

Peer-Reviewed Original Article

Reporting Web3: Challenges of Technology Journalism in Serving Informed Publics in Europe

Katja Leifheit, Judith Pies, Hilde Van den Bulck, Alessandro D'Arma, Marius Dragomir, Minna Horowitz, Marta Rodríguez-Castro, Martín Vaz-Álvarez

Abstract: This article presents a quality assessment of Web3 coverage in mainstream media across four European countries—Germany, Spain, the Netherlands, and the United Kingdom—as a starting point for discussing the standards of technology journalism that can meaningfully support an informed public. It begins with an overview of existing research on technology journalism and its role in fostering informed citizenry. This is followed by a mixed-methods content analysis, combining quantitative and qualitative approaches, to examine how the complex topic of Web3 is reported in the four European countries. Insights from journalists and editors contextualize the analysis. The findings highlight three key challenges across all countries: an event-driven rather than process-oriented focus, a narrow thematic scope on the financial applications of Web3 technology (cryptocurrencies), and a relatively limited diversity of sources. The article concludes by exploring how these challenges—and the broader trends in Web3 reporting—shed light on the potential and pitfalls of technology journalism in contemporary societies.

Keywords: Technology journalism, international comparative analysis, Web3, blockchain, crypto, quantitative and qualitative content analysis, quality journalism

Author information:

Katja Leifheit is a research associate at Stuttgart Media University, where she previously studied Audiovisual Media (B.Eng.) and Media Management (M.A.). She is pursuing a PhD on the adoption of generative artificial intelligence in the film and television industry as an external doctoral candidate at the Chair of Innovation Management & Media at Bauhaus-Universität Weimar.

ORCID: 0009-0009-0174-4275

E-Mail: leifheit@hdm-stuttgart.de

Judith Pies is a professor for data journalism at Stuttgart Media University. She holds a PhD in communication science from the University of Erfurt. Her research focus is on international and transcultural journalism with a special focus on the MENA region, media in conflict and media

accountability. In 2018, she founded the organization Medien | Kompetenz | International, which offers international media consultancy and training in media literacy.

ORCID: 0000-0001-6515-3356

E-Mail: pies@hdm-stuttgart.de

Hilde Van den Bulck is professor and head of the department of communication at Drexel University. She combines expertise in media structures and policies with expertise in media cultures, focusing on the impact of digitalization on legacy media, especially public service media. Her recent project focuses on the impact of datafication, algorithmisation and platformisation on citizens' epistemic agency, analysing how media can help solve rather than contribute to the epistemic crisis in the digitalized public sphere.

ORCID: 0000-0002-3858-1897

E-Mail: hdv26@drexel.edu

Alessandro D'Arma is a Reader in the School of Media and Communication at the University of Westminster, where he also serves as Director of the School's doctoral programme. His research focuses on communications policy, with particular attention to public service media, the politics of media policy, and the digital transformation of the media industries.

ORCID: 0000-0002-8845-2030

E-Mail: a.darma@westminster.ac.uk

Marius Dragomir is the director of the Media and Journalism Research Center. He works as a professor at Central European University (CEU) in Vienna where he teaches journalism and research design courses as well as practical classes on advocacy and policy engagement. He is also a researcher at the University of Santiago de Compostela. Over the last 35 years, Dragomir has specialized in areas, such as media and communication regulation, digital media, public service media governance, broadcasting, journalism business models and media sustainability, and media ownership regulation. He is currently leading a dozen research projects, among them Media Influence Matrix, Global Media Finances and State Media Monitor. In 2025, Dragomir received the Media and Democracy Karol Jakubowicz Award 2025 for the Media Capture Monitoring Report, a research report by the Media and Journalism Research Center and the International Press Institute.

ORCID: 0000-0003-2078-348X

E-Mail: mdragomir@journalismresearch.org

Minna Aslama Horowitz, PhD, is a researcher and instructor at the University of Helsinki specializing in communications policy, media trust, and digital governance. She has published widely on transformations of public service media, platform regulation, information disorders, and digital information literacy. In addition to her academic research, she collaborates with governmental and non-governmental organizations, as well as policy institutions. Currently, she serves as the Interaction Coordinator for the Finnish research consortium DECA (<https://www.decatutkimus.fi/home>), is a member of the Nordic Observatory for Digital Media and Information Disorder (<https://www.nordishub.eu/>) and is a Fellow at the Media and Journalism Research Center (<https://journalismresearch.org/>).

ORCID: 0000-0003-1347-6166

E-Mail: minna.aslama@helsinki.fi

Marta Rodríguez Castro is an Assistant Professor in the Department of Communication Sciences at the Universidade de Santiago de Compostela (USC), where she is part of the research group Novos Medios. She holds a PhD in Contemporary Communication and Information (International Mention, cum laude, 2021) and completed a postdoctoral stay at the University of Porto in 2022. Her research focuses on Public Service Media, particularly on public value creation, governance, funding, and regulation within European communication policies. She has authored numerous articles in leading journals such as Journalism Studies, European Journal of Communication, Journal of Information Policy, and Journalism and Media and edited several books. Marta has participated in several

national research projects, conducted research stays at CEU (Budapest) and the Hans-Bredow-Institut (Hamburg), and serves on the boards of the International Association of Public Media Researchers (IAPMR), AGACOM and the IAMCR working group “Public Media”.

ORCID: 0000-0002-1399-9154

E-Mail: m.rodriquez.castro@usc.gal

Martín Vaz-Álvarez is an Assistant Professor at the Faculty of Communication Sciences of the University of Santiago de Compostela (USC), Extraordinary PhD Prize winner in Contemporary Communication and Information by the same university, and member of the Novos Medios Research Group, where he works on technology, artificial intelligence and journalistic values, co-creation, and innovation in Public Service Media. He is also deputy-director for Innovation at the RTVE-USC Chair for the study of European PSM, senior expert at the Media and Journalism Research Center, and member of IDEGA (Institute for the Economic Development of Galicia).

His research explores the intersection between AI, journalism, and media innovation, with a focus on governance, participation, and digital transformation in public media systems. He has taken part in several national and European R&D projects and has been a visiting researcher at the Vrije Universiteit Brussel (SMIT) and at the Stockholm School of Economics in Riga.

Martín has published extensively in leading international journals, including *Journalism*, *Journalism Studies*, *Communication & Society*, *El Profesional de la Información*, and *Frontiers in Communication* and has also authored books and chapters in edited volumes.

ORCID: 0000-0002-4848-9795

E-Mail: martin.vaz.alvarez@usc.gal

Acknowledgment

This work was partially supported by the Strategic Research Council (SRC) established within the Research Council of Finland under Grant number 352557.

This publication is also part of the project titled “Creation of a platform for generating chatbots through AI for communicating the public value of PSM” (Ref. PDC2023-145885-I00), funded by MCIN/AEI/10.13039/501100011033 and the European Union.

To cite this article: Leifheit, Katja; Pies, Judith; D’Arma, Alessandro; Dragomir, Marius; Aslama Horowitz, Minna; Rodriguez Castro, Marta; Van den Bulck; Hilde; Vaz-Álvarez, Martín (2026). Reporting Web3: Challenges of Technology Journalism in Serving Informed Publics in Europe. *Global Media Journal – German Edition*, 16(1), DOI: 10.60678/chxj7t92

The Precarity of Technology Journalism

In May 2024, the Nieman Journalism Lab published an article that called for “debugging tech journalism,” claiming: “A huge proportion of tech journalism is characterized by scandals, sensationalism and shoddy research. Can we fix it?” (Lee, 2024). Taking the case of the coverage of Web3 in four European countries, this contribution combines insights from content analysis and interviews with journalists writing about technology to explore the nature and precarity of technology journalism today. By examining cases across multiple European countries, the study adopts an international comparative perspective that helps to identify both shared structural challenges of technology journalism and variations shaped by different media systems, regulatory environments, and journalistic cultures.

Web3, a term coined in 2014 by Gavin Wood, has become shorthand for “the project of rewiring how the web works, using blockchain to change how information is stored, shared and owned” (Stackpole, 2022). The idea gained traction in 2021, garnering academic (e.g., Fenwick & Jurcys, 2022) and (specialized) media (e.g., Edelman, 2021) attention. By 2024, it seemed journalistic attention had turned to (generative) artificial intelligence (AI) (Nielsen, 2024), only for Web3-related topics to resurface in 2025, following U.S. President Trump’s crypto strategy (Kostanic, 2025). This brief history suggests fickle and hype-based reporting (Nielsen, 2024). However, most technologies that were media hype at one point do not vanish post-hype as researchers, corporations, policymakers, and others continue to work on and with them, even if media attention decreases or shifts focus. The latter is problematic as these technologies tend to slowly enter the daily lives of citizens and/or impact wider society. Indeed, research into Web3’s cryptocurrencies suggests its impact on wealth (Henley & Partners, 2024) and wealth (in)equalities (Sai et al., 2021), and the environment (Brevini, 2022), amongst other things. This impact suggests the importance for citizens to understand the complexity of Web3 and its developments, calling on technology journalism to ongoingly perform this crucial informational function.

To do so, journalists must thoroughly understand how the technology, in this case Web3, works and keep up with its continuous developments. This is more easily accomplished by journalists working for specialist publications that cater to tech-savvy audiences, but a well-informed citizenry requires good technology journalism in mainstream media, too (Lee, 2024). However, with mainstream media’s business models under pressure, many newsrooms can no longer afford dedicated, tech-savvy specialists, raising the question of who in a newsroom can continuously observe and translate complex technology such as Web3 into easy-to-understand coverage. What is more, lacking in-house expertise, newsrooms rely on materials and information from developing science and technology companies. As a result, according to Brennen et al. (2022), “technology journalism remains interlaced with the technology industry in ways that may undercut growing calls for critical, rigorous, and independent technology reporting” (p. 1479).

This article aims to (1) provide and contextualise a quantitative and quality assessment of Web3 coverage of mainstream media in four European countries— Germany, Spain, the Netherlands and the UK—as an inroad to discussing the criteria for technology journalism that enable it to contribute meaningfully to an informed citizenry. The article takes (2) a comparative approach, as this allows us to distinguish between general production patterns in how Web3 is covered in mainstream media and national specificities that may inform both scholarly understanding and policy recommendations. Therefore, the article draws on a dataset developed through a broader media-mapping project examining newsrooms and journalists covering blockchain and Web3 in the four countries.

This contribution first discusses the theoretical role of technology journalism for informed publics, followed by an overview of existing literature on technology journalism and the research questions. After explaining the methods and used data, it describes the results from a quantitative and qualitative content analysis contextualized by perspectives from professionals in the field of technology journalism. It concludes with a discussion of the challenges and opportunities that the analyses on Web3 coverage reveal regarding the role of technology journalism for informed publics in today's society.

Technology and Informed Citizenry

Technology journalism is part of the idea of news media and journalism as the fourth estate (Schultz, 1998), i.e. normative expectations for journalism to monitor society critically, provide orientation to citizens, contribute to opinion formation and speak truth to power (e.g., Christians et al., 2009; Esser & Neuberger, 2019; Harcup & O'Neill, 2001). Technology journalists are expected to hold accountable the various actors involved in designing, building, regulating, trading and using technologies (Watson, 2016). From an individual-as-citizen perspective, journalism is a pre-eminent actor in securing the right to information, which includes access to democratically relevant and high-quality information. At the same time, today's citizen is what Schudson (1999) calls "monitorial". They commit their time and energy to information on their own terms (Deuze, 2008). Marciel (2023) distinguishes between citizens' interests, i.e. topics and content that attract individuals due to personal curiosity or entertainment value, and citizens' needs. The latter refers to information essential for citizens to fulfil their roles in a democracy, such as understanding policies, societal challenges, scientific developments, and technological innovations affecting governance. From this perspective, democracies require citizens to receive both the information they find interesting and entertaining and the information they need. This corresponds with the variety of roles and functions journalists see for themselves around the globe (Hanitzsch, 2011; Standaert et al., 2021). Within this idea of citizens as audiences in need of information, researchers distinguish general and special interest or niche journalism based on the targeted audiences (Gorgulu, 2019) and its functions (Donges, 2023): general interest or niche journalism targets

broad audiences, special interest journalism caters to specific, niche audiences with shared expertise or professional interests (e.g., scientific communities, industry professionals). General interest journalism facilitates society's self-observation, translating specialized knowledge into accessible information. It emphasizes inclusivity and aims to cover a wide range of topics relevant to society. Special interest or niche journalism goes beyond self-observation to support the self-organization of specialized communities, fostering internal communication and identity-building. It often involves more technical language and in-depth coverage of a particular field or topic, less relevant to the general public (Donges, 2023; Grenz & Donges, 2018).

These ideals of journalism play out variably in the reality of the ongoing structural changes in journalism that Nielsen and Levy (2010) capture under Schumpeter's (1942) economic concept of "creative destruction," (p. 83) referencing the techno-economic changes undermining journalism in various ways. Digitalization in particular has profoundly affected news media through interrelated (Kuiken et al., 2017) processes of ownership consolidation (Hendrickx, 2020), undermining traditional business models, forcing convergence of news production (Larrondo et al., 2016), and news production disruptions (Santana & Dozier, 2019). These changes are uneven and directed by national specifics and path dependencies, including market structure and media regulation, the presence of public service media, the size of the market, and audience demand. This unevenness underscores the importance of an international comparative approach, as it enables us to see how systemic differences across countries condition the ability of technology journalism to meet its democratic obligations. As such, understanding the impact of these shifts on technology journalism requires a comparative approach.

Still, Nielsen and Levy (2010) identify three main challenges that affect commercial legacy news organizations, particularly: loss of commercial revenue through economic shifts, increased competition for attention, and long-term political, social, and economic changes, including persistent neoliberalism. These shifts have a profound impact on journalists' work resulting in an increase of temporary and project-based employment or citizens accessing, using, and generating content themselves (Nielsen & Levy, 2010). We argue, that technology journalism is also affected, as it needs to claim its space in shrinking, de-specializing newsrooms with limited financial resources and limited time for journalists to engage in more in-depth reporting and to stay up-to-date on specialized topics.

Previous Research on Technology Journalism

Using the term technology journalism implies that it differs from general journalism. Some studies consider technology journalism as a subgroup of science (Verhoeven, 2010), lifestyle (Hanusch, 2012), or business journalism (Usher, 2012); others see it as a beat of its own, such as economy or sports journalism, as it reflects topics or societal domains that have become differentiated (Loosen et al., 2022, p.

42). Research shows technology journalists perceive their roles as disseminators of innovation, audience guides, and persons who explain complicated technology matters and provide entertainment (Geiß et al., 2013). Based on the audience served, many researchers define technology journalism as catering to an audience with a special interest in technology. This is particularly true for certain technologies such as AI (Brennen et al., 2021; Johanssen & Wang, 2021; Natale & Ballatore, 2017). However, our normative reflections suggest all citizens require information about the latest technological developments, their everyday impact, and societal implications. In practice, technology journalism can be found in both special and general interest media. In this article, we look primarily at journalism geared to broad audiences in four European countries and at journalism's ability to serve citizens' need to make informed decisions concerning questions around technology that impacts their lives and societies, focusing on Web3. However, we acknowledge a necessary exchange between general interest and specialized technology journalism.

If we consider technology journalism as a beat of its own, we need to define its topic. Recent research on technology journalism encompasses a broad range of technologies, from nanotechnology (Anderson et al., 2005; Cacciatore et al., 2012) to augmented reality (Laor et al., 2022) and, recently, AI (Brennen et al., 2022; Chuan et al., 2019; Fast & Horvitz, 2017). Other researchers focus their study of technology journalism on information and communication technologies (ICT) (Geiß et al., 2013). Approaches from the sociology of technology and innovation theory help to structure the potential field of coverage. Technology sociology traditionally distinguishes between the production and the consumption side of technology (Torpey, 2020). It further considers the "micro level," which looks into social interactions and technology, the "meso level," which focuses on the interrelationship between organizations (e.g., industrial companies) and technology, and the "macro level," which addresses the relationship between technology and social institutions or cultural convention (Häußling, 2019). Technology journalism should cover all these levels in order to fulfil its normative function.

Innovation theory, in turn, highlights how technological innovation evolves in different stages: discovery or invention, implementation, diffusion, and acceptance (Dogruel, 2014). These stages require different types of coverage. In the early stage of discovery or invention, citizens must be informed about the invention and its underlying ideas, theories, or rules. Journalists might explain how a technology generally works and how it is applicable in a social context. Once these ideas are launched into the market (implementation phase), journalists should discuss in which social context it might bring innovation, what opportunities and risks it entails, and how it can be monetized. Finally, once a product based on this particular technology is distributed and accepted by users (diffusion and acceptance phase), citizens might expect information on the product and its uses to be provided to individuals and society. For this article, we consider technology journalism as a beat of its own focused on a particular technology topic in its entire life cycle and from a micro-,

meso-, and macro-level perspective, being practiced in general interest (news) media and in special interest media.

At the same time, we acknowledge that technology journalism, as a news category, may also follow broad criteria of newsworthiness. Badenschier and Wormer (2012) start from the traditional news value models to theorize that technology journalism can be predicted to follow many of the conventional news factors, such as timeliness, proximity, conflict, among others. This is particularly the case in the context of news media's economic constraints, pushing the prioritization of news that appeals to audience interest. It makes technology journalism susceptible to news values such as unexpectedness or prominence (celebrity), possibly resulting in more event-based and hype reporting rather than periodic or institutional reporting (Livingston & Bennett, 2003).

Existing empirical studies suggest that, in contrast to the theoretical normative goals of technology journalism discussed above, technology coverage is often event-driven, shaped by celebrities and technology companies' PR efforts. For instance, Anderson et al. (2005) attribute the surge in nanotechnology coverage in the early 2000s to Prince Charles' public stance on the topic. The subsequent decline after 2006 (Cacciatore et al., 2012) supports this interpretation. More than a decade later, Nguyen & Hekman (2024) discuss a similar hype cycle with the rise of AI, identifying a peak in media coverage around 2018, soon to be surpassed by the media hype surrounding the release of ChatGPT-3.5 (Ryazanov et al., 2024). Framing within articles and headlines typically presents either a utopian or dystopian perspective on the impacts of technology (Arceneaux & Schmitz Weiss, 2010; Chow-White et al., 2020; Dudo et al., 2011; Geiß et al., 2013; Nguyen & Hekman, 2024). Notably, early coverage of AI was favourable (Fast & Horvitz, 2017). Still, recent years have markedly shifted towards more negative reporting (Chuan et al., 2019), accompanied by sensationalized headlines (Roe & Perkins, 2023).

Multiple studies (e.g., Anderson et al., 2005; Chow-White et al., 2020) suggest that technology journalists often struggle to provide in-depth reporting on the technical aspects and instead focus on economic benefits (Chow-White et al., 2020; Chuan et al., 2019) or on service-oriented reporting (Chyi & Lee, 2018). Furthermore, the degree to which citizens are well-informed through technology journalism may depend on the medium through which they receive their information, as Cacciatore et al. (2012) found that online media not only offer a more nuanced portrayal of emerging technologies but also provide more frequent updates than print media, thereby extending the duration of the hype cycle.

There are several studies on Web3 as a potential tool for verification and sustainable innovations for independent and citizen journalism, as well as the protection of sources and journalists' identities in sensitive and dangerous contexts (e.g., Al-Saqaf & Edwardsson, 2019; Heemsbergen & Maddox, 2022). However, relatively little is known about how journalists cover Web3-related issues. A study on Web3 coverage

in specialized German music magazines points to the need for a more nuanced discourse as its critical evaluation is limited (Ruth et al., 2025). Some research (e.g., Chow-White et al., 2020) suggests that amongst Web3-related topics, blockchain has generally been presented positively, whereas bitcoin/cryptocurrencies' coverage has a more negative spin. The lack of research on coverage of and newsroom views on Web3 inspires this study.

Research Questions

The preceding discussion – emphasizing normative perspectives on the role of technology journalism, engaging with definitional and empirical insights from technology journalism studies, and revealing the lack of research on Web3-related coverage – leads to the following two main research questions:

RQ1: How does mainstream journalism cover Web3 across different national contexts in terms of the amount of coverage, range of topics, journalistic genres, and adherence to prevailing journalistic standards?

RQ2: What are the challenges of Web3 coverage in its underlying production processes, and how do these manifest in varying media systems?

By formulating these questions within a comparative, cross-country design, we seek not only to identify recurring challenges in Web3 coverage but also to capture country-specific dynamics shaped by different media environments.

Methods and Data

This study draws on data collected as part of a broader media-mapping project “Reporting on Blockchain and Web3 for journalists” examining newsrooms and journalists covering blockchain and Web3 in Germany, Spain, the Netherlands, and the United Kingdom. To understand the challenges of Web3 journalism, we set up a multi-layered, multi-method research design comparing four countries that have experienced similar developments in the past years (Trappel & Tomaz, 2021), yet have traditionally been modelled as different media systems within the West-European media landscapes (Hallin & Mancini, 2004). The study examines whether recent transformations have led to similar outcomes in technology coverage and what specific challenges arise for Web3 journalism.

Country Selection

Although Hallin and Mancini's model has provoked criticism due to its vague methodology, generalising conclusions, and its Western-centred approach (e.g., Hallin & Mancini, 2011; Radue et al., 2025), some traditional characteristics can still be

observed to a certain extent in the journalism markets of the case countries and may result in differences in technology coverage. Thus, the four case countries—Germany, the Netherlands, Spain and the United Kingdom—were selected to represent three traditional differing European media systems (Hallin & Mancini, 2004). Germany and the Netherlands represent Northern/Central European systems, characterised by strong protections of press freedom, solid journalistic professionalism, and robust public service broadcasting/public service media (PSB/PSM). Spain is usually categorised as belonging to the Mediterranean or Polarised Pluralist Model, characterised by weaker professionalisation of journalism and close relationships (whether beneficial or antagonistic) between political figures and the media. The United Kingdom represents the liberal model, distinguishing itself with its more market-driven media (Hallin & Mancini, 2004).

Yet, recent transformations such as digitisation, platformisation and commercialisation (Nord et al., 2011 and Trappel & Tomaz, 2021) have led to similar outcomes relevant for tech journalism in all case countries: Online news platforms are crucial for journalism given the high level of digitisation in each country. Social media and messaging services are widely used, with the same global platforms—Facebook, Instagram, Twitter (X), WhatsApp and YouTube—dominating as news sources. A general phenomenon across all four countries is decreasing trust, although this varies somewhat, while trust in public service media (PSM) remains relatively high. National commercial media outlets are struggling financially due to platformisation, and the years of the Covid pandemic further weakened their sustainability prospects (Newman et al., 2025; Edelman, 2025). Consequently, the profession of journalism is becoming increasingly precarious, national news markets are becoming more concentrated, and AI tools are already having, and will continue to have, a significant impact on newsrooms, news production, distribution and consumption (Newman et al., 2025). From a democratic point of view, the overall status of freedom and information appears robust in all countries, as indicated by, among other things, the high self-perception of journalists as watchdogs. Yet, journalistic jobs are highly insecure in all countries and reflect a broader economic insecurity. Another commonality is that citizens' interest in news remains high, and affordable public and private news media are available. At the same time, however, media ownership has become more concentrated (Trappel and Tomaz, 2021), and the willingness to pay for content (which is particularly relevant for special interest/niche publications) remains low in all countries (Newman et al., 2025).

Media Selection

After identifying four sample countries, we contextualized the respective journalistic landscapes, including the selection and description of the five most relevant (prominent and widely consumed) media outlets. This was followed by country-specific quantitative and qualitative analyses of Web3-related content of the chosen outlets for March 2023 to February 2024. The media selection for content analysis was conducted according to each case's context, and, for each country, a mix of the largest

and most popular mainstream outlets was featured, consisting of print, broadcast-ing, and online outlets (see Table 1).

Table 1. Case outlets analysed

Country	News Outlet	Type
Germany	t-online	Online news website
	tagesschau.de (ARD)	PSM
	n-tv.de	Commercial broadcaster
	Bild.de	National newspaper
	Spiegel online	National newspaper
Netherlands	NOS	PSM
	Volkscrant	National newspaper
	Telegraaf	National newspaper
	NRC	National newspaper
	Algemeen Dagblad	National newspaper
Spain	ABC.es	National newspaper
	RTVE.es	PSM
	El Periódico.es	Regional newspaper
	Xataka	Online main technology news outlet ¹
	El Pais online	National newspaper
UK	The Guardian	National newspaper
	BBC News online	PSM
	Sky News online	Commercial Broadcaster
	Daily Mail Online	National newspaper
	Telegraph	National newspaper

Data Collection of Web3 Coverage

The first phase of the content analysis was a quantitative analysis in two steps that involved (1) a keyword search to identify articles containing relevant content. This process was informed by a review of related literature (Han, 2022; Sourin, 2023; Voshmgir, 2020), resulting in the selection of the following keywords: bitcoin, crypto*, blockchain, non-fungible token, NFT, and Web3. Using these keywords, stories focusing on Web3 were identified within 12 months, from March 1, 2023, to February 29, 2024. The texts amounted to 1700 stories, of which 400 were chosen to allow more in-depth coding. The second phase (2) of the quantitative content analysis focused on 100 articles per country, a total of 400 texts. It involved coding

¹ Xataka is the top technology outlet in Spain according to GfK Market Research, and the 5th digital outlet with the most users in the category News & Information, at 15.547.767 unique monthly users as of February 2024, when the data for this research was gathered; thus justifying its pertinent inclusion in the sample.

based on identification variables and genre, main subject area, and primary purpose (see the coding scheme in Appendix 1). Data was analysed using a descriptive statistical analysis comparing results by countries and media.

A qualitative content analysis was then conducted by choosing purposefully 12 stories per country from the quantitative content analysis sample, a total of 48 stories, for qualitative close reading. The selected texts included both typical and atypical stories from all outlets, to tease out nuances of mainstream coverage. The aspects analysed included audience address, diversity of viewpoints, relevance of sources, and form-related questions such as story structure and headlines (see the analysis scheme in Appendix 2).

We contextualised our content analysis findings with insights from 13 semi-structured interviews with news editors and journalists in the studied countries. The interviewees represented a variety of mainstream and tech-specialised media outlets, including several outlets covered in the content analysis. The commentaries collected from the interviews addressed newsroom's attitudes to Web3 and related aspects, respondents' self-reported knowledge about Web3 technologies; and their experiences covering Web3 (see the semi-structured, thematic interview guideline in Appendix 3). While the interviews had a much wider scope, for this article we only used the interviewees' contextualisation of our content analysis findings.

Systematic Analysis of Mainstream Media Coverage of Web3 in the Four Countries

The initial overview of the 12 months of keywords coverage clearly indicates the focus of Web3 news. As Table 2 shows, bitcoin and crypto* were the most common keywords in the coverage during the selected period, with crypto* accounting for almost half of all keywords. The keyword Web3 appeared rarely and most often in the Spanish data, due to one of the selected outlets focusing specifically on technology. The UK is the only other country in which the keyword appears six times; yet Web3 is not a term or topic of significant interest to journalists.

The frequency of bitcoin and crypto* reflects the prominence with cryptocurrencies, which represented the most frequently reported topic in the research material. Coverage both reflects and creates audience interest in the financial aspects of Web3.

By comparison, Bitcoin and crypto were by far the most popular keywords in Google search terms during the research period.² Subsequent stages of the content analyses did not reveal any other significant Web3-related keywords.

Table 2: Summary of keywords in the data (# per country and total %)

Country	Bitcoin	Crypto* (variations)	Blockchain	NFT (variations)	Web3
Germany	300	280	110	13	0
Netherlands	136	202	26	16	0
Spain	203	548	235	130	61
UK	459	845	61	216	6
Total #	1,096	1,875	432	375	67
Total %	28%	49%	11%	10%	2%

As the keyword search indicates, the volume of coverage is low. The technology-driven nature of current societal changes and their impact on life, work, and well-being have surprisingly little news value. During the analysed year, the five leading outlets in each country produced just 323 articles in Germany, 375 in the UK, 383 in Spain, and 472 in the Netherlands. For context: In the UK, The Daily Mail reportedly creates 1,500 articles per day, yet over one year, it had just 60 articles on the topic.

The coding of 400 stories provides insights into the characteristics of the stories. Subject-wise, the coverage included technology as such (3%), politics (3%), culture (6%), society (21%, including security and crime), and 1% miscellaneous, but was dominated by financial news (67%), the latter with various foci. First, cryptocurrencies were covered as conventional financial news, focusing on different types and values. For instance, Spanish media covered the potential of blockchain for innovative ventures. Second, financial coverage dealt with cryptocurrencies as related to celebrity news, focusing on how (primarily US-based) celebrities endorsed cryptocurrencies.

² See, Google Trends for 1 March 2023- 29 February 2024: Germany: <https://trends.google.com/trends/explore?date=2023-03-01%202024-02-29&geo=DE&q=web3,crypto,NFT,blockchain,bitcoin&hl=en>; Netherlands: <https://trends.google.com/trends/explore?date=2023-03-01%202024-02-29&geo=NL&q=web3,crypto,NFT,blockchain,bitcoin&hl=en>; Spain: <https://trends.google.com/trends/explore?date=2023-03-01%202024-02-29&geo=ES&q=web3,crypto,NFT,blockchain,bitcoin&hl=en>; United Kingdom: <https://trends.google.com/trends/explore?date=2023-03-01%202024-02-29&geo=GB&q=web3,crypto,NFT,blockchain,bitcoin&hl=en> retrieved on 4 July, 2026.

Finally, coverage of cryptocurrencies appeared under crime news, focusing on scandals across the case countries. For instance, in the UK, the crime-related crypto* news included significant financial scandals and legal proceedings, such as the Sam Bankman-Fried court case and the US Binance lawsuit, as well as smaller-scale crypto-crime such as scams, Ponzi schemes, and hacks. Amongst the less-covered subjects, we can point to issues such as NFTs, focusing, for instance, on their potential for the art market and video games that use the Web3 context as a platform. Overall, the analysis of the subjects covered suggests that Web3 and its various technological developments do not have tremendous news value in their own right. They are more often covered in relation to events that have greater news value, such as celebrities, or negative news such as crime and scandals, or negative environmental impact.

The genres of the 400 stories highlight the prominence of financial topics. The large majority (84%) of the coverage consists of news, reports, and features—that is, various forms of factual reporting—compared with just one-tenth of coverage composed of other forms, such as financial advice, and only a few stories focused on opinions about Web3. The low share of opinion pieces is surprising, especially given the novelty of many technological developments that tend to provoke reflection. One explanation is the lack of news value of the topic, as opinion pieces aim to contribute to public opinion and debate on issues that attract attention. Another explanation could be the lack of in-depth expertise, a prerequisite for strong opinion writing.

The quantitative analysis shows a predictable distinction between quality reporting in elite media and scandal-driven coverage in tabloids across the case countries. Coverage aligns with reporting norms, values, and traditions established by legacy media. Regarding accuracy, most stories analysed were based on reports from credible sources, which is unsurprising given that the countries' samples mostly contain major national journalistic news outlets. For instance, in the UK, elite newspaper The Guardian stood out with long, in-depth pieces, as did some investigative pieces in the German and Spanish elite newspapers. Spanish elite newspaper El País, German elite news outlet Der Spiegel, and PSM's Tagesschau scored well in sourcing, structure, and contextualization. At the same time, coverage in popular and tabloid newspapers was less well-sourced, diverse, contextualized, and more sensationalized with eye-catching headlines. Sensational headings characterized the UK tabloid The Daily Mail and the German tabloid Bild Zeitung.

The analysed articles and headlines were mostly framed and structured according to journalistic standards and conventions. The difference in journalistic traditions between elite and popular news outlets was reflected in headlines with tabloid newspapers, such as The Daily Mail and Bild Zeitung opting for more sensational headlines. For instance, a sensationalized Bild Zeitung article on European Central Bank President Christine Lagarde's son being involved in a Bitcoin investment framed the story as a scandal through its headline that used the term "verzockt" (gambling losses). Unsurprisingly, some headlines could be categorized as clickbait to cater to

tabloid-style reporting. In sum, across the sampled articles, there was a clear effort to cater to broad audience interests, aligning with the news outlets' positioning as leading national news media.

In-depth-Analysis of Web3 Articles in the Four Countries

While much of the coverage followed journalistic conventions, notable challenges emerged. First, coverage was overwhelmingly event-driven. For instance, in Spain, only a few relevant articles mentioning Web3 focused on longer-term, futuristic expectations of these technological developments. At the same time, in Germany, many items provided more informative and explanatory content. For instance, in Spain, quality outlet El País reported several times on Spanish innovations in the field, while German coverage had several pieces on the pros and cons of cryptocurrencies. Short, factual pieces dominated the UK coverage, followed by several more in-depth investigative pieces in elite outlets such as the BBC and the Guardian. While the coverage in the Netherlands contained some longer pieces, these were human interest stories focusing on fraudsters.

Second, a lack of diversity and nuance was observed in all case countries, possibly because most stories focused on finance. Diverse, accurate, contextualized reporting typically occurred only in PSM and elite newspapers. While PSM did not necessarily have the highest number of pieces on the topic, the coverage met high journalistic standards. The BBC incorporated explainers into its coverage and had longer pieces based on investigative or original reporting, while Spanish PSM RTVE has had several fact-checking pieces. Likewise, coverage in the Netherlands tended to provide simple, general updates with little nuance, making the viewpoint diversity the lowest-scoring category, except for the articles by elite newspaper NRC, and in some cases, newspapers AD and Volkskrant. A good example of a general interest, many-sided story, is a report on a famous Dutch theme park that created an online 3D version of a well-known attraction, accessible only through NFTs. This extensive article examines contrasting opinions among fans and employees on the ethics of NFTs.

Third, while most stories followed standard sourcing practices, they usually relied on a relatively limited number of sources, and some articles lacked cited sources, partly due to brevity and the nature of financial reporting that dominated the sample. As a result, articles missed multiple perspectives that sources from different backgrounds could have provided. A more extreme example of poorly sourced coverage is an advertorial in the German tabloid Bild Zeitung, apparently written by the online marketing agency Sinngold, which informed readers about the pros and cons of buying Bitcoin and where to purchase it.

Contextualisation from Professionals in the Four Countries

The professional insights from our interviews with journalists and editors in the field of technology journalism echoes the findings of the content analysis: the key challenges of Web3 journalism—event-based, narrowly focused, and poorly sourced coverage—were often discussed and explained in the interviews with professionals in all researched countries. First, professionals feel that to understand Web3, audiences should grasp the vast array of forms and applications within the concept. The complexity of the already challenging developments of digitalisation are particularly evident with Web3:

The applications of blockchain can be difficult to understand and that's partly because many of us grew up in a world where digital assets are [still considered] an obscure concept. (Spanish journalist, personal communication, April 2024)³

[Web3] is very abstract and technical, which journalism has a hard time grappling with in the first place. Plus, the ideas of Web3 are more about how it shifts value and power and less on 'things that happen' that one can report on. (Dutch journalist, personal communication, April 2024)

Second, the comments reinforce the findings of the content analysis that technology journalism is perceived as and practised as being driven by trends. Partly, the focus on trends, especially regarding Web3, results from a combination of the complexity of many technology topics and the challenging conditions in newsrooms across all the case countries. This creates a situation in which event-based journalism and coverage focus on how Web3 affects specific fields in the short term, and mostly negatively (e.g., financial markets, crime):

Bitcoin and NFTs were reported on because they surged or crashed in value. Their volatility was the news, not its technology or possible real-world use cases of blockchain technology. (Dutch journalist, personal communication, April 2024)

I feel like Blockchain is no longer the hype. Blockchain was big three to five years ago, but now it's all about generative artificial intelligence. (German journalist, personal communication, May 2024)

Third, given their financial and other sustainability challenges, news outlets are becoming less able to grasp the vast array of fields to which Web3 technology relates. While the scope of Web3 is vast and not often addressed in mainstream journalism, issues relating to environmental sustainability and applications for sustainable and global development resonate with the interviewed journalists.

Finally, the practitioners identified some opportunities for broader reporting that were also evident in the content analysis: some stories covered areas less often associated with Web3, such as art or the environment. While the potential of Web3 to

³ Many journalists chose to remain anonymous, also in terms of their place of employment, so they are here identified by country only.

enhance journalistic processes, addressed in some research (e.g., Al-Saqaf & Picha Edwardsson, 2019; Heemsbergen & Maddox, 2022) was not mentioned by the journalism practitioners, Web3 applications for democratising communication and promoting sustainable development resonated with them as potential topics:

The practical impact of data centres, energy consumption, security and data ownership make stealing data and phishing [possible topics] ... But also the possibilities for transparent and democratic decision-making, or validating reliable news through supply-chain transparency. So many possibilities. (Dutch journalist, personal communication, April 2024)

In the Global South, [Web3] technology is finding its way to people and helping them to stay anonymous so regimes can't attack them. Or [technology is helping] how women in Afghanistan can get paid with cryptocurrency and no one can digitally trace it to them. (UK journalist, personal communication, April 2024)

Discussion and Conclusion: How can Web3 Journalism Serve its Publics Better?

From the perspective adopted in this article, which highlights the role of technology journalism in fostering an informed citizenry, mainstream reporting on Web3 across the four countries falls short of normative expectations. Web3 and blockchain technology receive limited coverage in mainstream media outlets in Germany, Spain, the UK and the Netherlands. When reported, the focus is mainly on financial applications ("fintech"). Bitcoin and cryptocurrencies dominate the discourse, with reporting primarily produced by business and finance journalists. These stories centre on three main themes: fluctuations in cryptocurrency market valuations, crypto-related crimes and scandals, and celebrity endorsements of cryptocurrencies. Although the sample contained a few in-depth technology-focused articles, most coverage remains event-driven. Broader aspects of Web3, such as its impact on culture, environmental implications, or technological innovations, often lack the immediate news value that appeals to mainstream media outlets.

We have posited that technology journalism needs to address its topics on three levels: the relationship between technology and the individual, organizations, and society (Häußling, 2019). With few exceptions, reporting rarely examines the technology's broader societal implications or sheds light on the interests shaping its development. The analysis of Web3 in all of the case countries reveals features also detected in earlier research (e.g., Chow-White et al., 2020) on technology journalism: a focus on money rather than technology and an emphasis on hype or scandals rather than positive developments.

In other words, our findings on research question one highlight the need for more nuanced and expansive reporting on Web3 to ensure that the public is adequately informed. However, within the current journalistic landscape, this remains an aspirational goal. The coverage patterns identified in this study not only reflect the inherent complexity of Web3—which complicates the task for journalists to grasp its

many societal dimensions and convey them effectively to the public—but also highlights a broader contemporary challenge: technology journalism’s struggle to maintain its space in shrinking, de-specialising newsrooms where the opportunities for technology journalists to engage in in-depth reporting and stay up-to-date on specialised topics are becoming increasingly limited.

While Web3 may be considered an extreme case due to its inherent complexity and its decline in prominence within the technology hype cycle during the period investigated, it still serves as a helpful lens through which to assess the health of technology journalism. This strengthens the broader relevance of our findings for scholars, practitioners, and policymakers concerned with the future of journalism. The insights presented here are consistent with previous studies on technology journalism as reviewed earlier in the article. Promising directions for future research include ethnographic investigations within newsrooms and studies examining the role and influence of technology-focused niche outlets and their interactions with mainstream media.

In research question two, we asked about differences in the coverage of Web3 arising from varying media systems. While representing four different media systems, the media outlets studied all exist within contexts of financial and other sustainability challenges, as well as declining trust, partly due to the increasing prominence of global platforms as news sources, which particularly challenge commercial media, and partly due to political developments and austerity measures that affect the funding of public service journalism (e.g., Newman et al., 2024). Journalism as a profession is becoming more precarious, and national news markets are becoming more concentrated. Consequently, news outlets are becoming less able to grasp the vast array of fields to which Web3 technology relates.

Despite different journalistic traditions across the four countries studied, the reporting of Web3 showed notable consistency. The quality of reporting is closely aligned with established news values and routines. The characteristics of quality/elite versus popular/tabloid news outlets show greater differences than comparisons between outlets across countries. In the UK, *The Guardian* and elite newspapers in Germany and Spain stood out for a small number of lengthy, in-depth reports. *El País*, *Der Spiegel*, and *Tagesschau* demonstrated strong sourcing and contextualisation, while public service media and elite outlets offered the most diverse and reliable coverage. The BBC added detailed explainers and investigative pieces, and Spain’s RTVE contributed fact-checking reports. Yet, the analysis of the issues addressed indicates that Web3 and its associated technological developments rarely possess substantial news value in themselves and are instead predominantly reported in connection with more newsworthy events, such as celebrity involvement, crime, scandal, or negative environmental consequences. These patterns point to common news values, economic pressures, and underlying production routines that shape coverage across countries and outlets in similar ways.

At the same time, the comparative lens reveals subtle national variations, such as differences in newsroom structures, reliance on specific types of sources, or thematic emphases. In the coverage, Spain stood out because, unlike in the other countries, a technology-specialised outlet was among the five most frequently used news media, which resulted in a comparatively higher number of Web3-related articles, including pieces explicitly using the keyword “Web3”, for example. The only future-oriented article in our sample also came from Spain. These observations indicate that the mainstream media in Spain are covering Web3 more intensively and from a wider range of perspectives. This aligns with findings from comparative studies on innovation in journalism. The economic crisis and the resulting crisis in journalism have given rise to numerous innovations focused on integrating technology (Meier et al., 2022)

All in all, we observed more commonalities. Therefore, it seems that structural differences described by Hallin & Mancini (2004) do not translate into any substantial differences in the coverage of Web3. Rather, the results suggest a broader European challenge to journalism’s democratic role, that becomes particularly visible in the domain of technology journalism as a field of considerable societal relevance.

References

- Al-Saqaf, W., & Picha Edwardsson, M. (2019). Could blockchain save journalism? An explorative study of blockchain’s potential to make journalism a more sustainable business. In M. Ragnedda & G. Destefanis (Eds.), *Blockchain and Web 3.0* (pp. 97-113). Routledge.
- Anderson, A., Allan, S., Petersen, A., & Wilkinson, C. (2005). The framing of nanotechnologies in the British newspaper press. *Science Communication*, 27(2), 200–220. <https://doi.org/10.1177/1075547005281472>
- Arceneaux, N., & Schmitz Weiss, A. (2010). Seems stupid until you try it: Press coverage of Twitter, 2006-9. *New Media & Society*, 12(8), 1262–1279. <https://doi.org/10.1177/1461444809360773>
- Badenschier, F., & Wormer, H. (2012). Issue selection in science journalism: Toward a special theory of news values for science news. In S. Rödder, M. Franzen, & P. Weingart (Eds.), *The sciences’ media connection and communication to the public and its repercussions* (pp. 59-85). Springer.
- Brennen, J. S., Howard, P. N., & Nielsen, R. K. (2021). Balancing Product Reviews, Traffic Targets, and Industry Criticism: UK Technology Journalism in Practice. *Journalism Practice*, 15(10), 1479–1496. <https://doi.org/10.1080/17512786.2020.1783567>
- Brennen, J. S., Howard, P. N., & Nielsen, R. K. (2022). What to expect when you’re expecting robots: Futures, expectations, and pseudo-artificial general intelligence in UK news. *Journalism*, 23(1), 22–38. <https://doi.org/10.1177/1464884920947535>
- Brevini, B. (2022). *Is AI good for the planet?* Polity.
- Cacciatore, M. A., Anderson, A. A., Choi, D.-H., Brossard, D., Scheufele, D. A., Liang, X., Ladwig, P. J., Xenos, M., & Dudo, A. (2012). Coverage of emerging technologies: A comparison between print and online media. *New Media & Society*, 14(6), 1039–1059. <https://doi.org/10.1177/1461444812439061>
- Chow-White, P., Lusoli, A., Phan, V. T. A., & Green, S. E. (2020). “Blockchain good, Bitcoin bad”: The social construction of blockchain in mainstream and specialized media. *Journal of Digital Social Research*, 2(2), 1-27. <https://doi.org/10.33621/jdsr.v2i2.34>
- Christians, C. G., Glasser, T. L., McQuail, D., Nordenstreng, K., & White, R. A. (2009). *Normative Theories of the Media: Journalism in Democratic Societies*. University of Illinois Press.

- Chuan, C.-H., Tsai, W.-H. S., & Cho, S. Y. (2019). Framing artificial intelligence in American newspapers. In *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society* (pp. 339–344). Association for Computing Machinery. <https://doi.org/10.1145/3306618.3314285>
- Chyi, H. I., & Lee, A. M. (2018). Commercialization of technology news: Quantity and quality dimensions. *Journalism Practice*, 12(5), 585–604. <https://doi.org/10.1080/17512786.2017.1333447>
- Deuze, M. (2008). The Changing Context of News Work: Liquid Journalism and Monitorial Citizenship. *International Journal of Communication*, 2, 848–865. <https://ijoc.org/index.php/ijoc/article/view/290>
- Dogrue, L. (2014). What is so Special about Media Innovations? A Characterization of the Field. *The Journal of Media Innovations*, 1(1), 52–69. <https://doi.org/10.5617/jmi.v1i1.665>
- Donges, P. (2023). Fachjournalismus, -medien und -öffentlichkeiten. Von der Selbstbeobachtung zur Selbstorganisation. [Specialized Media and Publics. From Self-observation to Self-organisation.] *Communicatio Socialis*, 56(1), 23–32. <https://doi.org/10.5771/0010-3497-2023-1-23>
- Dudo, A., Dunwoody, S., & Scheufele, D. A. (2011). The emergence of nano news: Tracking thematic trends and changes in U.S. newspaper coverage of nanotechnology. *Journalism & Mass Communication Quarterly*, 88(1), 55–75. <https://doi.org/10.1177/107769901108800104>
- Edelman, G. (2021, November 29). The father of Web3 wants you to trust less. *Wired*. <https://www.wired.com/story/web3-gavin-wood-interview/>
- Edelman. (2025). *2025 Edelman trust barometer: Trust and the crisis of grievance*. <https://www.edelman.com/trust/2025/trust-barometer>
- Esser, F., & Neuberger, C. (2019). Realizing the democratic functions of journalism in the digital age: New alliances and a return to old values. *Journalism*, 20(1), 194–197. <https://doi.org/10.1177/1464884918807067>
- Fast, E., & Horvitz, E. (2017). Long-term trends in the public perception of artificial intelligence. *Proceedings of the AAAI Conference on Artificial Intelligence*, 31(1), <https://doi.org/10.1609/aaai.v31i1.10635>
- Fenwick, M., & Jurcys, P. (2022, January 27). *The contested meaning of Web3 and why it matters for (IP) lawyers*. SSRN Electronic Journal. <http://dx.doi.org/10.2139/ssrn.4017790>
- Geiß, S., Jakob, N., & Quiring, O. (2013). The impact of communicating digital technologies: How information and communication technology journalists conceptualize their influence on the audience and the industry. *New Media & Society*, 15(7), 1058–1076. <https://doi.org/10.1177/1461444812465597>
- Gorgulu, V. (2019). Narrowcasting or niche journalism. In T. P. Vos, F. Hanusch, D. Dimitrakopoulou, M. Geertsema-Sligh, & A. Sehl (Eds.), *The international encyclopedia of journalism studies*. Wiley. <https://doi.org/10.1002/9781118841570.iejso138>
- Grenz, F., & Donges, P. (2018). Fachöffentlichkeiten in der politischen Kommunikation. Erkundungen zwischen Medienöffentlichkeit und Policy-Netzwerken [Specialized publics in political communication Explorations between the general public and policy networks]. *Studies in Communication and Media*, 7(3), 392–422. <https://doi.org/10.5771/2192-4007-2018-3-392>
- Hallin, D. C., & Mancini, P. (2004). *Comparing media systems. Three models of media and politics*. Cambridge University Press.
- Hallin, D. C., & Mancini, P. (Eds.). (2011). *Comparing Media Systems Beyond the Western World*. Cambridge University Press.
- Han, B. K. (2022, February 23). *Know your keywords*. Medium. <https://medium.com/@BK.HAN/7-key-words-know-your-web3-terms-101-27a3ba1d9d60>
- Hanitzsch, T. (2011). Populist disseminators, detached watchdogs, critical change agents and opportunist facilitators: Professional milieus, the journalistic field and autonomy in 18 countries. *International Communication Gazette*, 73(6), 477–494. <https://doi.org/10.1177/1748048511412279>
- Hanusch, F. (2012). Broadening the focus: The case for lifestyle journalism as a field of scholarly inquiry. *Journalism Practice*, 6(1), 2–11. <https://doi.org/10.1080/17512786.2011.622895>
- Harcup, T. & O'Neill, D., (2001). What Is news? Galtung and Ruge revisited. *Journalism Studies*, 2(2), 261–280. <https://doi.org/10.1080/14616700118449>

- Häußling, R. (2019). *Techniksoziologie* (2nd edition). Barbara Budrich. <https://doi.org/10.36198/9783838550794-9-16>
- Heemsbergen, L., & Maddox, A. (2022). Distributing journalism: Digital disclosure, secrecy, and crypto-cultures. In M. Filimowicz (Ed.), *Privacy* (pp. 1-29). Routledge.
- Hendrickx, J. (2020). Trying to survive while eroding news diversity: Legacy news media's catch-22. *Journalism Studies* 21(5), 598–614. <https://doi.org/10.1080/1461670X.2019.1694430>
- Henley & Partners. (2024, August 27). *The Crypto wealth report 2024*. <https://www.henley-global.com/publications/crypto-wealth-report-2024>
- Johanssen, J. & Wang, X. (2021). Artificial intuition in tech journalism on AI: Imagining the human subject. *Human-Machine Communication*, 2, 173-190. <https://doi.org/10.30658/hmc.2.9>
- Kostanic, A. M. (2025, February 27). *Bitcoin drops, but Trump's policies may still position USA as a Web3 heaven*. The Recursive. <https://therecursive.com/trump-administration-crypto-policy-task-force-web3-regulation-europe-emperor/>
- Kuiken, J., Schuth, A., Spitters, M., & Marx, M. (2017). Effective headlines of newspaper articles in a digital environment. *Digital Journalism*, 5(10), 1300–1314. <https://doi.org/10.1080/21670811.2017.1279978>
- Laor, T., Rosenberg, H., & Steinfeld, N. (2022). Oh, no, Pokémon GO! Media panic and fear of mobility in news coverage of an augmented reality phenomenon. *Mobile Media & Communication*, 10(3), 365–386. <https://doi.org/10.1177/20501579211052227>
- Larrondo, A., Domingo, D., Erdal, I. J., Masip, P., & Van den Bulck, H. (2016). Opportunities and limitations of newsroom convergence: A comparative study on European public service broadcasting organisations. *Journalism Studies*, 17(3), 277–300. <https://doi.org/10.1080/1461670X.2014.977611>
- Lee, T. (2024, May 1). *Debugging tech journalism*. Niemanlab. <https://www.niemanlab.org/2024/05/debugging-tech-journalism/>
- Livingston, S., & Bennett, W. L. (2003). Gatekeeping, Indexing, and Live-Event News: Is Technology Altering the Construction of News? *Political Communication*, 20(4), 363–380. <https://doi.org/10.1080/10584600390244121>
- Loosen, W., Ahva, L., Reimer, J., Solbach, P., Deuze, M., & Matzat, L. (2022). “X journalism”: Exploring journalism's diverse meanings through the names we give it. *Journalism*, 23(1), 39–58. <https://doi.org/10.1177/1464884920950090>
- Marciel, R. (2023). On citizens' right to information: Justification and analysis of the democratic right to be well-informed. *Journal of Political Philosophy*, 31(3), 358–384. <https://doi.org/10.1111/jopp.12298>
- Meier, K., Schützeneder, J., García Avilés, J. A., Valero-Pastor, J. M., Kaltenbrunner, A., Lugschitz, R., Porlezza, C., Ferri, G., Wyss, V., & Saner, M. (2022). Examining the Most Relevant Journalism Innovations: A Comparative Analysis of Five European Countries from 2010 to 2020. *Journalism and Media*, 3(4), 698–714. <https://doi.org/10.3390/journalmedia3040046>
- Natale, S., & Ballatore, A. (2017). Imagining the thinking machine: Technological myths and the rise of artificial intelligence. *Convergence*, 26(1), 3–18. <https://doi.org/10.1177/1354856517715164>
- Newman, N., Arguedas, A. R., Robertson, C. T., Nielsen, R. K., & Fletcher, R. (2025). *Digital News Report 2025*. Reuters Institute; University of Oxford. https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2025-06/Digital_News-Report_2025.pdf
- Newman, N., Fletcher, R., Robertson, C. T., Arguedas, A. R., & Nielsen, R. K. (2024). *Reuters Institute digital news report 2024*. Reuters Institute; University of Oxford. https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2024-06/RISJ_DNR_2024_Digital_v10%20lr.pdf
- Nguyen, D. & Hekman, E. (2024). The news framing of artificial intelligence: A critical exploration of how media discourses make sense of automation. *AI & society*, 39(2), 437–451. <https://doi.org/10.1007/s00146-022-01511-1>
- Nielsen, R. K. (2024). *How news coverage, often uncritical, helps build up the AI hype*. Reuters Institute; University of Oxford. <https://reutersinstitute.politics.ox.ac.uk/news/how-news-coverage-often-uncritical-helps-build-ai-hype>

- Nielsen, R. K., & Levy, D. A. L. (2010). The changing business of journalism and its implications for democracy. In D. A. L. Levy & R. K. Nielsen (Eds.), *The changing business of journalism and its implications for democracy* (pp. 3-16). Reuters Institute; University of Oxford.
- Nord, L. W., Nieminen, H., & Trappel, J. (2011). Democratic Functions under Pressure: Conclusions. In J. Trappel, H. Nieminen, & L. W. Nord (Eds.), *The Media for Democracy Monitor: A Cross National Study of Leading News Media* (pp. 347-3669). Nordicom. <https://norden.diva-portal.org/smash/get/diva2:1534750/FULLTEXT01.pdf>
- Radue, M., Mack, J., & Richter, C. (2025) A context-led approach to media systems research. In C. Richter, M. Radue, C. Horz-Ishak, A. Litvinenko, H. Badr, & A. Fiedler (Eds.), *Cosmopolitan Communication Studies. Toward Deep Internationalization* (pp. 115-130). transcript. <https://www.transcript-verlag.de/media/pdf/55/00/12/0a9783839476772.pdf>
- Roe, J., & Perkins, M. (2023). What they're not telling you about ChatGPT: Exploring the discourse of AI in UK news media headlines. *Humanities and Social Sciences Communications*, 10(1), Article 753. <https://doi.org/10.1057/s41599-023-02282-w>
- Ruth, N., & Zickler, K. M. (2025) Decentralized discourse: analyzing Web3's impact and business implications in the German music press. *European Journal of Cultural Management and Policy*, 15, Article 13734. <https://doi.org/10.3389/ejcmp.2025.13734>
- Ryazanov, I., Öhman, C., & Björklund, J. (2024). How ChatGPT changed the media's narratives on AI: A semi-automated narrative analysis through frame semantics. *Minds and Machines*, 35, Article 2. <http://dx.doi.org/10.1007/s11023-024-09705-w>
- Sai, A. R., Buckley, J., & Le Gear, A. (2021). Characterizing wealth inequality in cryptocurrencies. *Frontiers in Blockchain* 4, Article 730122. <https://doi.org/10.3389/fbloc.2021.730122>
- Santana, A. D., & Dozier, D. M. (2019). Mobile devices offer little in-depth news: Sensational, breaking and entertainment news dominate mobile news sites. *Journalism Practice*, 13(9), 1106–1127. <https://doi.org/10.1080/17512786.2019.1588144>
- Schudson, M. (1999). Social Origins of Press Cynicism in Portraying Politics. *American Behavioral Scientist*, 42(6), 998–1008. <https://doi.org/10.1177/00027649921954714>
- Schultz, J. (1998). *Reviving the Fourth Estate: Democracy, Accountability and the Media*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511597138>
- Schumpeter, J. A. (1942). *Capitalism, socialism and democracy*. Harper & Brothers.
- Sourin. (2023, July 10). *50+ Web3 and blockchain keywords explained*. Medium. <https://heysourin.medium.com/50-web3-and-blockchain-keywords-explained-641d58061685>
- Stackpole, T. (2022, May 10). What is Web3? Your guide to what could be the future of the Internet. *Harvard Business Review*. <https://hbr.org/2022/05/what-is-web3>
- Standaert, O., Hanitzsch, T., & Dedonder, J. (2021). In their own words: A normative-empirical approach to journalistic roles around the world. *Journalism*, 22(4), 919-936. <https://doi.org/10.1177/1464884919853183>
- Torpey, J. (2020). A sociological agenda for the tech age. *Theory and Society*, 49, 749–69. <https://doi.org/10.1007/s11186-020-09406-0>
- Trappel, J., & Tomaz, T. (2021). Solid performance, but democratic deficits remain: Conclusions. In J. Trappel & T. Tomaz (Eds.), *The Media for Democracy Monitor 2021: How leading news media survive digital transformation* (Vol. 2, pp. 425–492). Nordicom. <https://doi.org/10.48335/9789188855428-10>
- Usher, N. (2012). Service journalism as community experience: Personal technology and personal finance at the New York Times. *Journalism Practice*, 6(1), 107–121. <https://doi.org/10.1080/17512786.2011.628782>
- Verhoeven, P. (2010). Sound-bite science: On the brevity of science and scientific experts in Western European television news. *Science Communication*, 32(3), 330–355. <https://doi.org/10.1177/1075547010362709>
- Voshmgir, S. (2020). *Token economy: How the Web3 reinvents the Internet*. Token Kitchen.
- Watson, S. (2016, October 4). Toward a Constructive Technology Criticism. *Columbia Journalism Review*. https://www.cjr.org/tow_center_reports/constructive_technology_criticism.php/

Appendix 1. Quantitative coding scheme (summary)

Dimension	Options
Author, news outlet, date, title	
Genre	1. News/reportage 2. Opinion 3. Other
Main subject area	1. Finance/economics 2. Technology 3. Politics 4. Culture 5. Society (incl. security) 6. Other
Main purpose	1. Current affairs reporting - neutral 2. Current affairs reporting - scandal 3. Educational - informing about and explaining the topic 4. Entertainment 5. Other

Appendix 2. Qualitative analysis scheme

Dimension	Aspects in close reading
Strength of sourcing	Are the information and statements attributed to authoritative, credible sources who are identified?
Accuracy and verification	Is the story fact-based versus rumour-based; are facts clearly distinguished from opinions?
Context, background, and analysis	Is the significance of the story mentioned? Are important issues of concern identified?
Diversity and balance of viewpoints	Are all relevant views represented? When applicable, are there both supportive and opposing arguments?
Story structure	How is the story structured? What are the main elements, and where are they presented in the story (story's significance, context, and background)?
Headlines, sub-headers, tag lines	Are the headlines, sub-headers, and taglines relevant to the story and accessible to audiences?
Audience address	How are the audiences positioned? Are they educated, entertained, or informed? Are they empowered to care about Web3 in a particular context (societal, economic, cultural, political)?

Appendix 3. Interview topic guide

1. Introduction and background of the study
2. Introduction interviewees (role in the newsroom, career, thematic focus)
3. Educational backgrounds of journalism staff (only if interviewee is in leading role)
4. Perception and knowledge about web3 in the newsroom
5. Web3 relevance and newsroom agenda
6. Training opportunities and needs of the newsroom
7. Challenges of Web3 coverage
8. Potential support measures
9. Any further issues still open