationship between mobile media use and press freedom attitudes also furthers scholarship related to the complicated way these concepts intersect with democratic outcomes (Adelakun et al., 2021; Ahmed & Cho, 2019; Park & Gil de Zúñiga, 2021).

This study's results offer a merger of the line of research about how cognition provides an entry into democratic demand in developing democracies (Mattes & Bratton, 2007; Mutsvauro, 2019) with the literature on press freedom and democracy supply studies (Nisbet, 2008; Stoycheff & Nisbet, 2014), and expands on that prior work with unique empirical insights about mobile media's expansion and proliferation. Building on the explanations of democratic attitude formation in Africa provided by Mattes and Bratton (2007), the results in this study demonstrate how attitudes are related to media usage, technological adoption, and the specifics of political and cultural context while extending that theoretical framework to include important new insights about mobile device use for various purposes. This analysis also builds on previous studies of democracy supply and demand by providing a conceptual starting point through attitudes about press freedom to help bolster and extend the theoretical underpinnings about democratic public opinion (Nisbet, 2008; Nisbet & Stoycheff, 2013; Stoycheff & Nisbet, 2014).

Unlike previous studies of ICTs and democratic outcomes, which cautioned about obstacles to home Internet access and mobile-broadband infrastructure (Stoycheff & Nisbet, 2014), these findings and related empirical data about mobile bandwidth penetration produce notes of muted optimism about the ability of more respondents to access information via mobile devices. As mobile media use and broadband infrastructure have rapidly increased within the past decade (ITU, 2021), these findings point toward the importance of mobile media use in predicting support for press freedom, especially among urban residents, more politically interested respondents, and those with higher levels of education.

Other key evidence points to the importance of citizen perceptions of press freedom when examining attitudes about demand for democratic concepts such as press freedom. Perceived supply of press freedom was significantly related to demand for press freedom, and moderated the influence of external evaluations of democracy ratings. These results support prior research by Fiedler and Frère (2018) and Sobel Cohen (2022) on the nuanced ways in which attitudes about democracy and press freedom in some African countries appear to supersede external evaluations of press freedom that may not fully capture variations and churn in public opinion about the press within a given country. Individual-level perceptions of press performance and capabilities were found to be more closely linked than external evaluators' assessments, highlighting the importance of cultural context and nuance in how burgeoning and developing democracies perceive the role of the press and its freedoms in their societies.

Results from analyzing RQ1 yield interesting findings following a comparison of individual-level differences in attitudes about press freedom in three African nations in which press freedom is generally

well established and highly valued. While patterns of statistical significance for the subset of Ghana, South Africa, and Cape Verde mirror the overall patterns of the 34 African countries analyzed, a closer look at these three countries with healthy press freedom climates indicates an even stronger relationship between mobile media use for informational purposes and citizen attitudes about press freedom. This difference supports literature indicating a range of culturally specific attitudes about press freedom in Africa based on democratic context and press environment (Fiedler & Frère, 2018; Sobel Cohen, 2022). By comparison, as may be expected, democratic indicators were less consistent predictors of press freedom attitudes in countries on the lower end of democracy rankings, such as Cameroon, Eswatini, and Sudan though mobile media use for informational purposes retained significance as a predictor. These findings, in comparison with findings from the more democratic countries, support conclusions about the need for democratic frameworks as preconditions or corequisites for press freedom while encouragingly pointing toward mobile media use as an important mediator of that relationship (Kalyango, 2011; Kasoma, 1995). Overall, by delving deeper into specific countries, these results add to a growing body of knowledge about press freedom specific to various African nations (Akpojivi, 2018; Martin, 2020; Sobel Cohen & McIntyre, 2020).

These findings also support efforts encouraging scholars to rethink how press freedom is conceptualized and measured around the world. More nuance and attention are needed to reveal more detail about differences in culturally specific factors and more attention should be given to domestic evaluations of press freedom by citizens, journalists, and other experts. Results from Table 1 make clear that citizen attitudes about supply of press freedom were more strongly related to demand for press freedom than external evaluations of press freedom and democracy were, in terms of the Freedom House democracy index, and in fact the inclusion of citizen perceptions of press freedom supply moderated the influence of external rankings on demand for press freedom.

These results echo findings by Sobel and McIntyre (2019) and Sobel Cohen (2022) that external indicators of press freedom and freedom of expression may be less valuable in explaining how respondents in some African countries experience and evaluate press freedom in their countries. While the body of literature on press freedom in Africa is growing, most studies continue to focus on Western countries' press freedoms, and use indicators more aligned with those conceptualizations. The findings of this study lend empirical evidence to support Sobel and McIntyre's (2019) conclusions about the need for a development media theoretical framework that accounts for journalist motivations in the context of political developments' influence on media systems. More research attention is needed to contextualize findings about press freedom in non-Western and Global South settings, especially when so many of those countries are experiencing fluctuations in democratic indicators and upheavals in political and public health as well as in various stages of journalistic and economic development (Becker et al., 2007; Sobel Cohen, 2022). These findings support related work demonstrating more complicated relationships among external indicators of press freedom and how some citizens and journalists experience an independent press on the ground (Adelakun et al., 2021; Dastgeer & Stewart, 2021; Fiedler & Frère, 2018).

Conclusion

This study sought to better understand the relationship between mobile media use and press freedom in 34 African countries as a means of learning more about how mobile technology's proliferation is associated with democratic outcomes in an area of the world in which both phenomena are advancing but in flux. Findings contribute to theoretical explanation for ICT's persistent positive association with democratic indicators such as press freedom, political participation, and civic engagement, and add to a body of literature examining citizen attitudes about supply and demand of press freedom and democracy in their countries (Nisbet et al., 2012). These results also contribute to a growing body of literature on what is known about press freedom in Africa, which has been found to be a nuanced concept with strong variations based on cultural values, government frameworks, and journalistic environments (Martin, 2020; Sobel Cohen, 2022; Sobel Cohen & McIntyre, 2020).

Limitations to this analysis are acknowledged in multiple areas. Any study based on cross-sectional survey data must be interpreted as a snapshot in time and this study is therefore incapable of providing clear causal and directional evidence among mobile media use and citizen attitudes about press freedom. Efforts were made to include controls and account for random errors to produce conservative estimates of relationships to address this shortcoming. Similarly, secondary data analysis produces drawbacks related to the inability to craft question wording or create more robust measures for analysis. Despite lacking this precision, this analysis relies on the breadth of responses produced by surveying 45,823 respondents across 34 countries using reliable and externally valid measures that the Afrobarometer has included in longitudinal research across several years. The ability to analyze a complex data set acquired through face-to-face interviews across dozens of countries from a region that deserves closer research attention is viewed as a suitable adjustment.

Given these limitations, future research recommendations are focused on efforts to collect more original data on mobile media use and press freedom in Africa via surveys, interviews, and other methods, especially given findings that support prior research on the nuanced nature of citizen attitudes about press freedom and journalistic effectiveness. Analysis of countries with relatively strong press freedom climates, such as Ghana, South Africa, and Cape Verde, may serve as a launching point for closer investigations of specific press freedom climates in specific countries. Yet more comparative and regional research should be done to understand the vast array of government and journalism climates present across Africa and other Global South regions, which have received relatively less communication research attention.

While findings support related research on mobile media and democratic outcomes, scholars should consider closer attention to the role of journalism climates and citizen attitudes about independent press as important variables when considering how mobile media use is related to predicting engagement in civic affairs, producing political knowledge, and encouraging online and offline political participation. As Sobel Cohen and McIntyre (2020) found in Uganda, the democratic context is closely related to discrepancies in how legislation purports to create a free press and how it operates in practice with political, economic, and technological constraints. A better understanding of the role of mobile media use in the context of a free press is likely to produce more robust theoretical models explaining the core relationship between mobile media and democracy in the future in various contexts.

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