

(Pragmatic) collaboration for progress or threat to autonomy? African news discourses about Chinese technology in Nigeria and Ghana

Global Media and China
2024, Vol. 9(4) 469–490
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DOI: 10.1177/20594364241232757
journals.sagepub.com/home/gch



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Abstract

This study explores how African news media frame China's role in digital technology. China's engagement in Africa is portrayed as an ambiguous trend by Western media, which point to risks of Chinese influence. Themes of exploitation and support for autocratic regimes are common in media narratives about Chinese-African collaborations. Yet claims that China pursues a neo-colonial project in Africa seem exaggerated. While Chinese geopolitical ambitions drive its foreign policy decisions, African actors often appear absent from these discussions. African perceptions and assessments of China are nuanced, indicating a complex relationship. They point to benefits and risks with China as an economic, political, and cultural partner. It is crucial to analyze local contexts where stakeholders “get to speak” about China and technology, offering interpretative frameworks and engaging with opposing perspectives. News media are vital sites where technology narratives are conceived and circulated. The present study analyses Nigerian and Ghanaian news media as examples. Both countries share a complex history of development collaboration with China. Using a news framing approach linked to sociotechnical imageries, the study focuses on how African media discourses give meaning to digital technology and assess it in relation to foreign partners, including geopolitical implications in the Global South.

Keywords

Africa, neo-colonialism, news framing, news media, tech discourses

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Introduction

During the 2010s, China expanded economic-commercial, developmental, and political activities across sub-Saharan Africa, positioning itself as an alternative to the West and its colonial history (Abidde & Ayoola, 2021). China's perceived lack of colonial legacy supposedly enables more "equal" partnerships with African countries (Zhao, 2014). Chinese-African diplomacy emphasizes trade, exploitation of natural resources, knowledge transfer, and infrastructure projects (Chiyemura et al., 2023), including information- and communication technologies (ICT). Initiatives range from AI education to expanding internet access in rural areas. As China strengthens its digital technology leadership, its domestic digitalization aids its global technology exporter status (Roberts et al., 2021). However, critics point to risks of digital technologies being used for surveillance and data profiteering (Davis & Xiao, 2021). For example, Chinese technology companies have been alleged to supply oppressive governments and extract valuable data from African markets (Gravett, 2020a).

Western media often view China's Africa policy through a geopolitical lens, competing with the USA and Europe. *The Economist* piece "New Scramble for Africa" (2019) is exemplary, depicting China as seeking to profit from the continent. Western coverage of Chinese activities in Africa highlights potential risks to local communities and the West (Addis & Zuh, 2018). While China's foreign policy is indeed informed by geopolitical aims, the African perspective on its impact remains under-researched. The intricate relationship between African assessments and China's role (Wang et al., 2014) calls for more research on African public discourse concerning Chinese involvement in digital technology. Such analysis requires focusing on media discourses as integrative components of public spheres (Nguyen, 2017). News media discourses highlight issues of public relevance, making them accessible to lay audiences. Hepp et al. (2012) advocate for investigating "discourse cultures," within which media narratives and public discourses emerge. They define culture as an intricate web of specific patterns—such as classification systems and discursive formations—that individuals within a group draw upon during interaction and when contextualizing issues. Discourses are distinct combinations of communicative practices and interpretative frameworks revolving around specific issues (Hepp et al., 2012). Culture and (media) discourses are interwoven, with the former providing the backdrop against which discursive practices are enacted and public meaning is constructed. It is crucial to analyze local contexts in which different stakeholders "get to speak" about China and technology, fill the issue with meaning, offer interpretative frameworks, and engage with alternative perspectives. Media framing shapes public perception of technology's value and societal impact (Nguyen & Hekman, 2022) and contributes to sociotechnical imageries, that is, visions about promises and pitfalls of emerging technology (Jasanoff & Kim, 2013).

The present study conducts an empirical analysis of African news media discourses on China's technological role by examining Nigerian and Ghanaian outlets. Both Nigeria and Ghana share a history of diplomatic interaction with China, including technology-centric development projects. Importantly, Chinese technology investments increased in Nigeria and Ghana (Kynge, 2023; Rochet, 2023). They are useful cases for comparing how Chinese technology ventures are perceived in African contexts. Nigeria and Ghana are primarily Anglophone, each hosting a media sector that is free in principle but suffers from different challenges pertaining to censorship and governmental influence. Using computational and qualitative text analyses, the study examines: (1) China's media representation; (2) African stakeholder positioning in technology developments with China; and (3) the interplay of benefits and risks in these technology developments.

The study contributes novel perspectives on the relevance of local media in interpreting digital technology and foreign relations, including geopolitical impacts in the Global South. It advances a

mixed-methods framework for examining media discourses from a framing perspective and for identifying societal actors in technology narratives.

Chinese digital technology and Africa

When examining China's role in Africa's digitalization, it is important to consider different dimensions of its involvement: (1) China as a technology power pursuing geopolitical goals; (2) China as a model for digital transformation in the Global South; (3) China as a regional partner in spreading ICT technology and -expertise.

First, China is frequently presented as the "other" technology superpower in a bi-polar geopolitical contest with the USA. Western media discussion about a "technology arms race," especially in AI, persist (Nguyen & Hekman, 2022). The Chinese government aspires to take a leading role in crucial digital technologies (Cheng & Zeng, 2022). This is evident in ambitious government programs such as "Made in China 2025," which aims to transform the country into an AI leader. The long-term goal is to shift its position in global technology from "norm-taker to norm shaper, if not maker" (Cheng & Zeng, 2022: 795). China's current leadership seeks to shape global technology governance, particularly through the Digital Silk Road Initiative, to enhance its normative influence in the Global South beyond trading goods (Cheng & Zeng, 2022; Gravett, 2020a). Nonetheless, China's technology advancement efforts and development activities show varied effects. Park and Tang (2021) found that Chinese investments contribute to job creation and technology education in Africa, yet knowledge transfer's impact is inconsistent. They highlight negative outcomes of investments, such as economic pressure and environmental challenges due to lax enforcement by African authorities (Park & Tang, 2021).

Second, China is viewed as a model for successful digital transformation in the Global South. Research suggests that "high-technology market development and financial development" (Li et al., 2020) are key drivers in China's technological progress. Government-supported digitalization efforts concern various societal sectors and industries, ranging from governance (Gao, 2020), through manufacturing (Zhao et al., 2022), to retail/commerce (Zhiwei, 2023), and culture (Keane & Chen, 2017). This success is recognized by governments in developing countries that view China as "a salutary example of a once impoverished country rising through the developmental ranks to become a now prosperous nation, the growth engine of the world economy, an idea which holds a great fascination[...]" (Ofosu & Sarpong, 2022). Ngameni et al. (2021) studied the digital economy's impact on the growth disparity between China and African nations from 2000 to 2016. They associate internet usage and ICT exports with economic strides, noting a parallel between digital and economic divides. They suggest that boosting digital investments in Africa may reduce this gap and drive economic progress (Ngameni et al., 2021). While China has made substantial advances in integrating digital technology into its economic fabric, Africa continues to rely on natural resources, with limited digital penetration (Ngameni et al., 2021). This disparity has led to a widening growth gap, urging a need for African countries to adopt and integrate modern digital technologies to stimulate economic growth (Ngameni et al., 2021).

Third, Chinese digital technology ventures in Africa continue a history of Sino-African technology transfer and commerce (Li, 2016). Chinese digital technology initiatives vary in form, scope, and aim but focus on a number of intersecting infrastructural, commercial, and political contexts. Chinese government and business entities, notably Huawei, contribute considerably to telecommunications and internet infrastructure across Africa (Ceci & Rubin, 2022), while Chinese mobile devices dominate African markets (Olaleye et al., 2019). For example, Huawei and ZTE have strong presences in Nigeria and Ghana, supplying mobile devices and ICT infrastructures but also skills

and knowledge through educational projects (Agbebi, 2018). Closely related to this, Chinese companies provide know-how in cloud computing, big data capabilities, and AI solutions. This includes manufacturing, the exploitation of natural resources, education, healthcare, and security technology for African governments. Concerns about China's impact on building digital network facilities point to sovereignty and dependency issues, while the provision of surveillance technology to authoritarian regimes invites scrutiny over its influence on technology supply and policy (Calzati, 2022).

The specter of Chinese “neo-colonialism” and African media discourses

References to neo-colonialism, exploitation, and support for autocratic regimes frequently surface in media narratives about Sino-African collaborations (Obeng-Odoom, 2022). China's digital technology initiatives have been labeled “digital colonialism,” with economic and political pressure aimed to influence African governments (Gravett, 2020a). The Chinese transfer of ICTs is linked with exploiting African digital markets and spreading authoritarian ideology (Gravett, 2020b). Some dispute “neo-colonialism” as misrepresenting Chinese activities in Africa, which are indeed Sinocentric but pragmatic (Lu, 2023). Sino-African partnerships focus on business, though “some African countries consider China as more than an economic partner, as someone who can offer an alternative development model” (Zheng, 2010, p. 271). Even if China's Africa strategy displays neo-colonial traits, the approach is distinct from historical Western practices due to a “new world order shaped by international norms and institutions that guards statehood and sovereignty” (Antwi-Boateng, 2017). Liu (2022) notes that African countries are exploring Chinese cooperation for new development paths divergent from Western neoliberalism. China's role in the Global South, while extensive, is shaped by varied factors, including the internal dynamics of African states and the wider global political climate, underscored by US-China competition (Liu, 2022).

Several studies examine China's broader role in African media, focusing on news framing and influence on media sectors. Media portrayals vary by country and outlet, complicating general conclusions. However, research indicates African views of China are mostly neutral to positive (Nassanga & Makara, 2016). Matanji (2022) found positive coverage of China's investments in Kenyan, South African, and Nigerian media, contrasting with critical American and British perspectives. China's global soft power efforts, aimed at enhancing its “discursive power” through media investments, boost this positive perception (Lee, 2016). Chinese media organizations attempt to promote a positive portrayal among African audiences through “infrastructure development, training, content production, content distribution and direct investment” (Wasserman, 2018, p. 108). Wasserman (2018) links these to diplomatic strategies but notes skepticism in African news coverage towards Chinese media despite acknowledging potential economic benefits. Wasserman and Madrid-Morales (2018) further observed that Chinese media had little influence on Kenyan and South African students' digital experiences.

Other studies indicate that African media often frame China's role as a business narrative, emphasizing economic collaboration over politics (Gabore, 2020). Yet, political frictions surfaced as African outlets critiqued China's COVID-19 response and vaccination diplomacy. Madrid-Morales (2021) questioned the prevailing narrative that China's increased media presence leads to higher levels of influence in determining African news media narratives on China, referring to African coverage of COVID-19 as a counterexample. Criticism in African media extends to Chinese labor practices, though Ofori and Sarpong (2021) noted these practices were largely determined by the host nation's labor laws.

The media framing of China in African media is complex and far from one-dimensional. In discussions of China's digital technology role and allegedly neo-colonial implications, the portrayal of China becomes an important factor in how Chinese activities are perceived by Africans, at least among the intellectual, economic, and political elites. However, so far, no empirical studies are available on how African news media frame Chinese technology specifically in their reporting.

African media, new framing, and technology discourses

African media landscapes are diverse and evolving, which is linked to rapid political and economic changes across the continent. African audiences broadly support press freedom, seeing news media as government watchdogs (Conroy-Kurtz & Koné, 2020). Digital platforms have bolstered independent media and activists advocating for reforms (Mutsvairo, 2018). These dynamics in African media call for critical comparative view on journalistic traditions in media discourse analysis.

Methodologically, news media discourses on technology can be considered public discourses, aggregating related communication on specific topics (Hepp et al., 2012). News media discourses register, frame, interpret, and clarify issues of public importance for audiences. Hepp et al. (2012) propose to critically examine specific "discourse cultures" that shape media discourses and their role in the formation of wider public discourses, which includes an assessment of how global trends are processed within concrete socio-cultural settings and political frameworks. The concept of discourse cultures connects two analytical lenses: (1) cultural patterns shape social practices and political norms, such as laws and prevailing ideologies, that "make" media discourse and determine public relevance. Culture is understood as "the specific whole of patterns (classification systems and discursive formations) that members of specific groups refer to in their practices (action, communication etc.) and in giving meaning to issues" (Hepp et al., 2012, p. 32, our translation). (2) Discourses are conceptualized as "analytically distinguishable ensembles of (communicative) practices and interpretative frameworks" (Hepp et al., 2012, our translation). Media discourses are accumulations of related communication, that is, news reporting in its various forms from different sources, on a specific set of issues (e.g., technology, politics, economy), where discursive practices and perspectives are shaped by specific cultural contexts.

This challenges research to consider an Afrocentric perspective in critically assessing digital trends and media discourses, which approaches Africans as active participants and not as marginal to European experiences (Mazama, 2001). While Afrocentricity is criticized for idealizing a homogenous view of Africa, advocates argue for its necessity in correcting misrepresentations of African perspectives. Attention needs a shift to the influence of digital technologies on local communities, as well as the implications for nation-states within the wider geopolitical context of post-colonial relations within and beyond Africa (Mutsvairo et al., 2021).

The Afrocentric approach is applied by investigating technology discourses involving China through African news media coverage. The news framing angle is useful for understanding how these discourses construe China's technological role (Nguyen & Hekman, 2022). Charting "emphasis frames" (Chong & Druckman, 2007) reveals primary contextual associations pertaining to digital transformation (Nguyen & Hekman, 2022). The choice of topics considered worth mentioning steers emphasis framing and agenda-setting. Examining the valence framing further uncovers how discourse participants offer evaluations of technology trends. This includes an analysis of risks and ethical challenges raised in news reporting as well as the general tone of voice. Additionally, taking stock of societal actors mentioned in news texts unearths what social groups dominate technology discourses. Eventually, news framing contributes to the formation of

sociotechnical imaginaries that circulate in public discourses (Jasanoff & Kim, 2013; Sartori & Bocca, 2022).

It is crucial to recognize that technology discussions extend beyond news media to include conversations in other fora, such as parliamentary debates and business gatherings, as well as on social media and in everyday technology use by the general populace. News media, however, distil these discussions to reflect broader public interests and establish common frames of reference across society. Particularly in Africa, media discourses often reflect the perspectives of political and social elites, necessitating a critical view on the political economies determining media landscapes. Nevertheless, analyzing African technology discourses through a news framing lens contributes to a deeper understanding of the complex relationship between African nations, China, and digital technology.

Research questions

For the empirical portion, the present study zooms-in on two Anglophone African countries with a long history of diplomatic engagement with China: Nigeria and Ghana. The examination of Nigerian and Ghanaian media discourses concerning Chinese technology trends is relevant for understanding nuances of geopolitical power exerted by China in the region. The manifestation of Chinese investments, as evidenced by the presence of corporations like Huawei in Nigeria, underscores the substantive role of Chinese technology transfer initiatives in the African technological landscape. In addition, Ghana's media ecosystem presents an incisive case study of China's overarching strategy to influence African media narratives. Nigeria's large internet user base and Ghana's pluralist media environment make them useful cases.

Based on the above discussion, three research questions guide the analysis:

1. *How do Nigerian and Ghanaian news media portray China in their coverage of digital technology developments?*
2. *What benefits and risks are associated with Sino-African collaborations centered on digital technology?*
3. *Who are the dominant actors in media discourses about digital technology and China?*

Method and data

The empirical portion applies a mixed-methods content analysis on articles covering digital technologies and China from two Ghanaian and three Nigerian English-speaking news sites (Table 1). These outlets were chosen for their popularity and coverage of technology and China-related topics. *The Punch*, established in 1970, is among Nigeria's largest news outlets and considered independent of political control. The *Nigerian Tribune*, founded in 1949, is the country's oldest operating private news outlet. *The Guardian Nigeria* is another widely read Nigerian news platform, focusing on politics and business. *News Ghana*, active since 2010, is one of the most popular Ghanaian news sites, while the *Daily Guide*, founded in 1984, is a widely circulated independent Ghanaian news outlet.

Articles mentioning China were collected for the period from January 2017 to December 2022. The full sample includes $N1 = 45,995$ articles, with a subsample of $N2 = 1,008$ focusing on digital technology. A classifier filtered articles mentioning specific tech-related keywords. Validation confirmed 90% of the articles were tech-centric. Computational analyses were applied to the full sample and subset.

These included Latent Dirichlet allocation topic modeling (LDA TM, Rehurek and Sojka, 2010), Named Entity Recognition (NER), and sentiment analysis using the Valence Aware Dictionary and Sentiment Reasoner (VADER). LDA TM identifies emphasis frames (Chong & Druckman, 2007) by clustering documents based on shared words, NER extracts entities from texts, and VADER assesses sentiment. Emphasis frames as topical foci in news framing are approached inductively with topic modeling, meaning emphasis frames are considered as the clustering of documents based on shared words that indicate highlighted aspects of social reality. For example, texts that form clusters by frequently sharing words, such as “medical,” “hospital,” “treatment,” “healthcare,” are interpreted as the “Healthcare” emphasis frame. This inductive approach, which allows frames to emerge from the data (Matthes & Kohring, 2008), captures complexity and novelty beyond predefined categories. The operationalization is validated through cross-referencing with manual inspection of example texts to align the computational framing analysis with qualitative assessments. Topics were clustered into meta-topics based on content similarities identified through the examination of keywords and example headlines to summarize the emphasis framing. Valence framing, explored through sentiment analysis, in conjunction with emphasis framing, enables the examination of trends in two critical dimensions of news media framing within a larger text corpus. VADER calculated sentiment scores for each text, ranging from -1 (fully negative) to 1 (fully positive). Additionally, the texts were examined for references to four major data risk categories: surveillance, cybercrime/cyberwar, data bias, and disinformation.

The supplementary qualitative analysis focused on 200 randomly selected articles from N2 to explore technology topics related to China. The results reference news headlines to substantiate the findings from the computational-quantitative analysis.

Results

News about China is a visible agenda item in the sample, although the volume of relevant articles steadily declined after peaking in 2020 (Figure 1). Technology articles are part of China reporting in Ghanaian and Nigerian news, but at 2.1%, they make up only a small fraction of all articles.

While the proportion of technology articles appears low, there are some noticeable differences between the news outlets (Table 2). For instance, *News Ghana* is almost three times as likely to cover technology news involving China than *Daily Guide*, and among the Nigerian news sites, *The Guardian* is most likely to report on technology topics when covering China ($\chi^2(4) = 65.5, p = .000$). The overall proportion of technology articles increased over the years, albeit to a relatively small extent (Figure 2).

Table 1. Sample overview.

Outlet	Country	# of China articles
<i>Daily Guide</i>	Ghana	2090
<i>News Ghana</i>	Ghana	12304
<i>Nigerian Tribune</i>	Nigeria	5555
<i>The Guardian Nigeria</i>	Nigeria	15037
<i>The Punch</i>	Nigeria	11008
Total		45995

To explore the main emphasis frames in general, LDA TM was used to generate 17 interpretable topics. These were manually grouped into meta-topics based on content similarities (Table 3).

Table 3 shows meta-topic proportions of an average article. Emphasis framing in China news focuses on developmental collaboration, business/trade and economic relationships, infrastructure projects, and technology transfer. This is encapsulated in the largest meta-topic “Development, Technology, Business, Trade & Economics.” The second largest is “(Global) Politics,” comprising different topics centered on global and/or domestic political developments involving China. One noticeable theme is here China’s rise as a geopolitical power on the global stage. This is followed by news stories about “Healthcare & Pandemic,” “Culture, Society & Sport,” and “Education.”

The general sentiment in China reporting is predominantly positive, with a dip between 2019 and 2020, likely linked to the COVID-19 pandemic (Figure 3). *News Ghana* seems to adopt a significantly more positive stance with an average sentiment score of 0.57, nearly twice as high as the scores of the other outlets. One possible reason for this is the substantial contribution of Chinese news agencies to *News Ghana*’s reporting about the country: 48% of all its China articles come directly from either the Chinese news service *Xinhua* or the Chinese news outlet *People’s Daily*.

References to imperialism, colonialism, and neo-colonialism can be found in only 1.4% of all China articles but for both Nigerian and Ghanaian articles (N1 = 45995). Especially Nigeria’s *The Punch* addresses this issue, for example, regarding national debts owed to China and other countries (“Loans from China, others worrisome,” *The Punch*, 2020).

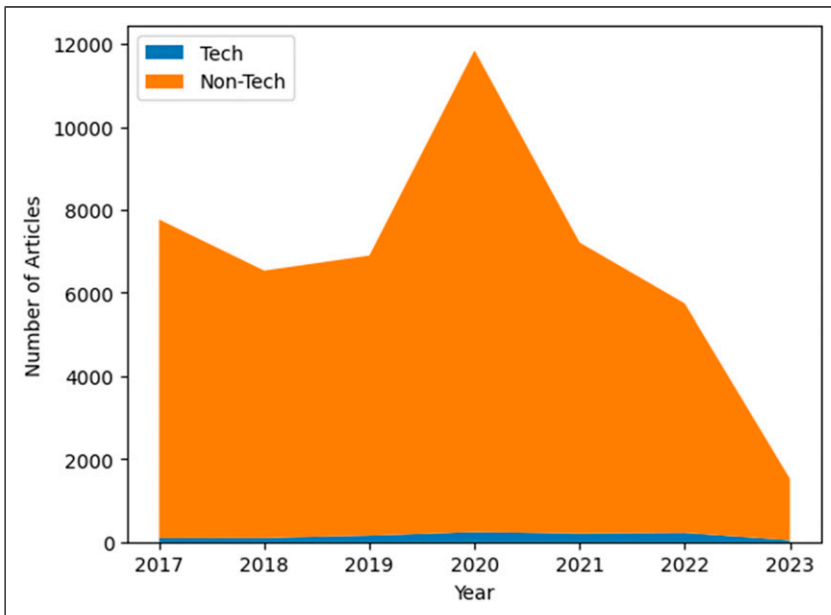


Figure 1. Volume of articles mentioning China 2017–2023.

Table 2. Technology articles per outlet.

News outlet	Technology articles	% of China articles
<i>Daily Guide</i>	21	1.0
<i>News Ghana</i>	349	2.8
<i>Nigerian Tribune</i>	76	1.3
<i>The Guardian Nigeria</i>	362	2.4
<i>The Punch</i>	200	1.8

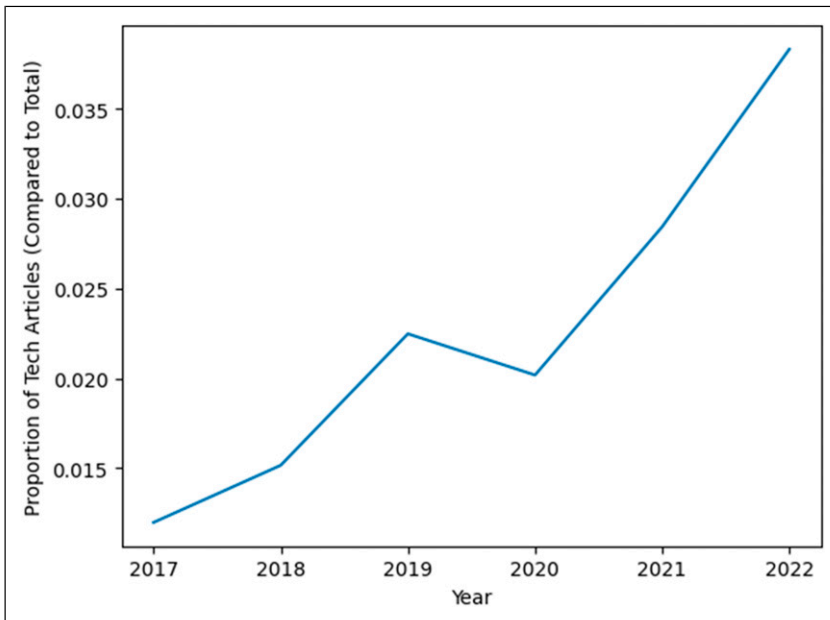


Figure 2. Proportion of technology articles over time. (NI = 45995).

African technology news and China: A constantly shifting angle between local and global?

Focusing on tech-relevant articles only, 12 emphasis frames emerged from the topic modeling (Table 4). These concern economic growth, digital communication infrastructures, platformisation trends, innovation, and smart devices. One of the largest topics is “Technology Progress & Economy,” which includes news stories about China’s position as a partner in African digitalization initiatives and development policies. Both Nigerian and Ghanaian news report how Chinese governmental and business organizations play a collaborative role in local digital transformation trends. Headlines such as “Federal Government hails Huawei over impact on Nigeria’s ICT sector” (The Punch, 2019) and “Huawei To Popularise 5G, AI In Ghana” (Daily Guide, 2021) illustrate this.

Table 3. Meta-topics and topics LDA in general China reporting (NI = 45995).

Meta-topic	Topics	Proportion of average article (%)
<i>Development, technology, business, trade & economics</i>	Logistics & transportation Agriculture International relations, trade & development Economic growth & natural resources Business & economic development Debt, investments & financial scandals/ corruption Construction projects Technology, research, technology business & platforms	39.7
<i>(Global) Politics</i>	Global politics & conflict Governance & politics Elections & party politics Security, crime & law	29.1
<i>Healthcare & pandemic</i>	Healthcare & research Corona pandemic	9.9
<i>Culture, Society & Sports</i>	Culture & society Sports	17.1
<i>Education</i>	Education	4.2

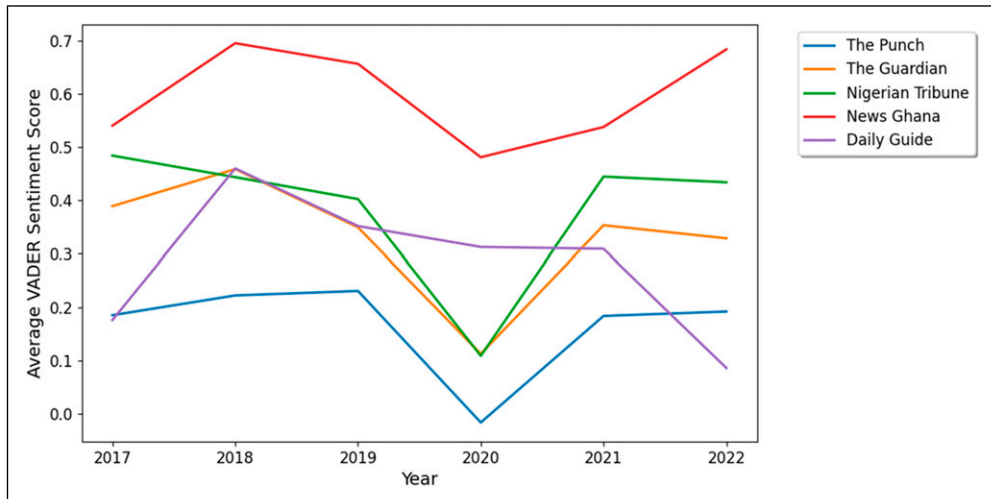


Figure 3. Sentiment in China news per outlet (NI = 45995).

There is also a pan-African dimension where the continent and not individual countries are positioned next to China, for example, “Africa seeks constructive cooperation with China” (News Ghana, 2019) or “African digital transformation not yet rapid” (The Guardian, 2017). A related theme is economic growth as a remedy to inequality and the importance of digital technology for emerging markets (“The race against economic inequality within emerging markets—A case for

Table 4. Topic for tech-related articles (N2 = 1008).

Topic	Keywords	Proportion of average article (%)
<i>Cryptocurrencies & FinTech</i>	Bank, currency, cryptocurrency, transaction, money, payment, cryptocurrencies, user, exchange, platform	8.1
<i>Smart Devices</i>	Camera, user, smartphone, device, experience, feature, battery, video, performance, phone	6.0
<i>Technology & Natural Resources</i>	Energy, power, oil mining, port, cost, production, manufacturing, process, operation	4.3
<i>Legal Issues</i>	State, court, man, life, case, law, office, governor, order, power	4.3
<i>Cybersecurity & Technology Platforms</i>	Security, equipment, firm, giant, risk, attack, concern, cybersecurity, ban, threat	9.3
<i>Technology & Education</i>	Student, training, university, skill, education, school, talent, team, programme	12.4
<i>E-Commerce & Economic Growth</i>	Consumer, growth, customer, product, project, solution, investment, sale, platform, brand	5.0
<i>Technology Platforms & Cloud Solutions</i>	Solution, customer, user, experience, cloud, application, platform, app, ecosystem. Software	10.0
<i>Tech, Healthcare & Corona</i>	Health, robot, virus, patient, covid, coronavirus, machine, human, information	5.9
<i>Mobile Networks & Infrastructure</i>	Operator, deployment, spectrum, report, telecom, speed, internet, infrastructure, user, end	9.8
<i>Technology Progress & Economy</i>	Sector, economy, opportunity, growth, policy, challenge, job, innovation, investment, congress	15.3
<i>Urban Innovation & Smart Vehicles</i>	Area, city, percent, vehicle, application, product, project, construction, province, innovation	9.4

SMEs,” Nigerian Tribune, 2020). China is here framed as an example for successful development. Digitalization is connected to Chinese influence but not portrayed as exclusively dependent on it, as it is perceived as a project of national importance where different global, regional, and local partners matter (e.g., “ICT organizations to receive gov’t support to develop local expertise,” News Ghana, 2021). Collaboration with Chinese partners concerns foundational technology infrastructures for digital transformation as well as AI development (e.g., “Huawei Launches Africa Cloud & AI Innovation Centre,” The Punch, 2020; “Cloud set to drive Africa’s inclusive AI future,” The Guardian, 2020).

Connected to this is expertise and knowledge transfer through educational initiatives. “Technology & Education” is a topic with higher probability to be covered in an average article (12%). Especially Huawei is considered an important factor in both Nigeria and Ghana (“ICT training: Huawei to sponsor Nigerian youths,” The Punch, 2018; “Huawei Introduces Free Home Study Program For Students,” Daily Guide, 2020). The company is virtually omnipresent in education-related articles through its various activities as a provider of training, organizer of competitions, and funder of educational facilities.

Another notable topic is “Cybersecurity & Technology Platforms” (9.3%), which encompasses the geopolitical competition with the USA as well as tensions between Chinese technology companies and Western governments. Headlines such as “US, China lead race for artificial intelligence—UN” (The Punch, 2019) or “Top NATO Commander Reports Progress in US Effort to

Keep China 5G Equipment Out of Europe” (News Ghana, 2021). China is portrayed as a technology power that drives innovation but also clashes with its competitors in a “technology war” (The Guardian, 2019). Another concrete example is the cybersecurity dispute around Huawei and the sanctions imposed by Western governments (e.g., “Huawei drags Sweden to court over 5G ban”). However, this includes articles that cover Chinese reactions to sanctions and stories about successful partnerships in 5G implementation involving Chinese companies (e.g., “China’s Huawei signs deal to develop 5G in Russia,” The Guardian, 2019). While these stories portray China as a player on the global stage outside of Africa, some articles cover Chinese operations in specific African contexts (e.g., “South African President backs Huawei on 5G,” News Ghana, 2019).

“Cryptocurrencies & Fintech” is another noticeable emphasis frame. China is here less portrayed as a key factor in African contexts but attains newsworthiness through its own official regulation of these technologies (e.g., “Chinese Central Bank Outlaws All Cryptocurrency Transactions,” News Ghana, 2021). Respective articles focus on how African countries benefit from crypto technology but also what risks it carries (e.g., “How Increased Cryptocurrency Adoption Could Affect the Naira,” Nigerian Tribune, 2020; “Cryptocurrency and cyber theft: Issues of global concern,” Nigerian Tribune, 2021).

Furthermore, China is frequently framed as an important trendsetter for digitalization processes in the Global South. The topic “Urban Innovation & Smart Vehicle” illustrates this: “China’s got a huge artificial intelligence plan,” (The Guardian, 2017), “Smart expressway in China makes travel more convenient, faster, safer,” (News Ghana, 2022). Again, China is looked at as an important technology country to learn from (“Lessons for Nigeria as China launches smart high-speed train,” the Guardian, 2020) but fewer articles seem to frame it as an actor in local African contexts for smart urban spaces and smart vehicles (“Chery teams up with Huawei to develop smart cars, as it plans to launch into Nigeria’s auto market,” Nigerian Tribune, 2021).

Figures 4 and 5 show how the foci of emphasis framing changed over time. The findings indicate that specific technology issues tend to peak temporarily, before media attention shifts, which may suggest technology hype cycles. Examples are *Cryptocurrencies & Fintech* in Nigerian articles and *Smart Devices* in Ghanaian counterparts. A noticeable difference between both media discourses is the drop of *Technology & Education* in Nigerian technology reporting versus the relative ascent in Ghanaian news. While this topic has a shared regional relevance, locally media attention differs noticeably, likely related to domestic developments affecting collaboration with China. Overall, the analysis of emphasis frames suggests that the centrality of Chinese technology organizations depends on specific contexts in which they can position themselves as influential partners and initiators of common projects. China matters for many fundamental technological developments but not for all of them to the same extent.

The overall sentiment in technology news about China is mostly positive, but *News Ghana* again stands out (mean sentiment of 0.89, Figure 6), with 39% of its technology articles being supplied by Chinese sources *Xinhua* or *People’s Daily*, respectively. However, *Daily Guide* had overall more positive coverage of technology news mentioning China until 2022, when it sharply dropped. This is due to a very small number of technology-related articles in that year (six in total), of which several focus on seemingly negative developments, such as the impact of COVID-19 on commerce and a legal fight between Huawei and the Swedish government.

Concerning the discussion of different risks and ethical challenges associated with digital technology trends, Nigerian and Ghanaian news reporting addresses these issues to a very limited extent. Merely 31 articles (3% of N2) explicitly mention data risks, with most of these raising

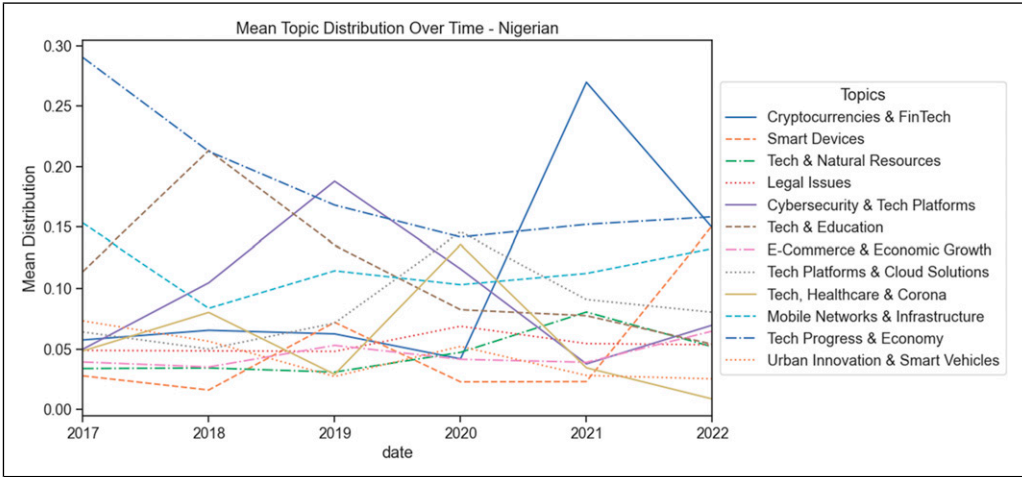


Figure 4. Topics over time Nigeria.

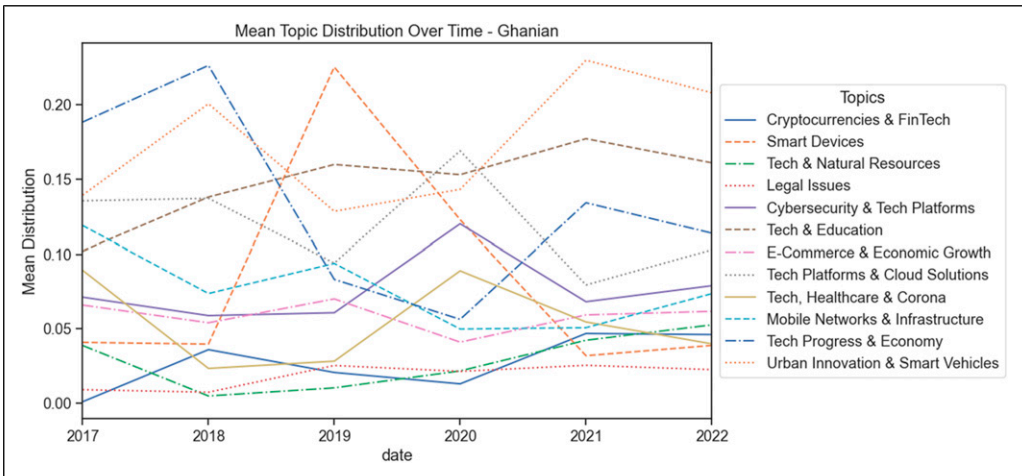


Figure 5. Topics over time Ghana.

cybersecurity issues (19 articles), followed by privacy invasion/surveillance (8 articles), and disinformation (e.g., “fake news,” 4 articles). No articles were identified that mention data bias and algorithmic discrimination.

To sum up, the findings suggest that African news reporting on China and technology developments shifts back and forth between three dimensions: a local one, where Chinese organizations have a concrete impact in specific economic, political, and social settings; a regional one, where Chinese activities are discussed on an African-transnational level; and a global one, where China is reported about as a technology power and trendsetter without a direct link to any of the other two dimensions. Further research is needed to quantify the magnitude to which these different dimensions are represented over the years in the corpus. Arguably, there is tentative evidence for

framing practices “in flux” in which African media discourses shift attention and processes of meaning-making about collaborations with foreign partners, their impact, and relevance through these dimensions. Notably, direct Chinese influence of the media agenda appears stronger in Ghanaian outlets than their Nigerian counterparts, of which some seem to have become slightly more critical in recent years.

Key actors: Local politicians and global companies

Regarding the most frequently mentioned people, organizations, and countries, the results from the NER analysis show that news reporting on China and technology connects local and global actors. For example, Nigerian president Muhammadu Buhari is the most frequently mentioned person in Nigerian articles (7.5%), followed by the head of the Nigerian Communications Commission (NCC) Umar Garba Danbatta (4.3%), and Minister of Communications and Digital Economy Isa Ali Pantami (4.2%). For Ghanaian news, Minister of Communications Ursula Owusu-Ekuful is the most frequently mentioned person (6.2%).

Most of the mentioned organizations are foreign, with Chinese companies dominating in sheer frequency, especially for the Ghanaian news outlets (Figure 7 and 8). Huawei is by far the most frequently mentioned technology company, leading the top 10 in all technology articles (Figure 7, $N_2 = 1008$). A point-biserial correlation test shows that the company is most likely to be mentioned in the topics “Cybersecurity & Technology Platforms” ($r_{pb[1006]} = 0.3333, p = .00$), “Technology Platforms & Cloud Solutions” ($r_{pb[1006]} = 0.1883, p = .00$), and “Mobile Networks & Infrastructure” ($r_{pb[1006]} = 0.1883, p = .0003$). It is also one of the most frequently mentioned actors in education-related articles (Figure 9).

There are only a few technology businesses native to Africa, such as the South African mobile communications company MTN or the Association of Telecommunications Companies of Nigeria (ATCON). More prevalent are Nigerian and Ghanaian governmental organizations and ministries dealing with education or technology issues. This suggests that Chinese technology companies often interact with Nigerian or Ghanaian public sector organizations rather than private entities.

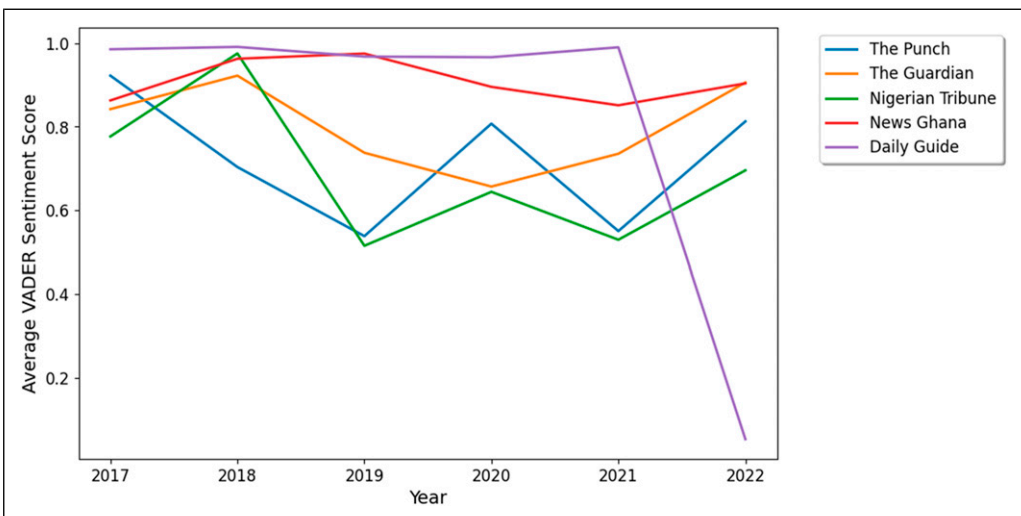


Figure 6. Average sentiment per outlet in technology news.

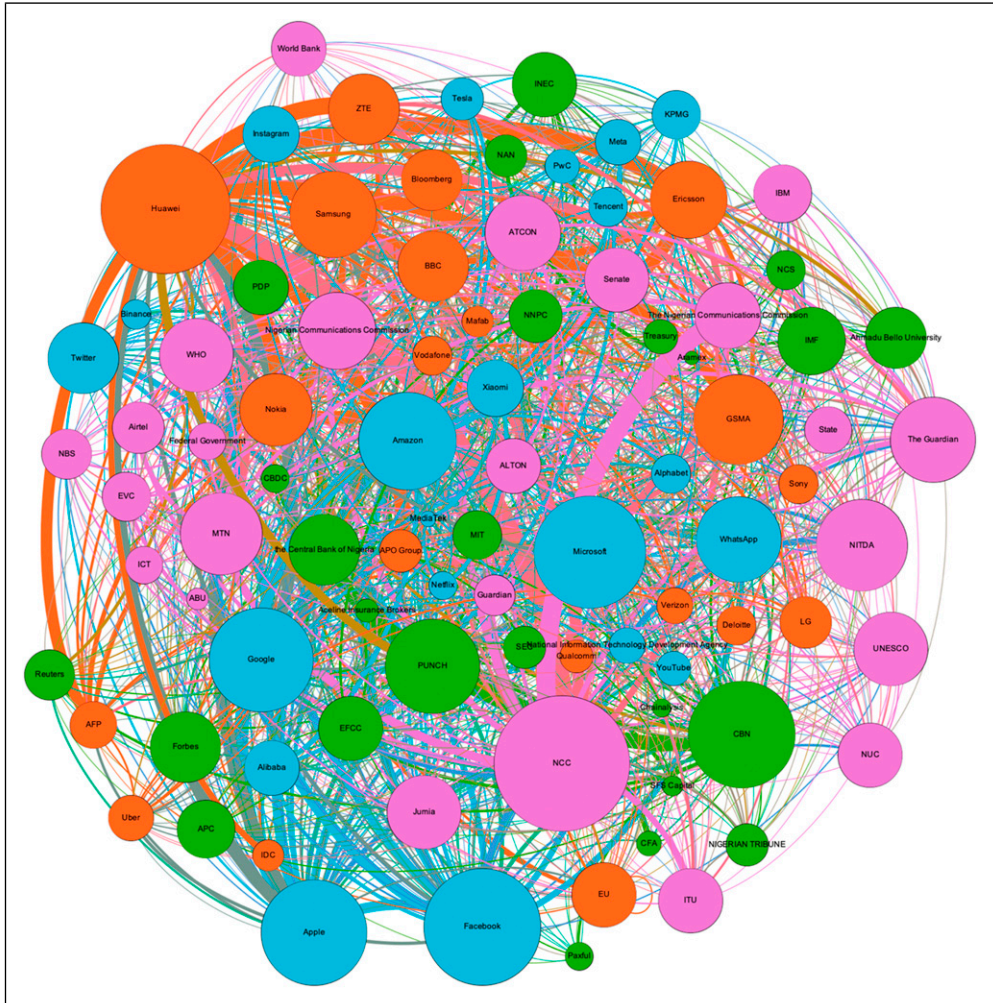


Figure 7. Top 100 organizations in Nigerian technology news.

What is notable is that the USA is referred to in approximately 47% of all technology articles in Nigerian news that also include China, while the same applies to only about 18% of all Ghanaian articles.

Other recurring actors are Western companies and politicians, particularly from the USA, who are often juxtaposed as competitors to China in the technology sector, both on a global stage and in regional African contexts.

Discussion

The findings imply that Nigerian and Ghanaian news media offer a multifaceted view on China and digital technology that fluctuates between local, regional, and global trajectories. Concerning research question 1 *“How do Nigerian and Ghanaian news media portray China in their coverage*

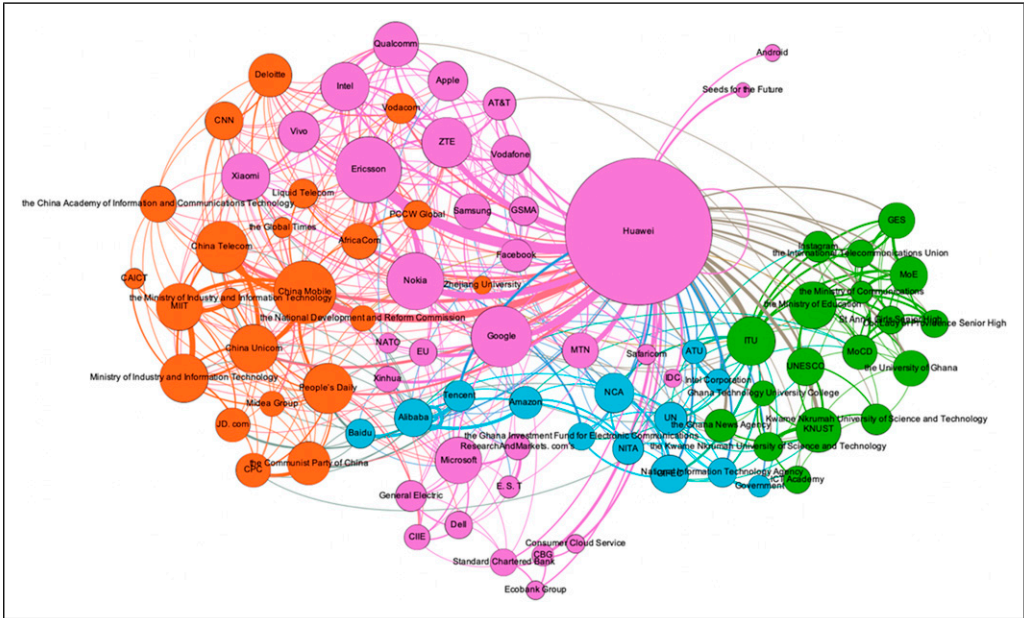


Figure 8. Top 100 organizations in Ghanaian technology news.

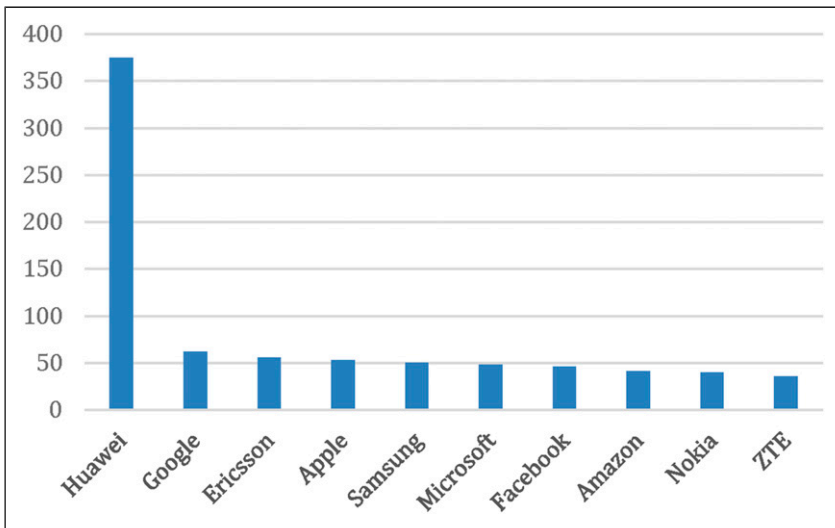


Figure 9. Top 10 technology organizations in technology news.

of digital technology?” China is acknowledged as a vital technology power that sets global trends and provides alternatives to Western innovation, with Huawei playing multiple roles in technology transfer, education, development, and commerce across Africa. Yet, the perception of China is not exclusively positive, with coverage touching upon allegations of espionage, clashes with Western governments, and concerns of dependence on Chinese investments as a risk to autonomy. This

resonates with global media discourses about China's geopolitical technology ambitions and echo Western warnings about security risks (Nguyen & Hekman, 2022). These critical assessments, while few in numbers, indicate awareness in African news discourses of the challenging implications of global technology rivalries involving China (Qobo & Mzyece, 2023) as well as the threats posed by Chinese surveillance technology (Gore, 2023).

Despite overarching similarities, nuances matter. Ghanaian news tends to hold a more positive stance on collaboration with China, possibly influenced by *News Ghana's* policy of amplifying Chinese perspectives for Ghanaian audiences. In contrast, the sampled Nigerian news appears more critical, reflecting an inherent ambiguity in assessments: China is welcomed for specific technological development projects but viewed critically regarding loans and debt, positioning the country simultaneously as an inspiration, a partner, and a potential risk. This indicates a nuanced and reflective stance that seems to have evolved over time with changes in the domestic political climate. However, the critical approach of Nigerian media toward economic issues in general must be acknowledged, considering that years of mismanagement, corruption, and unemployment have impeded the country's ability to realize its potential (Sunkanmi & Isola, 2014).

Concerning research question 2 "*What benefits and risks are associated with Sino-African collaborations centered on digital technology?*" most benefits are linked to economic growth and developmental progress. ICT, AI, and other emerging digital technology trends are considered key components in addressing inequality, raising living standards, and creating wealth. The news discourses suggest that China is pivotal in supplying necessary infrastructure and knowledge for emancipating Africans. There is a certain technological determinism in these narratives that imply mastery of technology solves social and political problems. China is referred to as an example for the positive impact of technology. In areas such as technology education, ICT infrastructures, and mobile tech, China dominates as an important partner. What pro-technology perspectives fail to acknowledge is the dominant presence of the digital divide in Nigeria, Ghana and elsewhere across Africa. While the number of Africans accessing and using the digital technologies has increased in recent years, efforts to narrow the digital divide have not always been fruitful (Mutsvairo & Ragnedda, 2019).

Risks and ethical challenges of digital technology are rarely discussed. When mentioned, they usually involve cybersecurity issues, privacy risks, and disinformation through digital media. One reason for this is differences in cultural settings as well as political systems between African countries and Northern American or European ones. The identification and experience of risks is socio-culturally contingent and African discourses may either not consider certain risks as such, do not detect them since African contexts of technology use differ from Western ones, or because political climates do not permit to openly address them. Most likely a mix of these factors apply in varying configuration for different specific African contexts. Overall, the generally positive-enthusiastic outlook on technology may contribute to a more positive assessment of China in the technology domain.

Regarding research question 3 "*Who are the dominant actors in media discourses about digital technology and China?*" African actors are mostly politicians and governmental organizations, whereas foreign technology businesses dominate the conversation. While Chinese organizations are dominant, other global players especially from the USA such as Google, Amazon, and Meta are present and widely used across different African countries. This observation echoes recent research that shows that despite their prevalence, Chinese technology companies are not the main factors affecting civil liberties in Africa (Gagliadorne, 2020), as a wider spectrum of global influences and especially domestic politics and policies play a significant role.

To conclude, African news framing of China in the context of technology suggests a multifaceted role: China is seen as a global driver of technology trends, a model for digital transformation, and a local partner embedded in sociotechnical imageries. These imageries often exhibit tech-determinist tendencies, emphasizing predominately positive effects. Despite common pan-African framings, the analysis reveals significant differences in how African media discourses relate to foreign partners and to what extent they are open to external voices, which is crucial for a nuanced understanding of Chinese influence. Editorial policies and journalistic practices play a pivotal role, as demonstrated by *News Ghana* giving Chinese narratives a platform. The variable success of Chinese media strategies across African nations challenges the assumptions of a uniform and unengaged reception of technological developments in the Global South. The attention to technology's role in development, resource exploitation, and education marks a clear distinction in African media discourses from Western narratives, highlighting the process of local adaptation to global digital transformation trends. However, it is important to consider news outlets' differences in assigning news value(s) and providing space to technology topics. Again, editorial guidelines, journalistic staff and organizational culture, but also media ownership (is the outlet in the hands of a large technology company?) are relevant factors here (Nguyen & Hekman, 2022). The sampled mainstream news outlets all cover technology stories but not to the same extent. Further research is needed for the African context into technology agenda-setting from an editorial-organizational perspective.

Nevertheless, the Afrocentric approach to analyzing technology discourses through African media extends the critical-analytical scope beyond dominant Western and Chinese narratives, allowing for a better understanding of African agency and the complexity necessary in researching global media discussions.

Conclusion

The present study has offered an empirical analysis of African news discourses on China's role in technology developments by using a combination of computational-quantitative and qualitative content analytical methods on Nigerian and Ghanaian examples. Adopting an Afrocentric approach, it prioritizes African perspectives, challenging Eurocentric or Sinocentric analyses that may misrepresent local realities. Results reveal both similarities and stark differences compared to global technology discourses. These findings highlight the need to consider contextual differences, including media ecosystems, political systems, and organizations, rather than just world regions.

The analysis offers essential, albeit rare, perspectives on China's representation in the African digital technology sectors. The outcomes of the analysis support the argument that African views are nuanced and complex. While some support and praise China's involvement in digital transformation trends, concerns exist regarding cybersecurity and potential exploitation by Chinese technology companies.

There are several limitations. Computational methods provide a coarse distant reading, necessitating supplementary qualitative investigations of discourse dynamics, narratives, and motifs. Fine-grained framing analysis of, for example, issue-specific frames and more specific valence frames, would require supervised machine learning based on a sizable training dataset of human annotations. Future studies should also expand the sample of African news outlets beyond Nigeria and Ghana and include ethnographic field research with African news professional and technology commentators.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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