Article

Google News Initiative's Influence on Technological Media Innovation in Africa and the Middle East

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Abstract
The Google News Initiative (GNI) aims to collaborate closely with the news industry and financially support the creation of quality journalism in the digital age. It also aims to bring technological advancements and innovation into newsrooms' operations. Drawing on journalism innovation and responsible innovation theories, this study examines GNI beneficiaries in Africa and the Middle East. To address this, we analysed GNI projects' descriptions combined with thirteen (*n* = 13) in-depth interviews with leading actors and beneficiary news organisations to answer two main questions: (a) What are the main characteristics of the technological innovations proposed by GNI Innovation Challenge grantees in Africa and the Middle East? and (b) How are these news media organisations becoming increasingly dependent on these platforms' technological and financial aspects? Anchored in journalism innovation, responsible innovation, and platformisation theories, our findings show that funded organisations heavily depend on Google's technological and financial infrastructure to innovate. Furthermore, we note that some projects do not offer a clear path for sustainability in the future. We further argue that this initiative builds an infrastructure of power and dependency that poses risks to responsible innovation in journalism. Our study contributes to extant scholarship on digital platforms and their role in the infrastructure of news organisations, creating power asymmetries between those who serve as the backbone for data flows and technological processes and those dependent on these institutions.

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1. Introduction

In 2018, Google officially launched the Google News Initiative (GNI) programme, which was developed to foster collaboration with news institutions to achieve, as Google described, "a stronger future for news" (Schindler, 2018, n.p.). Broadly, the GNI aimed to collaborate closely with the news industry by offering financial and training support for creating quality journalism in the digital age. The programme revolves around three main objectives. First, GNI sought to elevate and strengthen quality journalism. Second, it sought to evolve journalism business models to drive sustainable growth. Last, the initiative sought to empower news organisations through

technological innovation. This programme section was structured at its inception through Digital Innovation Challenge, which focused only on European newsrooms. Since 2018, the GNI has globally expanded through its "Innovation Challenge" scheme to include hundreds of media organisations with a fund of over US $300 million, aiming to develop sustainable business models by diversifying revenue streams, generating audience engagement, and bringing emerging technologies to media organisations (Google, 2021). Thus, Google's long-term aim was to spur technological innovation and advancement in newsrooms worldwide.

The GNI comes at a time when journalism is facing an "institutional crisis" (Reese, 2021, p. iv). This critical point has assumed a variety of manifestations in the news industry, including the hard transition wrought by digitalisation (Paulussen, 2016) and the flight of advertisers from the institutional journalism spaces. As a result, it triggered an existential crisis that has seen newsrooms folding, cutting down on staff (Skowronski, 2009), being "juniorised" (Rodny-Gumede, 2014) and, in some instances, disappearing altogether. Specifically, journalism in the Global South has paved a more complex reality, often complicit in colonial regimes, such as in Africa and the Middle East (see Barratt & Berger, 2007). Faced with such existential threats, journalism institutions have embraced different funding models for survival, including philanthropic (Lugo-Ocando, 2020) and platform funding (Papaevangelou, 2023). These new sources of income attempted to close the financial gap created by the diminished advertisement revenue and cut-throat competition for existing advertisers with other institutions. When Google launched its GNI, it was a welcome source of funding for many journalism institutions (de-Lima-Santos & Mesquita, 2021a) that were already crippling under complex revenue models in ways that stifled innovation (Schindler, 2018). In the Middle East and Africa, about 43 organisations were beneficiaries of the GNI Innovation Challenge fund until 2021.

Through the conceptual lens of journalism innovation, responsible innovation (RI), and platformisation, we explore the GNI Innovation Challenge as a catalyst for journalism innovation in African and Middle East newsrooms. In doing so, we seek to understand how the GNI sought to elevate and strengthen quality journalism through technological innovations. Thus, the aims of this study are threefold. First, we discuss how the GNI Innovative Challenge programme pushes technological innovation in journalism to create "sustainable" business models. Second, to understand if projects funded by GNI have a clear path for sustainability in the future. Last, to examine if these projects have key dimensions of RI. Therefore, this article poses two specific research questions:

RQ1: What are the main characteristics of the technological innovations proposed by GNI Innovation Challenge grantees in Africa and the Middle East?

RQ2: Are these news media organisations becoming increasingly dependent on these platforms' technological and financial aspects? If so, how?

Findings show that the GNI Innovation Challenge builds an infrastructure of power and dependency that poses risks to the continuity of the developed projects in the region and, thus, of technological development. Furthermore, adopting emerging technologies does not bring key dimensions of RI, as it is challenging for most organisations to deploy them. Additionally, this program limits the deployment of these technologies to a certain extent in these countries. Our study contributes to extant scholarship on digital platforms and their role in the infrastructure of news organisations, creating power asymmetries between those who serve as the backbone for data flows and technological processes and those dependent on these institutions. Furthermore, as most scholarship studying platforms' funding for journalism has primarily focused on the Global North, specifically the European Union and the US, our study broadens this scope by homing in on an understudied geographic area with unique nuances and challenges.

2. Theoretical Grounding

Our research builds on three pillars: (media) innovation theory, the concept of RI, and literature on the dependency of news organisations on tech companies such as Google. We detail each topic in the following subsections.

2.1. Journalism Innovation: Disrupting Innovative Processes and Leading-Edge Technologies in Newsrooms

The increasing need for innovation in rejigging old media platforms, activating creative alterations in content production, and spurring the rise of distribution and commercialisation initiatives within the newsroom has become increasingly apparent in the face of institutional challenges that journalism has suffered since the digital disruption. Be that as it may, journalism innovation of some sort has been notably present in different aspects of both legacy and digital media landscape, which offers symbolic and practical comfort because "innovation is essential to the survival of the news industry" (Posetti, 2018, p. 8).

In a bid to establish the core tenets of innovation, Francis and Bessant (2005) outlined the "four Ps of innovation," which are novel *products*, new *processes* and modus operandi, new *positions*, and *paradigmatic* innovation in the guiding principles for the business model of organisations; all of which are broad groupings with unclear boundaries. Scholars have applied these four Ps to understand the innovation challenges in the news industry (de-Lima-Santos et al., 2022). As far as the journalistic world goes, these four Ps exist within or beyond media products (e.g., media platforms), media processes

(e.g., production and dissemination of media products, such as books, computer games, software, sound, and video recordings), media positions (e.g., brand identity, strategic positioning), and in media paradigms (e.g., models of revenue generation; Morlandstø, 2017).

In the classical Schumpeterian philosophy of innovation, there is a consensus that innovations can be either "incremental" or "radical" based on the extent of innovation and change or value addition (Storsul & Krumsvik, 2013). For journalism, most innovations, especially the early ones, were incremental in that they revolved around creative alterations in content production. However, technological developments over the past decades have spurred the industry to make radical changes within newsrooms and their various markets. For example, the internet and mobile devices have transformed the extant status quo of news media, like their communication model (Küng, 2013). Unlike legacy media, where the model is one-to-many (information gatekeepers), radical innovation has shifted towards a many-to-many model, where information is produced from and received by multiple channels or individuals/collectives (Belair-Gagnon et al., 2019; de-Lima-Santos & Mesquita, 2021b).

Recently, journalism witnessed radical innovation by embracing data practices and artificial intelligence (AI) systems (de-Lima-Santos et al., 2022). The adoption of emerging technologies in newsrooms is part of this journalism innovation, whereby organisations are "doing things (from the incremental to the transformative) that support the digital era development of journalism" (Posetti, 2018, p. 9). Automated news generation and algorithmic dissemination of news content fundamentally disrupt the journalistic culture and tradition (Lokot & Diakopoulos, 2016). Similarly, AI-oriented news tools, such as aggregators or fake news detectors, have emerged worldwide. For example, Tencent, a Chinese tech giant, introduced Dreamwriter in 2015, a news writing bot that many believed could lead to a new disruption in journalism (Kuai et al., 2022). More recently, OpenAI's cutting-edge tools, such as ChatGPT and DALL·E, indicate the potential of AI systems to automatically generate content based on text prompts.

While there is evidence of change, many scholars believe that the news media do not typically embrace radical (transformative) innovations, as most tend to hesitate to change newsroom rituals, procedures, strategies, and norms (Paulussen, 2016). Products and services with such a level of disruption (capable of replacing new ones) have been described as "creative destruction" in the traditional Schumpeterian literature (Hendrickx & Picone, 2020). Radical innovations are typically disruptive in nature; thus, they challenge the status quo, questioning old processes and impeding long-standing discoveries (de-Lima-Santos & Mesquita, 2021b). Other scholars have excused reluctance for various reasons, such as house cultures, lack of necessary resources, organisational tradition, legal requisites (Hodgkinson & Healey,

2011), and job loss (Munoriyarwa et al., 2021). Albeit to the reluctance and challenges, evidence from incremental and cumulative transformations over time shows that innovations in journalism continue to be essential in determining the field's current and future direction of the industry, as they might be a key to finding sustainable business models.

2.2. Thinking About Responsible Innovation in the News Industry

As the power of technology has become more evident, debates concerning responsibility have broadened (Stilgoe et al., 2013) to include benefits and harms, the dilemma of control (Collingridge, 1980), the development of pathologies of path dependency (David, 2007), and technological lock-in mechanisms (Arthur, 1989). Due to the limits of fully recognising the implications of innovations, the adverse effects often become evident with a considerable time delay. Thereby, some managers tend to be more contentious in embracing new technologies in their organisations, "leading to an incremental, not transformative change" (Voegtlin et al., 2022, p. 8). This unpredictability of innovation is inherently linked to its collective nature, where several stakeholders collaborate to develop it (Blaskó et al., 2014). Furthermore, adopters of innovations must deal with potential trade-offs between deploying emerging technologies in their organisations or lacking behind their competitors.

Approaches to RI aim to encompass this discussion by posing questions of uncertainty in multiple forms: purposes, motivations, social and political perspectives, sustainability, trajectories, and directions of innovation—particularly technological ones—as their designs can shape humans' lives by promoting or undermining specific values (van de Poel, 2009). In other words, research on RI promotes reflection on how to develop innovative processes in a transparent, interactive format so that societal actors and innovators become mutually responsive to each other with a view to the acceptability and sustainability of innovations by society and considering ethical values in their development (Von Schomberg, 2011).

In this view, four principles can be adopted to promote RI in organisations: Anticipation, Reflexivity, Inclusiveness, and Responsiveness. Anticipation is a process that faces tensions between prediction—which tends to draw particular futures—and participation, seeking to open them up to foresee potential risks, dangers, and public concerns. Reflexivity means reflecting on underlying purposes and motivations to explore innovations' impacts on society within territorial contexts. Inclusiveness is the interactive process of engaging the public and diverse stakeholders to open discussions, raise dilemmas and provide an open space to create solutions to the underlying problems of innovation. Responsiveness considers innovation's subsequent trajectory and pace to ensure its proper continuity rather

than "just another form of window-dressing" (de Hoop et al., 2016, p. 111).

In journalism, when emerging technologies are deployed, organisations must be aware of the potential risks of developing projects that are not sustainable in the long run (Voegtlin et al., 2022). Furthermore, the responsibility to do no harm should be part of the innovation process. Adhering to this line of reasoning, we contend that RI can best be conceptualised as an endorsement of relevant public values during innovation (Taebi et al., 2014), which are aligned with journalism practices.

Innovation involves creating value from ideas, which subsequently includes establishing relationships with stakeholders to facilitate its incorporation. Tech companies are essential and necessary social change agents (Aguilera et al., 2007), particularly in journalism innovation. However, their role in society comes with relevant responsibilities, like mitigating harmful practices and having reliable governance comprising institutions, structures, and procedures on multiple levels. In this respect, tech companies have long been criticised for leading many news media's business models to fail (Rashidian et al., 2018). In the RI's view, tech companies might find two paths for developing technological innovations in news media: changing the design to accommodate conflicting values or making a value trade-off deciding what should take priority in the design. The key for RI is to find and maintain the right balance between the benefits of development and social disadvantages (Voegtlin et al., 2022).

RI also has its limitations. For example, ethical elements are anchored to circumscribed territorial spaces, as different objects and social situations are ruled by other normative systems (Blaskó et al., 2014). However, material barriers can limit innovations in certain conditions. Innovations can also require abandoning or reducing engagement with various existing practices, which might have cultural roots that are not acknowledged. Additionally, even responsibly, innovation can exacerbate power imbalances as some advancements may depend on specific individuals or groups. As a result, these various stakeholders may have conflicting and opposing goals, making it difficult to develop an effective innovation strategy and therefore hindering the implementation of RI (de Hoop et al., 2016; Voegtlin et al., 2022).

2.3. The Complicated Relationship Between Digital Platforms and News Media Organisations

Digital platforms have contributed to the transformation of news content's online distribution. Many news publishers have largely become dependent on platforms as crucial traffic sources, raising concerns regarding, among others, the monetisation of news content. Additionally, digital platforms' recommendation engines use advanced machine learning algorithms to analyse individual and aggregate user data to deliver the "most relevant" news content, changing audiences' behaviours through filtering and bundling content (Capobianco, 2021).

This phenomenon has broadly resulted from platformisation, that is, "the penetration of online infrastructures, economic processes, and governmental frameworks of online platforms in multiple socioeconomic sectors and spheres of existence" (Poell et al., 2019, pp. 5–6). In other words, the infrastructural status that these platforms have acquired has permitted them to extend their reach in a myriad of domains, making them omnipresent in our online activities (Plantin & Punathambekar, 2019). Journalism has not been able to avoid the impact of platformisation, influencing many facets of editorial processes. Conversely, platforms rely on publishers to exercise "platform power," which is "contingent on [platforms'] ability to maintain relations and sustain them over time" (Nielsen & Ganter, 2022, p. 22).

Through these configurations, platforms have shown how they can enhance publishers' reliance on their services to innovate. However, studies have demonstrated that news outlets are potentially exposed to dangers caused by unanticipated changes in platforms' algorithms or business interests (Nielsen & Ganter, 2022). Therefore, the relationship between platforms and publishers has become particularly complicated. Despite that, both parties desire to collaborate, yet with significant reservations, particularly from the publishers' side, as they are becoming overly dependent on these tech companies. To this end, publishers have been attempting to counterbalance this by reconfiguring their resources' investment in platform services (Meese & Hurcombe, 2021) to "wrangle back control of their audiences, data, and revenues" (Chua & Westlund, 2022, p. 82).

Researchers have also approached this issue from the standpoint of editorial autonomy in the face of online platforms' algorithmic and automated content curation (Simon, 2022). This evokes issues of media capture, a frame used to describe situations where the dependency of news media organisations on other influential stakeholders, such as platforms, might dilute their role of holding power to account (Schiffrin, 2021). However, media capture should not only be treated as a threat to editorial autonomy, which can largely remain intact (Poell et al., 2022). It can also be considered a risk to news media organisations' infrastructural autonomy and innovation capacity (Nechushtai, 2018).

Therefore, crucial to understanding the power asymmetry that underpins the examined relationship is the concept of "infrastructural capture," which describes "situations in which an organisation tasked with scrutinizing another organization, institution, business, or industry is incapable of operating sustainably without the resources or services they provide" (Nechushtai, 2018, p. 1046). Looking at the technological innovation capacity of news media, they became constrained by reinforcing structural advantages of platforms (de-Lima-Santos & Salaverría, 2021). For example, these companies have

not only "become dominant in AI research and provision" but have also made it "difficult for many news organizations to develop AI without having to rely on tools and infrastructures provided and maintained by these companies" (Simon, 2022, p. 7). These concepts provide us with the conceptual tools to understand the implications of funding concerning innovation processes behind the digital platforms' aid to news organisations.

3. Methods

The GNI Innovation Challenge has conducted five regional innovation challenges, funding over 200 projects in 47 countries. According to Google, this scheme aims to "empower news organisations from around the world that pioneer new thinking in online journalism, develop new paths to sustainability, and better understand their communities" (GNI, 2022). To understand the realities and challenges faced by GNI beneficiaries in Africa and the Middle East, specifically regarding the adoption of innovative processes in their newsrooms, this study followed a multi-method qualitative research approach based on the analysis of the projects descriptions available on the GNI portal triangulated with semi-structured and in-depth interviews with 13 leading actors in selected organisations. The interviews were made between July and October 2022 and were conducted and recorded via Zoom. On average, they lasted 42 minutes. Table 1 lists the GNI beneficiaries interviewed and the place they are located. Broadly in these interviews, we sought to understand issues around their dependency on Google as an organisation, the kind of innovation they were supported to undertake, and the project's sustainability post-GNI funding.

Answering these questions helped us to understand, at a broader level, the power dynamics that link the GNI to its beneficiaries.

The data-gathering process was fraught with challenges. These organisations were selected based on the list available on the GNI website. The final list of 13 beneficiaries is based on a snowball sampling to identify others, as it was not possible to interview representatives of all GNI beneficiaries due to the unavailability of potential interviewees, as many of our repeated requests went unanswered. Some contacts declined our request, unaware of the GNI project that their organisation had partaken in, while others retracted their participation at the last minute. Thus, we did not follow a purposive sampling strategy. Considering these limitations, we aimed for geographical representation. We secured interviews from at least one representative from North and Central Africa, and the Middle East. In addition, we sought to cultivate a representative sample that reflects the ideological diversity and variety of media types (e.g., digital native and traditional print-first outlets).

For our data analysis, we conducted an inductive thematic analysis after all authors transcribed the interviews. This is a widely used method to draw themes from qualitative data, particularly in datasets composed of interviews (Braun & Clark, 2006). With an inductive approach, the identified themes emerged from the data themselves without trying to fit them into a pre-existing coding frame or the researcher's analytic preconceptions. The inductive thematic analysis used for this study was performed using NVivo, a common software to assist in qualitative research. After that, we reported our findings combining them with our theoretical framework to create a thematic narrative.

Table 1. A breakdown of the organisations and their geographical location whose representatives were interviewed.

Code	Organisation	Country	Type of Organisation
R1	Egab (Official incorporated name: Egab for Digital Content)	Egypt	Digital native media
R2	Africa Uncensored	Kenya	Digital native media
R3	TelQuel Digital	Morocco	Digital native media
R4	Richmond Hill Media Limited (Ripples Nigeria)	Nigeria	Legacy media
R5	Stears News Limited (Operating Company), Stears Information Services (Holding Company)	Nigeria	Legacy media
R6	Food For Mzansi, a digital news platform of Farmers For Change (Pty) Ltd	South Africa	Digital native media
R7	263 Chat	Zimbabwe	Digital native media
R8	WhiteBeard	Lebanon	Start-up
R9	Daraj Media	Lebanon	Digital native media
R10	Community Media Network	Jordan	Digital native media
R11	Sowt Podcasting and Training L.L.C.	Jordan	Digital native media
R12	L'Orient-Le Jour/Société Générale de Presse et d'Édition SAL	Lebanon	Legacy media
R13	Raseef22 dba Levant Laboratories SAL	Lebanon	Digital native media

Note: Codes were used in the presentation of findings.

4. Findings

In Africa and the Middle East, GNI Innovation Challenge had granted funds for 43 projects until 2021, 22 (51,16%) in 2019 and 21 (48.84%) in 2021. These projects were concentrated in 18 countries in this geographic region. As shown in Figure 1, many countries were not contemplated with these grants, expanding the power asymmetry in this region.

The datafication and platformisation of the digital infrastructure create power asymmetries between those who embrace technological knowledge and those who are surviving in the digital age (Nielsen & Ganter, 2022; Poell et al., 2022). Using the typology proposed by de-Lima-Santos and Mesquita (2023), we classified these projects according to their aims to identify these discrepancies. According to the project description, our categorisation focused on aspects of the data we were most interested in exploring. To avoid projects overlapping multiple categories, we followed the priority based on what was mentioned. First, if the description states the use of emerging technologies, such as AI or immersive tools, it would be classified as Technological Innovation. Second, if the project focused on reaching new or niche audiences, Audience Building was used. Lastly, the Business Model applies to projects that mention new revenue streams or strategic goals.

According to this typology, most of these projects focused on developing a business model for these organisations (about 42%). To a lesser extent, these projects aimed to bring emerging technological innovations (30%) or new audiences (28%). As shown in Table 2, the media organisations that used GNI grants to introduce novel technologies in their newsrooms were predominantly found in Israel and Jordan, which might suggest a more enabling environment for digital media infrastructures. As stated in their descriptions, most projects aimed to bring AI solutions to newsrooms.

4.1. The Reflexivity and Motivations Behind Technological Innovations

Having a broader view of these projects and looking at smaller geographic regions, we can see that the Middle East led the emerging technologies development. For example, the Turkish company Demirören Media proposed an AI system that categorises news content and offers personalised options to readers on the topics they are interested in, aiming to increase readers' engagement on its platforms through microsegment level. Similarly, the Jordan news outlet Al Bawaba proposed a solution to leverage its digital archive using Google Cloud and a trained AI system capable of semantically understanding and tagging Arabic content.
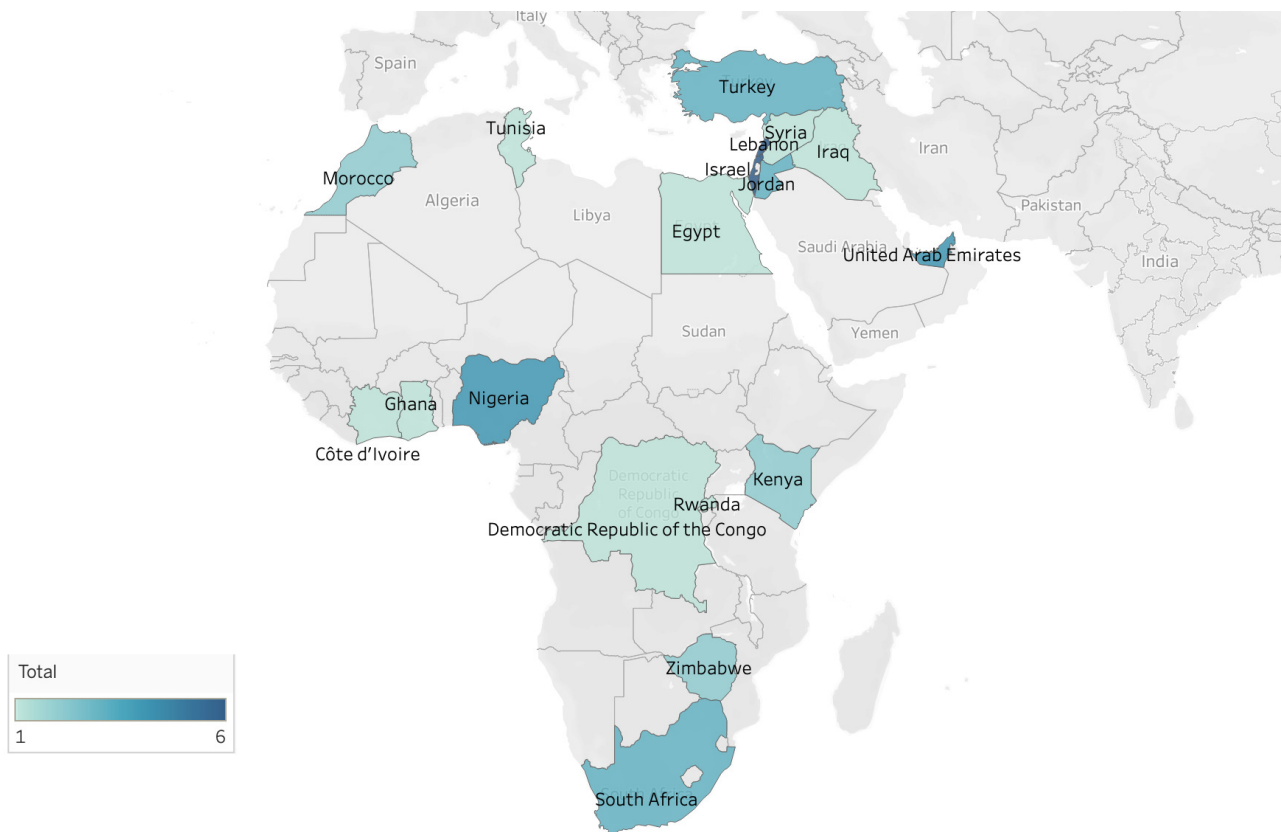
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Figure 1. Countries awarded by GNI Innovation Challenge grant in Africa and the Middle East.

Table 2. Typology of projects in different countries in Africa and the Middle East.

Typology	Country	Count
Technological Innovation	Israel	5
	Jordan	2
	United Arab Emirates	1
	Syria	1
	Nigeria	1
	Morocco	1
	Kenya	1
	Iraq	1
Audience Building	United Arab Emirates	3
	Zimbabwe	2
	Turkey	2
	South Africa	2
	Rwanda	1
	Nigeria	1
	Lebanon	1
Business Model	Lebanon	5
	Nigeria	2
	Turkey	1
	Tunisia	1
	South Africa	1
	Morocco	1
	Kenya	1
	Jordan	1
	Israel	1
	Ghana	1
	Egypt	1
	Côte d'Ivoire	1
	Congo	1

Other organisations embraced the logic of aggregation and automation to negotiate transactions between markets and social entities, informing the public about governance systems and institutions. For example, Community Media Network (Jordan) used Google's grant to build Rabet, which means "link" in Arabic, a platform that aggregated various data of the top 500 Jordanian officials and members of parliament, former ministers, and influential figures (such as writers, party people, artists, and sports people) to show the connection between them, based on their family, work, and business. According to R10, this tool "allows us to have more transparency when appointments are made at any level." For example, one law in Jordan states "that a member of parliament or the government is not allowed to own any company that deals with the government" nor can "be a minister or a member of Parliament and then apply for a tender or work tender" (R10). This allows them to investigate power abuses in the government.

In North and East Africa, organisations focused on developing solutions that could help them to create a sustainable business model, such as an online platform to structure, validate, and enable their projects. According to R1, GNI Innovation Challenge helped her to scale her business from a minimum viable product to a valuable, scalable process that drives growth. Egab is a platform that connects local journalists across Africa and the Middle East and editors of regional and international media outlets to pitch stories in any format or language. Focusing on solutions journalism, the platform's big motto is "learning by doing" (R1), which includes feedback for journalists to learn and implement in the next pitch:

> We reject many pitches, but the difference is that we say why. We want the journalist to learn. I always say we're a business. Yes, we are for profit, but we have solid social goals. Our ultimate goal is for these journalists to be able to pitch and produce stories without our help. (R1)

For two years, "instead of putting a lot of money into building an online platform that no one would use, my idea was to start with emails and a Google workspace. This has been our operation until we got the grant" (R1).

In Kenya, Africa Uncensored brought new ways to produce news content by giving voice to communities not always heard by the news media. Focusing on

crowdsourcing information from people living in informal settlements in Nairobi, Africa Uncensored created a direct channel for the public to air their issues while providing a channel for the organisation to map these issues and better cover them: "We decided this channel will be via SMS because it is very cheap in Kenya. It's accessible to many people, and many mobile plans have it for free" (R2). The solution created by Africa Uncensored would aggregate these messages received from the public in a portal that journalists could check and build stories from these texts and images.

In Southern Africa, examples of building new audiences are commonly found. Focused on citizen journalism, Food For Mzansi (South Africa) targeted three agricultural communities in its pitch for Google, aiming to increase the literacy of South African youth and young small-scale farmers in these regions by involving them in news reporting processes. The organisation was in a "start-up" phase when its team saw the GNI call:

> We are three and a half years old at the moment. When we applied, we were in our first or early second year. As a start-up, we were always looking for cash, which is very limited [in the news industry]. So, we're always looking around for grant opportunities. (R6)

Similarly, the news outlet 263Chat (Zimbabwe) proposed to build new audiences by presenting an alternative to radio by establishing a podcast network, as it was eager to find another way to create audiences beyond its website limited to those people who have internet access. 263Chat has complemented its offer by creating an e-paper—which is sent out to its "54,000 subscribers daily (Monday to Friday)" (R7)—, an SMS platform, and a podcast, allowing Zimbabweans access to its content in different formats and not always requiring internet connection.

4.2. The Challenges of Anticipating the Use of Technological Innovations in Newsrooms

Our respondents highlighted several challenges to implementing technological innovations in their countries. A common hurdle among our respondents is the lack of skills to develop these emerging technologies in their countries. Stears (Nigeria) used the grant to create a billing infrastructure to collect regular payments from readers, mainly focusing on "integrating with African payment gateways and receiving payment from African audiences" (R5). Therefore, it is essential to find "the right talent," which is not an easy task, as these professionals need "to complement particular parts of the [media] business" (R5).

Our interviewee from the Lebanese organisation Daraj Media shared the same feeling. R9 told us that the news outlet "took literally more than half of the grant duration to figure out a team and who we are going to work with." LIFT-im is an innovation lab based at Daraj Media, aiming to bring emerging technologies to newsrooms. It is a project that requires high knowledge of advanced technologies such as AI:

> We came across a company in Jordan that is doing outstanding work. They proposed to work with us on deploying AI solutions that we imagined, but it was costly. We would have to pay much more than what we had received from Google. (R9)

An in-house team was also expensive for the organisation, as salaries for tech professionals tend to be higher. Besides that, there is intense competition from foreign companies and organisations outside the news industry for technologists.

As a result, it took a long time for the organisation to figure out whom to work with, as it required the team to know about AI, be native English and Arabic speakers, and have a genuine interest in media: "You need to tick too many boxes. If they exist, they are already employed and we can't afford them," explained R9. The solution came up through a collaboration between academia and Daraj. The news organization found a professor based in Paris (France) with a team in Beirut who agreed to become part of the LIFT-im lab and work together on these projects. The team has developed an AI-driven tool to look at Twitter in real-time to detect tweets generated by bots from the ones created by actual people, helping journalists to analyse how bots lead the conversation and what kind of impact they might have in the public discourse in Lebanon.

Other organisations relied on third-party companies to support them in developing their proposals. The Lebanese WhiteBeard is a team of engineers, designers, and managers who offer software solutions and insightful guidance for companies, mainly specialised in the news industry, as one of its co-founders worked for many years for the newspaper *L'Orient-Le Jour* (Lebanon). This tech company was responsible for helping other news organisations to deploy their innovative solutions using their GNI grants, such as *L'Orient-Le Jour*, Nida al Watan, and Rasseff22. Whitebeard also received a GNI grant to develop a Customer Relationship Management solution for smaller news outlets, allowing these newsrooms to manage subscriptions better using a tool that combines a metered paywall and a locked system based on data signals from audiences.

The lack of technological knowledge in the region might not have been anticipated by these organisations or Google, which did not work with them to develop these projects. For example, Citizen Bulletin also relied on other organisations to build the project. Once the existing funding was over, they folded.

All respondents bemoaned that their GNI were developed independently without help from Google. We learned that the tech giant does not support these news organisations with the needed skills for deploying these technologies, and the meetings are limited

to checking status. Some respondents mentioned that Google outsourced the whole process to third-party companies. It must be said that others noted that, in cases when they had to deal with former journalists working at Google, they had a more positive experience as former journalists, "they understood our reality better" (R9). Additionally, a few respondents noted that the process was very smooth compared to other funds they got.

4.3. The Inclusiveness of Technological Innovations and Its Limitations

By creating more diverse project teams or involving different stakeholders, some projects brought this inclusiveness approach to their projects. Outsourcing is a tool that helps in this process. However, specific organisations, particularly those with headquarters abroad, ended up developing their projects in other countries outside Africa or the Middle East. For example, Legit.ng (Nigeria) did not have information about the ReCo project, a content recommendation tool, as "it was made overseas," in its office in Ukraine, according to a representative who did not agree to be interviewed by us. Pulse.ng (Nigeria) is owned by the parent company, Ringier, based in Switzerland. We contacted a representative who also knew nothing about the project. In this aspect, the inclusiveness of these projects reveals to be poor. In some respects, being led and developed by organisations in Western countries, some projects limit their possibilities to contribute to local development and mitigate the low level of technological development in the region.

Other organisations brought an inclusive spirit to their projects by engaging new publics or providing an open space to create solutions for their problems, such as Africa Uncensored (Kenya), 263Chat (Zimbabwe), and Egab (Egypt). Similarly, EcoNai+ from Ripples Nigeria promises to track and mark changes to environmental phenomena using geo-journalism and crowdsourcing data. This platform allows users to collect, visualise, and report on data from communities impacted by climate change. According to R4, EcoNai+ is an ecosystem of:

> A couple of tools to help across the value chain of the environmental report, tracking, data capture or unreported to help journalists, researchers, scientists, policy formulators, as well as community members, convert their fears and their worries and anxieties about the environment into actual data that can help to drive and attract intervention for change. (R4)

By looking at "the most disadvantaged and underserved communities in a country" (R4), EcoNai+ brings this aspect of inclusiveness of technological innovations. However, it comes with limitations: "Geo-journalism involves a lot of technical training, acquisition of skills, and some technical tools," requiring training for people to learn how to use these tools. Furthermore, technological structures involve multiple owners, actors, and

stakeholders that embroil the datafication and technical processes (Parks & Starosielski, 2015). To avoid it, GeoViz+, a tool to visualise data, relies on an easy-to-use approach of out-of-the-box tools, such as Flourish and DataWrapper (see de-Lima-Santos et al., 2021).

Equally important is to think about the technologies available to citizens. The reliance on SMS by Africa Uncensored helps to reach wider audiences in Kenya, as it "is very cheap, and a lot of people have in their mobile plans for free" (R2). Food For Mzansi targeted three agricultural communities as the organisation sought to create "community impact" (R6) by giving voice to these African youth and young small-scale farmers in these regions. The same goal had TelQuel Digital using the grant to "create podcasts focused on Moroccans living abroad" (R3).

4.4. The Responsiveness and Continuity of These Projects

All these grants are co-funded, meaning these news outlets still need to invest money into developing these projects. While some organisations use staff hours as part of the co-funding scheme, others had to invest money to develop these projects, as the grants were insufficient to cover them. The interviewees did not precisely describe the co-funding mechanism. While some mentioned that Google sponsored 70% of the project, others said it was 60% or 80% for them. Given this lack of common standards, it is hard to understand how Google decides on the grant's value. Some respondents bemoaned that they requested more funds in their application, but Google decided to give them less.

Some technologies were developed to a broader scope. EcoNai+, for instance, has the mission to contribute to solving the problem of climate change using technological media innovation. For R4, this solution allows Ripplers to become a "media tech company," preparing for the industry's future and potentially touting new revenue streams. Africa Uncensored also saw the potential of its tool during the Covid-19 pandemic for health function. Therefore, the team decided to explore this function to fundraise it for then expand it to other scopes.

Conversely, other organisations have yet to finalise their development even with the end of the grant period. For example, Community Media Network has not yet made Rabet available. According to R10, the political scenario in Jordan hampered its release:

> I don't know how successful it will be. We're going through two different problems. First, the space for civil societies is shrinking in our country. We are under a lot of pressure, myself and my organisation, and the tax people suddenly start to be interested in us, and we're facing a lot of bureaucracy. We're worried that if we put this up online publicly, we will get in further trouble. We're trying to limit the problem.

On the other hand, we might have a new government. We want this to be available, at least to key editors and journalists, so they can use the information. (R10)

As technologies require constant reassessments and upgrades to keep pace with changing circumstances and the evolution of the industry, it is also essential that news outlets can respond adequately and timely to them. However, most organisations do not seem to have a clear path to continue developing these projects. Half of the organisations interviewed mentioned that they have applied or will apply for further funding from GNI Innovation Challenge. Some respondents said they would apply for other GNI grants, such as Equity Fund, to continue their projects. These answers stress the technological innovations' pathologies emerging in the news industry, such as path dependency (David, 2007) and technological lock-in mechanisms (Arthur, 1989).

Equally problematic was that some organisations mentioned the need to fundraise money from philanthropic institutions to continue developing these projects. This clearly shows that some projects are not yet sustainable. As a result, news outlets are not prepared to carry on these projects, putting at risk their continuity and clearly showing that Google did not help these organisations to mitigate the costs of these technological innovations. R2 clearly stated: "In the end, we realised it would be costly running this project after the grant is over. So, we decided we are going to continue it for a little bit."

5. Discussion and Conclusions

Our study shows a discrepancy in the deployment of emerging technological innovations in Africa and the Middle East. While North and West African news outlets rely primarily on the traditional use of technologies to create or develop tools to support their organisations' business models, in the Middle East, more emerging technologies are being deployed with GNI Innovation Challenge grant, particularly in Israel, Jordan, and Lebanon. In Southern Africa, the focus is on building new audiences. These different approaches reflect on the level of technological development in these regions and show how these innovations have a diverse range of solutions, from the most advanced (e.g., AI and immersive technologies) to the simplest ones (e.g., SMS integration systems and online portals). This shows how diverse and complex this geographical region is.

In the Global South, philanthropic routines lead news organisations, notably smaller and independent ones, to concentrate almost exclusively on funds provided by these institutions to sustain their business (Lugo-Ocando, 2020). While news organisations fail to generate enough revenue streams to create sustainable business models, the reliance on "Silicon Valley for funding and organisational imperatives" (Poell et al., 2022, p. 12) initially

appeared as a promising path for sustainability. By giving this one-year grant, Google expects news organisations to solve their long financial sustainability problem and adopt technological innovation that will disrupt their business models and put them on the path to sustainability. Google seems to frame journalistic innovation as achievable only through its proprietary and technological capacities. However, as some of these organisations highlighted, there are limitations to developing these projects in the region due to the lack of knowledgeable IT personnel, high hiring costs, and reliance on third-party vendors. As a result, most projects ended up being minimum viable products of their original idea.

Furthermore, Google expects news outlets to co-fund these projects for one year. Many news organisations do not have the resources to co-finance these projects, which could indicate the lack of grantees in many African countries. Conversely, as some respondents mentioned, these GNI grants leave a feeling of validation for these pitches, giving the hope that these technological innovations will help these organisations in the future.

Thus, tech companies set the terms and conditions, leading news organisations to adapt incessantly to their needs. This shows how the power and functions provided by "Big Tech" platforms, such as Google and Facebook, continue to pervade news organisations, sustaining power asymmetries. As a result, to develop journalistic innovation in their newsrooms, grants such as the GNI Innovation Challenge seem to be the path of least resistance. However, what Google does with the GNI Innovation Challenge is an extension of "philanthrocapitalism," which Bishop and Green (2008) define as private wealth that "can advance the public good by applying entrepreneurial skills, speed, and score-keeping to our most persistent challenges" (p. ix). Similarly, these distinct regional characteristics demonstrate that philanthrocapitalism does not solve the inherent journalistic institutional crisis (Reese, 2021).

We believe that these grants could have the potential to become a global benchmark. For this, it is necessary not simply to offer money for the development of digital infrastructures, but also to provide support for these organisations during and beyond the development process, allowing them to fully launch a solution that offers maximum value to boost their overall presence in the digital news ecosystem. In other words, the design and deployment of the awarded projects should have decision support from Google, which could help news outlets to develop their technological innovations in good faith and with careful approaches, following RI principles (Voegtlin et al., 2022). Thus, these projects could guarantee new revenue streams for these organisations, while also bringing them to a sustainable path.

However, the examples presented in this study, such as Al Bawaba's proposal to utilise Google Cloud for its archive, demonstrate how news outlets increasingly rely on platforms' infrastructures to build technological

solutions (de-Lima-Santos & Salaverría, 2021; Parks & Starosielski, 2015). This situation further reinforces the infrastructural dependency of journalism on tech giants (Nechushtai, 2018). Additionally, the beneficiaries' decision to outsource critical parts of the projects to third-party companies did not allow them to acquire valuable knowledge that could help them become more independent. We contend that it further fuels the underlying power asymmetries between news media and platforms. As a result, dependency is not limited to infrastructure and resources but also knowledge, networks, and expertise.

Consequently, this article contributes to the critical discussion concerning the issue of news media organisations' capacity to innovate in an environment where large tech companies effectively control many of the tools and processes required to do so. Our study focuses on overlooked regions, namely Africa and the Middle East, where journalists are often in dire need of funding, thus risking a further entrenchment of contingency on platforms. Last, we wish to contribute to the ongoing dialogue about how platforms' programs could be shaped and executed to empower newsrooms. Even if it might not always be possible to prevent adverse effects from occurring, it is at least helpful to anticipate them, be responsive, and attempt to mitigate their impacts as much as possible.

Due to the limitations of language and vast scope, we could not reach out to every Google-funded organisation in the region. Although this limits our study, as it does not represent the entire variety of technological innovations adopted by these grantees, we combined methods to achieve a representative model that depicts the essential standard features to understand the influence of the GNI Innovation Challenge across the region. Similarly, some organisations were afraid of sharing data about these projects, as they had signed non-disclosure agreements with Google, restricting what they could share. Future studies could explore how these news outlets sustain some of these projects after the grant period and how these organisations continue developing emergent technologies in their newsrooms. A comparative analysis of the GNI Innovation Challenge between the Global South and a more privileged market, such as North America and the European Union, could also illuminate particular beneficiaries' treatments by Google. Despite these limitations, our study adds to the existing literature by demonstrating the power asymmetries between those who serve as the backbone for technological innovation processes and those dependent on these institutions.

In conclusion, these projects help us understand the challenges news outlets experienced in Africa and the Middle East. We can also perceive the processes involved in developing emerging technological innovations in a diverse geography area, contributing to broader stakeholders' visions of RI and helping them to adopt best practices that could empower them to create better solutions. Furthermore, the power dynamics embedded in these projects cannot be ignored as they influence the levels and trajectories of innovation dependency that bind Google and the project beneficiaries. Overall, this study demonstrated that dependence and power imbalance might negatively affect RI in the news industry.

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Conflict of Interests

The authors declare no conflict of interests.

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