

Report on Alternative Business Models for a Less Polluted Ecosystem

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EXECUTIVE SUMMARY

This report, "Study on Alternative Business Models for a Less Polluted Ecosystem," examines how current media business models contribute to the spread of disinformation and explores potential strategies for mitigation. The primary research question is whether existing media platforms foster disinformation narratives and how this can be addressed.

The study employs a comprehensive methodology that includes a review of various business models and in-depth case studies of media platforms utilizing both traditional and alternative approaches. Additionally, it incorporates insights from academic articles, news sources, the NODES team's research, and expert interviews with media and fact-checking professionals. These insights informed the development of recommendations for sustainable business models that support a cleaner information ecosystem.

Central to this issue is the prevailing advertising-based revenue model, which incentivizes the creation of sensational content designed to captivate audiences and maximize ad revenue. However, this model is inherently vulnerable to manipulation by malicious actors seeking to exploit the virality of misinformation¹. To counteract these detrimental effects, a range of alternative business models have been analysed, including the freemium and subscription-based models, peer-to-peer and mixed platforms that prioritise user privacy, and community-driven open-source models.

In tandem with these alternative approaches, the report analyses the efforts made by the European Union to regulate the digital sphere, enacting measures such as the Digital Services Act (DSA) and Digital Markets Act (DMA) to promote transparency, combat anti-competitive practices, and enhance cybersecurity frameworks.

Building upon these insights, a set of recommendations is presented to guide stakeholders in fostering a healthier information ecosystem. These encompass promoting alternative business models that prioritize user engagement and trust over ad-based revenue, enhancing public awareness of regulatory frameworks to cultivate trust and reduce polarization, bolstering media literacy education to

¹ For the purposes of this research, misinformation refers to false information that is spread, regardless of intent to mislead.

empower individuals in discerning reliable sources from misinformation, and integrating credible fact-checking mechanisms into digital platforms to uphold accuracy and user trust.

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INTRODUCTION

Contemporary digital media has become a primary source of information for billions of people. However, it often serves as a battleground for heated and sometimes toxic arguments that polarize the public. The modern digital media landscape is dominated by algorithms and logic that pave the way for manipulative and deceptive content.

The “Study on Alternative Business Models for a Less Polluted Ecosystem” is part of the “Narratives Observatory Combatting Disinformation in Europe Systemically (NODES)” project. Its main objective is to build a narrative observatory that can analyze and monitor the emergence and spread of disinformation, offering concrete and practical solutions and recommendations. These efforts are crucial for strengthening our public spheres and democracies.

Researching alternative revenue sources that could shape the future of digital media is fundamental for providing a healthier and safer space for public debate, fostering trust instead of division on pressing issues for the European continent. This comprehensive approach addresses the problem of disinformation more effectively.

The main research question of this study is: “Do existing business models for current digital media platforms foster the spread of disinformation narratives, and what can be done to avoid or mitigate that?” In the following sections, we address this question using various methodologies.

EXISTING DIGITAL MEDIA ECOSYSTEM

The rise of disinformation narratives spread was made possible due to objective conjuncture reasons, reflecting the changing landscape of the information market. The existing digital media ecology is characterized by the following main features²:

1. **Financial Decline of Legacy News:** Journalism has experienced a significant loss of its paying audience and consequently, a decline in revenue. Presently, the majority of digital advertising revenue is captured by five technology companies, four of which - Facebook, Google, Yahoo, and X (ex-Twitter) - incorporate news into their platforms.
2. **Drive for Immediacy:** The pressure to publish quickly has resulted in less rigorous fact-checking and an increase in fake news. Media organizations must now produce content more rapidly than ever, compete for users' limited attention, manage their presence on social media, and engage with businesses. This shift is driven by the fact that revenue no longer comes directly from readers, but from carefully targeted, data-driven advertising³.
3. **Rise of Alternative Media:** The decline of traditional news outlets has paved the way for alternative media sources, including independent blogs, YouTube channels, and podcasts. While these platforms often provide valuable perspectives and fill gaps left by mainstream media, they also vary widely in credibility and can contribute to the spread of misinformation. The democratization of content creation means that anyone

² Bakir, A. & McStay, M. (2018). Fake News and The Economy of Emotions. Problems, causes, solutions.. *Digital Journalism*, Vol 6, no 2, pp. 154-175. Available at: <https://doi.org/10.1080/21670811.2017.1345645>.

³ Biesaga M., Caldarelli G., Iaconesi S., Lipparini F., Napiorkowski M., Nowak A., Persico O., Talaga S., Widegren E., Ziembowicz K. (2021). Mechanisms that Shape Social Media and their Impact on Society. Available at: <https://digital-strategy.ec.europa.eu/en/library/mechanisms-shape-social-media-and-their-impact-society-report-state-art-research>.

with internet access can become a publisher, blurring the lines between professional journalism and amateur content⁴.

4. **Increasing Exploitation of Algorithms:** A growing number of individuals are financially capitalizing on the algorithms used by social media platforms and search engines. Fake news is often used as clickbait—web content designed to attract attention and generate advertising revenue, often sacrificing quality and accuracy. This is typically achieved through sensationalist headlines or eye-catching images to drive clicks and shares, with extensive use of microtargeting and deepfakes.
5. **Rapid Circulation of False Information:** User-generated content and propagandists have accelerated the spread of misinformation⁵ and disinformation⁶. This proliferation is facilitated by social media platforms' algorithms, which often prioritize sensational and emotionally charged content that generates high engagement. Disinformation campaigns are now a common strategy for various actors aiming to manipulate public opinion or disrupt social cohesion.
6. **Increasing Emotionalization of Online Discourse:** Online discussions have become more emotionally charged for various reasons, including the anonymity of users. This environment fosters the development of sentiment analysis techniques and the creation of targeted media content. Additionally, it leads to news contexts, such as filter bubbles in Facebook news feeds, that are designed to provoke strong emotional reactions.
7. **Fragmentation of Audiences:** The digital media landscape has led to the fragmentation of audiences. Rather than consuming

⁴ Bell, E. J., Owen, T., Brown, P. D., Hauka C. & Rashidian, N. (2017). The Platform Press: How Silicon Valley Reengineered Journalism. Tow Center for Digital Journalism, Columbia University. Available at: <https://academiccommons.columbia.edu/doi/10.7916/D8R216ZZ>.

⁵ For the purposes of this research, misinformation refers to false information that is spread, regardless of intent to mislead.

⁶ In this context, disinformation refers to news that is intentionally created to mislead and deceive users.

information from a few centralized sources, users now have access to a multitude of niche platforms and outlets catering to specific interests and viewpoints. This fragmentation can exacerbate echo chambers, where individuals are exposed primarily to information that reinforces their existing beliefs, limiting exposure to diverse perspectives⁷.

8. Privacy Concerns and Data Security: The collection and use of personal data by digital media platforms for targeted advertising and content personalization raise significant privacy concerns. Data breaches and the misuse of user information can undermine trust in digital platforms and highlight the need for stronger data protection regulations. Ensuring data security and respecting user privacy are crucial for maintaining the integrity of the digital media ecosystem⁸.
9. Global Reach and Local Impact: Digital media has a global reach, enabling news and information to spread rapidly across borders. This interconnectedness can amplify the impact of significant events and foster a global dialogue, but it also means that misinformation and disinformation can have far-reaching consequences. The challenge lies in addressing these issues on an international scale while considering the local contexts and implications⁹.

The interplay of these factors underscores the need to modify the way media platforms function and generate revenues. The financial decline of legacy news, the drive for immediacy, the rapid circulation

⁷ Bradshaw, S. & Howard, P. N (2018). Challenging Truth and Trust: A Global Inventory of Organized Social Media Manipulation. Computational Propaganda Research Project. Internet Institute, University of Oxford. Available at: <https://demtech.oii.ox.ac.uk/wp-content/uploads/sites/12/2018/07/ct2018.pdf>.

⁸ Bell, E. J., Owen, T., Brown, P. D., Hauka C. & Rashidian, N. (2017). The Platform Press: How Silicon Valley Reengineered Journalism. Tow Center for Digital Journalism, Columbia University. Available at: <https://academiccommons.columbia.edu/doi/10.7916/D8R216ZZ>.

⁹ Bradshaw, S. & Howard, P. N (2018). Challenging Truth and Trust: A Global Inventory of Organized Social Media Manipulation. Computational Propaganda Research Project. Internet Institute, University of Oxford. Available at: <https://demtech.oii.ox.ac.uk/wp-content/uploads/sites/12/2018/07/ct2018.pdf>.

of misinformation and disinformation, the increasing emotionalization of online discourse, and the exploitation of algorithms all contribute to the complex dynamics of the current digital media ecosystem. Additionally, the fragmentation of audiences, the rise of alternative media, the impact of mobile technology, the role of AI, ethical challenges, privacy concerns, and the global reach of digital media further complicate this landscape.

DOMINATING ADVERTISING-BASED MODEL OF THE DIGITAL MEDIA

The advertising-based model emerges as the most prevalent among the various business models present in the digital media landscape, which will be elaborated on in the subsequent chapter. Big tech platforms like Facebook, Instagram, YouTube, X (formerly Twitter), and BuzzFeed predominantly rely on data-driven advertising to generate revenue. These companies offer free access to their content, platforms, or services, monetizing through various forms of advertising. This chapter delves into the intricacies of the advertising-based model, examining its mechanisms, challenges, and ethical implications. To better understand this business model, we will also delve into specific case studies of leading digital media companies.

Revenue streams include display ads, video ads, native advertising, sponsored content, and programmatic advertising. In this model, attracting and retaining audience attention is crucial, as the rates publishers charge advertisers depend on the size and nature of the audience they can reach.

The primary issue with the ad-based business model is its tendency to promote the creation of viral posts and news designed to capture maximum user attention. Sensational and immediate news, driven by advertising incentives, provides a fertile ground for misinformation and disinformation. When news goes viral, it generates advertising revenue with each visit to the original site or the social media platform where the content first appeared. The industry generally agrees that the core problem of disinformation-related issues lies in the transparency of this business model¹⁰.

This is closely related to what Alex Fedorov, at Social Discovery Group, identifies as ethical concerns surrounding social media in the current market dynamics. These concerns largely revolve around the manipulation and exploitation of user data for profit the extent that advertisement-based platforms might potentially be legally

¹⁰ Expert Interview with Alex Fedorov, Senior Product Designer at Social Discovery Group, 31 January 2024.

categorized as "social advertising platforms" rather than "social media" ones¹¹.

A key component of ad-based business models is the use of behavioral targeting techniques. This involves tracking users' online behavior and delivering advertisements based on their activities and interests. The principle behind behavioral targeting is to focus on the individual user rather than the content or publication.

These techniques are widely incorporated into recommender systems utilized across diverse revenue-generating media platforms. While the utilization of recommendation algorithms can have adverse effects on the information ecosystem, these effects differ from those resulting from prioritizing advertising revenues. The crucial inquiry revolves around whose content the recommender system promotes and the intentions behind the content generation or promotion. In advertising-based models, reliance on external clients increases susceptibility to malicious actors who can manipulate content to deceive target audiences. Conversely, in business models not centered on advertising, the recommender system may contribute to the formation of echo chambers – a widespread phenomenon elaborated upon in this paper – yet diminishes the likelihood of malicious content promoters exploiting behavioral targeting.

Modern recommender systems are often trained to simplify the world into binary descriptors ("black or white"). These simultaneously make users feel empowered and yet live in fear that their beliefs might be challenged or doubted, potentially stripping them of the 'truth' they hold dear within their echo chambers¹².

The latest statistics show that advertising-based business models and Facebook specifically are losing ground, both in terms of their daily active users, time spent on the platform, content views and

¹¹ Idem.

¹² Idem.

advertisement reach¹³¹⁴. Among the reasons for that are new consumption habits – the general acceptance of recurring payments has made it easier for users to enroll in new services or products, as well as general distrust in the big tech algorithms.

As Alex Fedorov put it in his expert interview, "*the transparency of a social media product is tied to the user acknowledgement of the underlying business model*"¹⁵.

Case study 1: Facebook (2.98bn monthly users¹⁶).

Facebook's business model centers on collecting data from its extensive user base to enable targeted advertising. The platform places a strong emphasis on interactivity and hyper-textuality, enabling users to share news and publicly react to content. While featuring moderate levels of visual content, Facebook employs algorithmic curation that prioritizes engagement to amplify viral news. In combating misinformation, the platform implements algorithm adjustments and fact-checking mechanisms, although challenges persist in terms of user responsibility and confirmation bias¹⁷.

¹³ Naughton, j. (2022). For the first time in its history, Facebook is in decline. Has the tech giant begun to crumble? The Guardian. Available at: <https://www.theguardian.com/commentisfree/2022/feb/06/first-time-history-facebook-decline-has-tech-giant-begun-crumble>.

¹⁴ Lindner, J. (2024). Facebook Decline Statistics: Latest Data & Summary. WifiTalents: Statistics: Social Media and Online Communities. Available at: <https://wifitalents.com/statistic/facebook-decline/>.

¹⁵ Expert Interview with Alex Fedorov, Senior Product Designer at Social Discovery Group, 31 January 2024.

¹⁶ As of the first quarter of 2023. Source: <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>.

¹⁷ Hase, V., Boczek, K. & Scharkow, M. (2022). Adapting to Affordances and Audiences? A Cross-Platform, Multi-Modal Analysis of the Platformization of News on Facebook, Instagram, TikTok, and Twitter. Digital Journalism, DOI: 10.1080/21670811.2022.2128389.

Since 2016, when Facebook faced heavy criticism for perceived bias during the American presidential election campaign, the platform has made efforts to overhaul its moderation policies. For instance, it has conducted tests on its algorithms to determine if they can reduce the visibility of fake news stories in news feeds.

Additionally, both Facebook and Google have explored various approaches to fact-checking. Initially, Facebook introduced a red "disputed article" label, which was later replaced by a selection of "related articles" in an attempt to encourage users not to rely solely on one information source. Facebook justified this change by citing academic research indicating that prominently labelling an article with a strong image, such as a red flag, might actually reinforce deeply held beliefs, thus achieving the opposite effect of what was intended¹⁸.

Case study 2: TikTok (over 1bn active users¹⁹).

TikTok is a popular social media platform that allows users to create, view, and share short videos captured using mobile devices or webcams. Renowned for its highly engaging user base and addictive nature, TikTok features personalized feeds filled with entertaining short videos set to music and sound effects. The company's mission is to inspire creativity and spread joy by entertaining its audience. Notably, TikTok distinguishes itself from platforms like Facebook through its heightened emphasis on visual content²⁰. However, despite this distinction, the platform still relies on ad-generated revenues.

¹⁸ Lyons, T. (2017). Replacing Disputed Flags With Related Articles. Meta. Available at: <https://about.fb.com/news/2017/12/news-feed-fyi-updates-in-our-fight-against-misinformation/>.

¹⁹ As of January 2023. Source: <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>.

²⁰ Hase, V., Boczek, K. & Scharrow, M. (2022). Adapting to Affordances and Audiences? A Cross-Platform, Multi-Modal Analysis of the Platformization of News

TikTok's meteoric rise in popularity is undeniable, with a remarkable user base of 1.5 billion active users, predominantly composed of children and teenagers. From 2018 to 2022, the platform saw an annual increase of 350 million new active members. Operating under a standard ad-driven business model, TikTok utilizes a powerful recommendation algorithm to engage users further. By suggesting a diverse range of videos tailored to individual preferences, the platform effectively encourages users to consume more content²¹.

TikTok's influence in shaping the dissemination of both positive and negative messages has garnered significant attention from the academic community. Scholars have highlighted the platform's impact on various aspects of users' lives, ranging from travel destinations to perceptions of climate change and attitudes towards medical and scientific issues. Notably, TikTok's Chinese origins and presumed unbiasedness add a layer of complexity to its influence.

Researchers utilize TikTok's extensive young user base to investigate how specific issues are portrayed in short user-generated videos and how they are perceived by users. Research covers a wide range of current topics, from e-cigarettes to climate change to ChatGPT²². For example, a study by the University of Queensland analyzed 808 e-cigarette-related videos on TikTok, most of which portrayed e-cigarettes positively. This highlights concerns about potential harm

on Facebook, Instagram, TikTok, and Twitter. *Digital Journalism*, DOI: 10.1080/21670811.2022.2128389.

²¹ Jaipong, P. (2023). Business Model and Strategy: A Case Study Analysis of TikTok. *Advance Knowledge for Executives*, 2(1), No.12, 1-18 (2023). Available at: <https://ssrn.com/abstract=4335962>.

²² Haensch, A. C., Ball, S., Herklotz, M. & Kreuter, F. (2023). Seeing ChatGPT Through Students' Eyes: An Analysis of TikTok Data. Haensch, Anna et al. "Seeing ChatGPT Through Students' Eyes: An Analysis of TikTok Data." *2023 Big Data Meets Survey Science (BigSurv)*: 1-8.

due to the platform's popularity among underage users²³, leading to regulatory scrutiny and lawsuits related to minor safety issues²⁴.

Another study analysed 100 climate change-related videos on TikTok, which collectively amassed millions of views, likes, and comments. However, only a small fraction of these videos incorporated information from credible sources, prompting concerns regarding the scientific accuracy of content circulated on TikTok. Unlike text-based or image-centric platforms such as ex-Twitter and Instagram, moderating video content on TikTok poses greater challenges and requires more time due to its multimedia nature²⁵.

TikTok's platform logic, which prioritizes virality, introduces additional complexities. Creators frequently aim for viral content by pushing boundaries, occasionally resulting in harmful trends²⁶.

TikTok has endeavoured to address content issues on a macro level by implementing the For You algorithm, which is overseen by humans. This algorithm determines which videos gain traction on the platform and which do not. However, this approach has raised concerns about subjectivity, fairness, and the values embedded in its design. The platform has faced accusations of restricting the visibility of content related to topics such as "Black," "Black Lives Matter," and "LGBT," raising questions about its commitment to inclusivity and diversity.

²³ Sun T., Lim C.C., Chung J. & others (2023). Vaping on TikTok: a systematic thematic analysis. *Tobacco Control*; 32:251-254. Available at: <http://dx.doi.org/10.1136/tobaccocontrol-2021-056619>.

²⁴ Zeng, J. & Kaye, D. B. V. (2022). From content moderation to visibility moderation: A case study of platform governance on TikTok. *Policy & Internet*, 14, 79– 95. Available at: <https://doi.org/10.1002/poi3.287>.

²⁵ Basch, C.H., Yalamanchili, B. & Fera, J. (2022). #Climate Change on TikTok: A Content Analysis of Videos. *J Community Health* 47, 163–167. Available at: <https://doi.org/10.1007/s10900-021-01031-x>.

²⁶ Weimann, G. & Masri, N. (2023). Research Note: Spreading Hate on TikTok. *Studies in Conflict & Terrorism*, 46:5, 752-765. DOI: 10.1080/1057610X.2020.1780027.

On a micro level, content is managed by users, who have the ability to influence the promotion of videos through actions such as liking or disliking them.

Despite these challenges, there has been little research on TikTok's measures to flag or combat misinformation. Given its potential influence on young generations, further exploration of this issue is crucial.

Case Study 3: BuzzFeed (around 100m monthly visits²⁷)

The news and entertainment platform BuzzFeed is one of the earliest on the web. Its mission, as stated on its website, includes providing trusted, quality, brand-safe news and entertainment to hundreds of millions of people, making content on the Internet more inclusive, empathetic, and creative, and inspiring its audience to live better lives.

BuzzFeed's primary revenue streams consist of advertising, sponsorships for ad integrations, and video monetization across various social media platforms such as YouTube, Facebook, and Snapchat. The company also owns HuffPost and ComplexNetworks, which respectively provide news and entertainment content.

Based on their firsthand encounters, BuzzFeed journalists effectively utilize emotional storytelling methods found online. With a primarily youthful audience, the platform leverages engaging and emotive storytelling formats such as memes, visual humor, adorable animal images, and other types of content that tend to go viral.

Articles published on BuzzFeed often adopt a unique approach, blending humour with informative substance, particularly when covering important and serious topics such as election campaigns. Despite the light-hearted tone, these articles aim to provide readers with detailed information to enhance their understanding of the issue at hand. This distinctive style allows BuzzFeed to engage its

²⁷ As of May 2023. Source:

<https://www.similarweb.com/website/buzzfeed.com/>.

audience effectively while delivering valuable insights on complex subjects²⁸.

In print news, advertisers carefully select their news outlet, ad format, and ensure that adjacent stories do not harm their brand. However, such considerations are often not feasible online due to the nature of behavioural advertising. Additionally, while advertising spaces are technically owned by web publishers, they are typically outsourced and rented to entities known as "ad networks," which act as intermediaries between web publishers and organizations looking to advertise.

Ad networks offer advertisers a vast array of websites to display their ads, enabling them to reach large, well-profiled audiences. For instance, Google Marketing Platform spans over two million websites, reaching over 90% of internet users. Programmatic advertising further refines targeting by using additional data sources to select the most appropriate potential consumers, relying on algorithms to maximize engagement.

Overall, while ad networks themselves may not directly propagate disinformation, their advertising practices and lack of oversight can inadvertently contribute to its spread by providing financial support to websites that publish such content.

Several ad networks and programmatic companies already promise that they can deliver brand-safe adverts. The Magnite DV+ (previously known as the Rubicon Project), for example, claims it can both identify undesirable publishers before the advertisements are released, and protect against non-human traffic, unauthorized inventory, and generally bad experiences. A similar approach has been taken by Google AdSense, a tool for monetizing publishers' websites and blogs, which has started blocking undesirable resources. However,

²⁸ Dennis, J. & Sampaio-Dias, S. (2021). "Tell the Story as You'd Tell It to Your Friends in a Pub": Emotional Storytelling in Election Reporting by BuzzFeed News and Vice News. *Journalism Studies*, 22:12, 1608-1626. DOI: 10.1080/1461670X.2021.1910541.

comprehensive measures across all ad networks are needed to effectively combat this issue.

Another significant factor contributing to ad-based models' preference for sensational and misleading headlines is the use of optimization algorithms. These algorithms are designed to prioritize engagement metrics such as views, comments, shares, and likes, thereby amplifying the spread of false information packaged in emotionally charged news stories with sensational headlines.

Due to the use of behavioural targeting techniques, the dominant social media platforms tend to offer the user information he is more likely to visualize, and by doing so the platforms encourage echo chambers²⁹ (or filter bubbles) to form.

As said by Alex Fedorov, these recommender systems in social media typically present users with content that aligns with their existing beliefs, simplifying complex realities into binary choices³⁰. This can be highly engaging but also polarizing. This situation favours fake news producers, both in terms of deliberate creation of deceiving content for propaganda reasons or for mere economic profiting.

Deceptive contexts present a significant democratic challenge by fostering misinformed citizens and perpetuating echo chambers that isolate users from diverse perspectives. The emotionally charged and provocative nature of much fake news worsens this problem, resulting in heightened emotional polarization among users. Exposure to emotionally charged content in news feeds elicits similar emotional responses in user interactions, thus perpetuating the cycle of misinformation.

²⁹ An echo chamber is an environment where a person only encounters information or opinions that reflect and reinforce their own. Echo chambers can create misinformation and distort a person's perspective, so they have difficulty considering opposing viewpoints and discussing complicated topics. They are fuelled in part by confirmation bias, which is the tendency to favour info that reinforces existing beliefs.

³⁰ Expert Interview with Alex Fedorov, Senior Product Designer at Social Discovery Group, 31 January 2024.

Additionally, in recent years the automated journalism tools, which has been used for decades by legacy news agencies to provide detail-heavy news which does not require human interpretation, has started to use data and sentiment analysis to tailor the story for the local audiences and produce tone-optimised and geo-tailored stories, becoming an asset for deceiving content producers. As well as automatically generating fake news storylines with a strong editorial voice, software bots learned to widely spread such automated fake news, thereby giving the impression that the fake news is popular and endorsed by many³¹.

Importantly, social network users are particularly exposed to a broader range of news than non-users, but those with extreme ideological positions tend to share more content, contributing to the prevalence of sensational and divisive information. While increased exposure to diverse viewpoints can reduce ideological polarization, it can also heighten affective polarization due to the negative nature of many online interactions. This dual effect complicates efforts to mitigate the adverse impacts of the ad-based economic model on public discourse and information integrity³².

³¹ Bakir, A. & McStay, M. (2018). Fake News and The Economy of Emotions. Problems, causes, solutions. *Digital Journalism*, Vol 6, no 2, pp. 154-175. Available at: <https://doi.org/10.1080/21670811.2017.1345645>.

³² Tucker, J. A., Guess, A., Barberá, P., Vaccari, C., Siegel, A., Sanovich, S., Stukal, D. & Nyhan, B. (2018). *Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature*. William Flora –Hewlett Foundation.

ALTERNATIVE BUSINESS MODELS

In addition to the ad-driven media business model, digital media business models are commonly categorized based on their primary revenue streams:

1. Freemium Model

The freemium model, employed by platforms like LinkedIn and Medium, provides users with a basic version of the digital media platform or service at no cost while offering premium features, additional content, or exclusive offerings for a fee. Users can access a limited set of features or content without payment and opt to upgrade to a paid version for enhanced functionality or exclusive access to content. This model is widely used across various industries, including software-as-a-service (SaaS) products, online gaming, and digital content platforms.

Case study 4: Medium (137m monthly visits³³)

Medium offers a social journalism platform that empowers creators to share and publish stories, with a focus on nuance and storytelling, free from the influence of advertising. Its business model is "freemium," allowing users without a paid subscription to read up to three free stories per month. Currently, the platform boasts approximately 400,000 paying subscribers who contribute \$5 per month, resulting in a monthly revenue of around \$1.75 million after payouts to staff and writers (over \$2 million³⁴).

The company has taken an additional step by establishing an instance on Mastodon (more information below), exclusively accessible to paying subscribers. As previously mentioned, the

³³ As of May 2023. Source:

<https://www.similarweb.com/website/medium.com/#overview>.

³⁴ Pryor, J. J. (2020). How Big is Your Piece of the \$2 Million Medium Pie? Medium. Available at: <https://medium.com/feedium/how-big-is-your-piece-of-the-2-million-medium-pie-38e8d5385c3d>.

company relies predominantly on paid subscriptions for revenue, with no advertising income.

Case study 5: LinkedIn (740 million members)³⁵

LinkedIn, the world's largest professional networking platform, has become an essential tool for individuals and businesses, boasting over 740 million members across 200 countries and territories. The platform's business model focuses on connecting professionals, offering services tailored to individual users, recruiters, advertisers, and businesses. LinkedIn's vast user base and data collection capabilities allow it to provide targeted advertising and recruitment services, enhancing its value proposition. Unlike other social networks, LinkedIn diversifies its revenue streams through premium subscriptions, targeted advertising, and Talent Solutions, which optimize the hiring process for businesses. In 2020, LinkedIn's premium subscriptions and Talent Solutions generated significant revenue, showcasing the platform's effectiveness in serving the professional community.

2. Subscription-based model

In this model, adopted by widely known streaming platforms such as Netflix, Spotify, Amazon Prime, digital media companies offer premium or exclusive content and services in exchange for a subscription fee. Users pay a recurring fee to access content, which may include articles, videos, audio, or other forms of media. This is a business model to scrutinize as, for instance, the audience of

³⁵ Larsen, R. (2024). The Business Model and Revenue Streams of LinkedIn Explained. Untaylored, Business Design. Available at: <https://www.untaylored.com/post/the-business-model-and-revenue-streams-of-linkedin-explained#:~:text=LinkedIn's%20business%20model%20revolves%20around,recruiters%2C%20advertisers%2C%20and%20businesses.>

subscription video-on-demand services only reached up to 1.8bn users around the globe in 2023³⁶.

This model extends to journalism and news platforms, akin to Netflix and Spotify, termed as "Spotification"³⁷. Platforms like Apple News+, Cafeyn/LeKiosk, and Readly bundle journalistic content from various producers, offering an innovative means for users to consume news online. Such platforms are expected to grow, as they provide convenience by aggregating content and employ recommender systems for personalized content delivery.

Since this model doesn't depend on advertising-generated revenue streams, it lacks advertising incentives and doesn't prioritize clicks and views to the same degree as the ad-based model. Consequently, there's potentially a reduced likelihood of intentional and unintentional misinformation and disinformation. However, like the ad-based model, personalization of content and recommender systems may still contribute to audience polarization. To counteract polarization, these platforms should provide a variety of viewpoints on topics of interest³⁸.

The expansion of paid-for online media could potentially benefit news publishers by fostering a culture of paying for online content across various platforms. Rather than diverting attention and resources away from news, paying for other forms of online media might actually cultivate a greater willingness among users to pay for online news as

³⁶ Rotblut, C. (2023). How Streaming Services Netflix, Disney and Spotify Stack Up. *Forbes*. Available at: <https://www.forbes.com/sites/investor/2023/11/09/how-streaming-services-netflix-disney-and-spotify-stack-up/>.

³⁷ Fletcher, R., & Nielsen, R. K. (2020). Are Netflix and Spotify subscribers more likely to pay for online news? comparative analysis of data from six countries. *International Journal of Communication*, 14, 3439–3457.

³⁸ Buschow, C. & Wellbrock, C. M. (2023). "Spotify for News"? User Perception of Subscription-Based Content Platforms for News Media. *Journal. Media*, 4, 1-15. Available at: <https://doi.org/10.3390/journalmedia4010001>.

well, thereby augmenting revenue streams for news publishers³⁹. Therefore, it appears that the implementation of a “Spotify model” for news platforms might be a viable option for future media.

Crucially, subscription-based recreational platforms like Spotify and Netflix warrant further investigation for their impact on the evolving landscape of new-media information. Notably, podcasts on Spotify are gaining prominence as significant sources of information for an expanding audience, while non-fiction content is also gaining traction on Netflix. While there is a risk of sensationalizing information, these platforms also offer meticulously curated content, potentially assuming essential roles traditionally associated with journalism.

Case study 6: Netflix (270m subscribers)⁴⁰

Netflix holds a dominant position in the streaming entertainment market, providing subscribers with a diverse range of content. Operating on a subscription-based model, Netflix prioritizes user experience without resorting to advertising. Its extensive catalog caters to a wide range of preferences, offering a diverse selection of movies, TV shows, documentaries, and other content. Nevertheless, concerns have emerged regarding the platform's potential use of manipulative techniques.

The question has been thoroughly examined in academic articles. A team of researchers from the University of Chicago suggested that Netflix may employ various manipulative techniques, such as design elements like autoplay, auto preview, and a lack of stopping cues. They argue that these tactics potentially erode a user's sense of agency over time and content choice, ultimately aiming to capture a larger share of the user's attention⁴¹.

³⁹ Fletcher, R., & Nielsen, R. K. (2020). Are Netflix and Spotify subscribers more likely to pay for online news? comparative analysis of data from six countries. *International Journal of Communication*, 14, 3439–3457.

⁴⁰ As of the first quarter of 2024. Source: <https://www.statista.com/statistics/250934/quarterly-number-of-netflix-streaming-subscribers-worldwide/>.

⁴¹ Schaffner, B., Stefanescu, A., Campili, O. & Chetty. M. (2023). Don't Let Netflix Drive the Bus: User's Sense of Agency Over Time and Content Choice on

While Netflix's content can indeed wield significant societal influence, as seen in the positive impact of "The Queen's Gambit" on chess participation and the negative effects of "13 Reasons Why" on boys' suicide rates⁴², the platform's policies regarding viewership data and algorithms remain opaque⁴³.

Despite its cultural significance, there is a paucity of literature delving into how Netflix's content presentation and manipulative strategies impact users, largely due to its primary perception as an entertainment rather than a news service⁴⁴. Additionally, since users predominantly view Netflix as an entertainment provider rather than a traditional news outlet, the standards for discerning and evaluating content may not be equivalent. Consequently, the repercussions of Netflix's content delivery methods and its exploitation of user susceptibilities to manipulative techniques remain largely unexplored, with scholarly research on this subject being limited.

3. Peer-to-peer model

A peer-to-peer model of social media refers to a decentralized approach where users directly interact with each other without the need for intermediaries or central servers. In this model, users

Netflix. Proc. ACM Hum.-Comput. Interact. 7, CSCW1, Article 128. Available at: <https://doi.org/10.1145/3579604>.

⁴² Bridge, J. A., Greenhouse, J. B., Ruch, D., Stevens, J., Ackerman, J., Sheftall, A. H., Horowitz, L. M., Kelleher, K. J. & Campo, J. V. (2020). Association Between the Release of Netflix's 13 Reasons Why and Suicide Rates in the United States: An Interrupted Time Series Analysis. *Journal of the American Academy of Child & Adolescent Psychiatry* 59, 2, 236–243. Available at: <https://doi.org/10.1016/j.jaac.2019.04.020>.

⁴³ Wayne, M, L (2022). Netflix audience data, streaming industry discourse, and the emerging realities of 'popular' television. *Media, Culture & Society*, Vol. 44(2) 193–209. Available at: <https://doi.org/10.1177/01634437211022723>.

⁴⁴ Lotz A. L. & others (2022). Netflix, library analysis, and globalization: rethinking mass media flows. *Journal of Communication*, Volume 72, Issue 4, Pages 511–521. Available at: <https://doi.org/10.1093/joc/jqac020>.

communicate, share content, and engage with each other on a network where every participant has equal status and can act both as a producer and a consumer of content.

Peer-to-peer social media platforms often rely on distributed networks or protocols to facilitate communication and content sharing among users. These platforms prioritize user privacy, data ownership, and censorship resistance by removing the need for a central authority to oversee interactions.

The main revenue stream of peer-to-peer social media platforms can vary, but commonly, it tends to be subscription fees or transaction fees.

Case study 7: Patreon (101m monthly visits⁴⁵)

Patreon is an innovative "peer-to-peer" business model platform established in 2013, designed for creators across various fields such as podcasting, writing, video production, music, art, gaming, and more, to receive direct support from their followers and fans. Initially, users can join for free and showcase their work, but once they begin monetizing, Patreon takes a percentage of their earnings. In exchange, the platform offers payment processing, communication tools, workshops, analytics, and other features.

Patreon facilitates the formation of small, dedicated communities where creators can gather supporters who contribute a monthly fee, ensuring a steady income and granting them independence compared to relying on large followings on platforms like Instagram or YouTube. This independence is valuable as it helps creators avoid the need to sell branded products, which can potentially introduce bias into their content. Despite this, Patreon has demonstrated consistent profit growth, achieving a valuation of \$4 billion after its latest funding round in 2021.

Indeed, the case of Patreon is crucial in showcasing the validation of the peer-to-peer business model, where individuals can directly

⁴⁵ As of May 2023. Source:
<https://www.similarweb.com/website/patreon.com/#overview>.

support their favorite creators, ensuring not only a reliable income but, more significantly, freedom and independence for the creators. This model represents a genuinely new approach where creators and the platform can establish a mutually beneficial relationship without the need to collect data or exploit people's privacy. It exemplifies a shift towards more ethical and transparent ways of monetizing content while empowering creators to maintain control over their work and connect directly with their audience.

Case study 8: Substack (around 45m visits monthly⁴⁶).

Substack is another "peer-to-peer" business model platform established in 2017. Originally starting as an email platform, it provided writers with a means to build an audience and send newsletters. Similar to Patreon, creators on Substack have the option to offer their content for free or charge a fee, with the platform taking a 10% commission fee.

According to the company, Substack boasts 1 million paid subscriptions, with most charging between \$5 and \$15 per month. In 2021, Substack reported a revenue of \$9 million and achieved a valuation of \$650 million.

4. Open-source model

Open-source business model for a media platform involves leveraging the principles of open-source software – where the source code is freely available for anyone to inspect, modify, and distribute – while still generating revenue through various strategies.

Such platforms, usually decentralized and relying on a community-driven model for its development and maintenance, can have a diversified set of revenue streams, but remain fundamentally non-

⁴⁶ Similarweb (2024). Substack.com. Available at: <https://www.similarweb.com/website/substack.com/#overview>.

commercial, with donations, grants and crowdfunding being the key source of income. Their decentralized nature means that each instance (server) can have its own funding model, which might include additional revenue streams such as local donations, membership fees, or other community support mechanisms. Examples of such platforms include Mastodon and Peertube discussed below.

Case study 9: Mastodon (around 3m visits monthly to the original server operated by Mastodon gGmbH non-profit⁴⁷).

Mastodon is a free and open-source software designed for self-hosted social networking services. Operating similarly to X (ex-Twitter), Mastodon consists of numerous independently run nodes or servers, each with its own set of rules, privacy policies, and content moderation standards. Funded by crowdfunding and devoid of advertisements, Mastodon is maintained by the German non-profit Mastodon gGmbH.

Each user is a member of a specific Mastodon server, which can interoperate as a federated social network. This setup enables users on different servers to interact with one another, creating a larger social network. The intention behind this federated structure is to afford users the flexibility to select a node with policies that align with their preferences while still maintaining access to a broader social network.

Indeed, there are several decentralized platforms similar to Mastodon, such as PeerTube and Friendica. One of the key advantages of these platforms over centralized social media owned by big tech companies is that there is no corporation behind each network. Instead, they are typically coordinated by non-profits and operate as free, open-source, and ad-free websites.

These platforms have adopted similar protocols and have created a Fediverse network. The Fediverse is an ensemble of federated (interconnected) servers used for web publishing, including social

⁴⁷ Similarweb (2024). Mastodono.social. Available at: <https://www.similarweb.com/website/mastodon.social/#overview>.

networking, microblogging, blogging, and websites, as well as file hosting. While independently hosted, servers within the Fediverse can communicate with each other, fostering a decentralized and interconnected online ecosystem.

Indeed, the appreciated advantages of such platforms appeared evident last year when the European Commission set up its own server on Mastodon⁴⁸.

Case study 10: PeerTube (around 167k visits monthly⁴⁹)

PeerTube is a free and open-source, decentralized video platform powered by WebTorrent and operating on the ActivityPub federation protocol. Launched in 2017, PeerTube utilizes peer-to-peer technology to alleviate the load on individual servers during video playback. The development of PeerTube is currently backed by the French non-profit organization Framasoft, with the overarching goal of offering an alternative to centralized platforms like YouTube.

5. Mixed model

It is crucial to emphasize that many commercial platforms mentioned above typically depend on a variety of revenue streams, with advertising, subscription or premium features fees, and transaction fees being dominant among them. However, there exists a group of media platforms that boast truly diversified income sources, without any single one being predominant.

⁴⁸ Kan, M. (2022). EU Joins Mastodon Social Network, Sets Up Its Own Server. PC MAG. Available at: <https://www.pcmag.com/news/eu-joins-mastodon-social-network-sets-up-its-own-server>.

⁴⁹ Similarweb (2024). Joinpeertube.org. Available at: <https://www.similarweb.com/website/joinpeertube.org/#overview>.

Case study 11: VICE (28m monthly visits⁵⁰)

VICE serves as an intriguing example of a platform that diversifies its revenue sources, incorporating both advertising and subscription models. It epitomizes digital-native news outlets that seamlessly blend entertainment with news, pushing the boundaries of traditional journalism and reshaping the concept of journalistic practices and norms⁵¹.

VICE's departure from conventional journalism is palpable in its use of edgy language, references to internet culture, and a conversational tone. While some may perceive VICE's content aggregation as clickbait, researchers contend that it offers a distinctive fusion of serious reporting and entertaining narratives tailored to a youth-oriented audience. VICE journalists, adept in internet culture, harness emotion to deliver insightful political journalism to their predominantly young audience, blurring the lines between news genres and formats⁵².

Case study 12: Reddit (306 million weekly active users⁵³)

Reddit, founded in 2005, has evolved into a prominent social media platform distinguished by its user-created and user-moderated communities, known as subreddits. Each subreddit centers on a specific topic, allowing users to post, comment, and vote on content, with the most upvoted content gaining higher visibility. This decentralized moderation model empowers community members to establish and enforce their own rules and Reddit's Content Policy, alongside Reddit's internal safety teams, fostering a unique blend of

⁵⁰ As of May 2023. Source: <https://www.similarweb.com/website/vice.com/#overview>.

⁵¹ Ibid.

⁵² Ibid.

⁵³ As of May 2024. Source: <https://www.redditinc.com/>

social interaction and self-governance. Initially launched with \$12,000 in seed funding from Y Combinator, Reddit's valuation soared to \$10 billion by September 2021, following a \$410 million Series F funding round. The platform went public in March 2024, boasting over 306 million weekly active users. Reddit's mission is to bring community, belonging, and empowerment to everyone in the world.

Reddit's business model revolves primarily around the sale of advertising on its mobile applications and website. Advertisers can reach unduplicated audiences on Reddit through interest-based and contextually relevant communities and content. In addition to ads, Reddit also generates revenue from licensing public content on Reddit, products within its user economy (such as post awards), and Reddit premium subscriptions, providing users with perks like ad-free browsing and access to exclusive content. This model has proven successful, with total revenue reaching \$804 million in 2023.

The platform's community-driven nature and the ability for users to vote on posts and comments, earning "karma" for their contributions, highlight its democratic content curation. Popular content rises to the top, while older posts are automatically archived after six months, preventing further comments or votes. Reddit continues to thrive by prioritizing user empowerment and providing value to both its community and advertisers, cementing its status as one of the world's most popular digital media platforms.

More details on the Reddit's approach to combat disinformation are presented in the following box.

Reddit's Approach to Combating Disinformation

Reddit tackles disinformation through a multifaceted strategy that emphasizes user behavior, community involvement, and transparency:

1. Behavioral Focus: Instead of having a specific rule targeting misinformation, Reddit addresses the issue by focusing on user behavior. Policies target inauthentic actions, such as

impersonation and manipulation by foreign entities, rather than the content itself. This approach aims to curb disinformation by scrutinizing the intent and authenticity of users.

2. **Community-Driven Moderation:** In addition to Reddit's internal safety teams, subreddits are moderated by volunteer users who create and enforce rules tailored to their specific communities. For example, r/Science subreddit requires posts to link to peer-reviewed journals, filtering out unverified information. This localized moderation ensures that disinformation is managed in a contextually appropriate manner.
3. **Voting System:** Reddit's voting mechanism allows users to upvote or downvote content, which determines its visibility. This system leverages the collective judgment of the community to highlight credible information and diminish the reach of less reliable content. It embodies the principle of the "wisdom of crowds," relying on community actions to maintain information integrity.
4. **Public and Open Platform:** The open nature of Reddit enables diverse engagement, reducing the likelihood of echo chambers. Public visibility of all content allows users from different communities to interact and challenge each other's posts, fostering a broader exchange of ideas and mitigating isolated information bubbles.
5. **Controlled Recommendations:** Reddit offers users the choice to receive recommendations from similar communities while excluding certain content types, such as violent or sensitive topics. This balance ensures recommendations enhance user experience without compromising safety or community standards.
6. **Transparency Reports:** Reddit publishes bi-annual transparency reports and quarterly safety and security reports on r/redditsecurity detailing its enforcement actions, governance practices and safety improvements. These reports provide insights into how Reddit enforces its rules and

manages the platform, reflecting a commitment to transparency and accountability. By disclosing actions taken by both employees and volunteer moderators, Reddit builds trust and maintains an open dialogue with its users.

By integrating these elements, Reddit effectively combats disinformation through a holistic and user-centric approach, leveraging community engagement and transparency to uphold the integrity of information shared on its platform.

Source: Expert Interview with Reddit representative, 26 February 2024.

The following table summarizes the key features of various media platform business models, based on the case study analysis.

Type of business model	Main Revenue Streams	Key features	Examples
Ad-based	Advertising	<ul style="list-style-type: none"> - Relies on data-driven advertising for revenue generation. - Offers free access to content or services, monetizing through various forms of advertising. - Utilizes display ads, video ads, native advertising, sponsored content, and programmatic advertising. 	<ul style="list-style-type: none"> - Facebook - TikTok - BuzzFeed
Freemium	Premium Features, Fees	<ul style="list-style-type: none"> - Provides basic version for free with premium features available for a fee. - Users can access limited features without payment and opt for paid upgrades. - Widely used across software-as-a-service products, online gaming, and digital content platforms. 	<ul style="list-style-type: none"> - Medium - LinkedIn
Subscription-based	Subscription fees	<ul style="list-style-type: none"> - Offers premium or exclusive content and services for a recurring subscription fee. - Provides access to articles, videos, audio, or other media formats. - Widely adopted in streaming platforms and journalism/news platforms. 	<ul style="list-style-type: none"> - Netflix

Peer-to-peer	Subscription fees, Transactions fees	<ul style="list-style-type: none"> - Decentralized approach where users directly interact without intermediaries. - Prioritizes user privacy, data ownership, and censorship resistance. - Relies on distributed networks or protocols for communication and content sharing. 	<ul style="list-style-type: none"> - Patreon - Substack
Open source	Crowdfunding, Grants, Membership fees, Donations	<ul style="list-style-type: none"> - Source code is freely available for inspection, modification, and distribution. - Relies on community-driven development and maintenance. - Diversified revenue streams including donations, grants, and crowdfunding. 	<ul style="list-style-type: none"> - Mastodon - PeerTube
Mixed	Advertising, Subscription Fees, Premium Features, Transaction fees	<ul style="list-style-type: none"> - Diversified income sources without single dominance. - Utilizes a combination of advertising, subscription or premium features fees, and transaction fees. - Offers flexibility in revenue generation strategies. 	<ul style="list-style-type: none"> - VICE - Reddit

EU REGULATORY APPROACH

In recent years, the European Union has taken decisive steps by introducing legislation that represents a unique case globally. For the first time, these regulations shift the "self-regulation regime" of global big tech companies, imposing restrictions on the use of algorithms and recommender systems, and generally mandating greater transparency for media platforms.

This legislation is particularly relevant for the purposes of this research. The final recommendations to the relevant stakeholders, presented in the concluding section of this report, must align with these regulations. This alignment will help harness the potential of the legislation, providing additional impetus for its development towards decreasing toxicity and polarizing effects in the current media landscape, while also creating filters for misinformation and building trust.

Below is an overview of the main legislative acts of the EU in the field of media space regulation relevant to this research.

EU Digital Services Act

The centralized media owned by big tech companies continue to dominate the current information landscape in terms of users and views. The EU Digital Services Act, enacted in 2022, stands out as unique legislation in the Western world, representing one of the initial comprehensive attempts to regulate prominent internet platforms and hold them accountable for the content posted on their services.

The Digital Services Act (EU Regulation 2022/2065, DSA) is a recent regulation that mandates major internet platforms such as Facebook, YouTube, TikTok, X and similar services to implement enhanced measures to address societal risks within the EU. Non-compliance could lead to fines amounting to billions of euros.

The DSA aims to put an end to the era in which tech companies essentially self-regulated, establishing their own content moderation policies and issuing "transparency reports" about their efforts to combat harms like disinformation, which have been difficult for third parties to scrutinize. The DSA promises to change this dynamic by

compelling platforms to be more transparent about the functioning of their algorithmic systems and holding them accountable for societal harms arising from the use of their services.

Officially published in the European Union's journal on October 27, 2022, the DSA became effective on November 16, 2022. This law applies to all providers of intermediary services across the EU starting February 2024. However, the largest platforms and search engines were required to comply with the new rules earlier, beginning in the summer of 2023, and they were given four months to adhere to the DSA after being designated by the European Commission.

Key provisions of the DSA include:

- Clear rules for handling illegal content: The DSA revises the procedure by which digital service providers must promptly remove illegal content according to national or EU law. It also strengthens a Europe-wide prohibition on general content monitoring, ensuring that platforms are not compelled to continuously police their platforms at the expense of free speech.
- New rights for users to contest content moderation decisions: Platforms are required to furnish affected users with detailed explanations in the event of account blocks, or removal or demotion of content. Users will have enhanced rights to challenge these decisions with the platforms and pursue out-of-court settlements if necessary.
- Increased transparency regarding recommender systems and online advertising: Platforms must clearly articulate the functioning of their content moderation and algorithmic recommender systems in their terms of service. They must provide users with at least one option for an alternative recommender system (or "feed") not reliant on profiling. Additionally, platforms must furnish users with clear information regarding why they were targeted with an advertisement and how to modify ad targeting parameters.

- Restricted use of targeted advertising and deceptive designs: The DSA imposes a prohibition on targeting advertisements to children and on profiling individuals according to "sensitive" traits such as religious affiliation or sexual orientation. Additionally, the DSA will implement restrictions on design techniques that deceive and manipulate users, commonly referred to as "dark patterns"⁵⁴."
- General transparency and reporting obligations: Platforms must furnish annual reports on their content moderation endeavours, detailing the quantity of removal orders (issued by Member States or "trusted flaggers"⁵⁵) concerning illegal content, alongside the volume of user complaints and their resolutions. Transparency reports are also mandated to outline any automated systems employed for content moderation, divulging their accuracy and potential error rates.
- Requirements for major platforms to mitigate "systemic risks": EU legislators have acknowledged that the largest platforms

⁵⁴ Dark patterns are design elements that deliberately obscure, mislead, coerce and/or deceive website visitors into making unintended and possibly harmful choices.

⁵⁵ Trusted flaggers are entities, explicitly not individuals (see recital 46 of the DSA), which must cumulatively fulfil the following conditions established by the legislator in Article 19 para. 2 DSA. Specifically, the entity must (1) have particular expertise and competence for the purposes of detecting, identifying and notifying illegal content and be active within their designated area of expertise; (2) represent collective interests and be independent from any online platform; (3) carry out its activities for the purposes of submitting notices in an accurate and objective manner; (4) have transparent funding structures; and (5) publish at least once a year a report on actions and notices made in the previous year, which must meet certain minimum requirements.

According to recital 46, such entities can be public in nature, such as, for terrorist content, internet referral units of national law enforcement authorities or of the European Union Agency for Law Enforcement Cooperation ('Europol') or they can be non-governmental organisations, consumer organisations and semi-public bodies, such as the organisations part of the INHOPE network of hotlines for reporting child sexual abuse material and organisations committed to notifying illegal racist and xenophobic expressions online. For intellectual property rights, organisations of industry and of right-holders could be awarded trusted flagger status, where they have demonstrated that they meet the applicable conditions and respect for exceptions and limitations to intellectual property rights."

pose significant potential risks to society, including threats to fundamental rights, public discourse, elections, gender-based violence, and public health. Consequently, the DSA will mandate platforms with over 45 million users in the EU, such as YouTube, TikTok, and Instagram, to formally evaluate how their products, including algorithmic systems, might exacerbate these societal risks and to take concrete measures to mitigate them.

- Legally mandated data access for external scrutiny: Platforms' self-assessments and risk-mitigation efforts will not solely rely on trust—platforms will also be required to share their internal data with independent auditors, EU and Member State authorities, as well as researchers from academia and civil society. These entities will scrutinize the data to help identify systemic risks and ensure platforms are held accountable for addressing them.
- Enhanced competencies and enforcement powers for the European Commission and national authorities: Enforcement will be coordinated between new national and EU-level bodies. The Commission will have direct supervision and enforcement authority over the largest platforms and search engines, with the ability to levy fines of up to 6% of their global turnover. Additionally, the Commission may impose supervisory fees on platforms to assist in financing their enforcement activities.

The implementation of the Digital Services Act (DSA) represents a significant shift in the regulation of online platforms and search engines within the European Union. Here are the key steps in the DSA's implementation and what comes next:

- Assessment of user numbers to determine VLOPs & VLOSEs: On February 17, 2023, platforms and search engines reported the number of their active end users in Europe to the EU Commission. The Commission is now tasked with evaluating the accuracy of these reports to officially determine which services meet the threshold (over 45 million active EU users) of being designated as a Very Large Online Platform (VLOP) or

Very Large Search Engine (VLOSE). Initial disclosures indicate that platforms such as Facebook, Instagram, Google, YouTube, TikTok, and X (ex-Twitter) qualify.

- Compliance for VLOPs & VLOSEs: Upon being designated as VLOPs and VLOSEs, the largest platforms and search engines will have four months to adhere to the rules outlined in the DSA. This includes conducting and publishing their inaugural annual risk assessments, as well as implementing regulations on content moderation. Users can expect to see changes on the platforms during this time, such as new features facilitating the reporting of illegal content, as well as updated Terms and Conditions that are clear and understandable to all users, including minors.
- Empowering Digital Services Coordinators (DSCs): Starting from February 17, 2024, platforms and search engines with fewer than 45 million monthly active users will be obligated to comply with the new EU Regulation aimed at empowering and safeguarding online users by addressing systemic risks and enhancing content moderation tools. These measures encompass various aspects such as content profiling, protecting minors online, combating illegal content, and preserving freedom of expression. A crucial element of the enforcement framework is the establishment of a pan-European supervisory architecture, with the European Commission leading oversight efforts in collaboration with national digital services coordinators.

Notably, the creation of the European Center for Algorithmic Transparency (ECAT) ⁵⁶ will support supervisors in ensuring that algorithmic operations comply with EU legislation. For larger entities identified as dominant players, including major search engines like Bing and Google Search, and prominent online platforms such as Facebook, Instagram, and YouTube,

⁵⁶ European Commission (2024). Towards a safer, more predictable, and trusted online environment. European Centre for Algorithmic Transparency. Available at: https://algorithmic-transparency.ec.europa.eu/index_en.

compliance entails rigorous risk assessments and adherence to content moderation standards.

As the DSA comes into effect, the EU and its member states are tasked with strengthening enforcement capabilities, with initiatives like the ECAT poised to play a pivotal role in upholding regulatory standards and promoting transparency in the digital landscape⁵⁷.

Hence, the DSA regulation establishes a fresh framework for media platforms to function within, introducing new regulations and reporting obligations. These changes are poised to enhance the European information ecosystem. The recommendations outlined in the concluding chapter of this study are in harmony with the stipulations of the DSA, leveraging the positive momentum generated by this regulatory update.

In addition to the DSA, over the last years the EU has implemented several other measures and regulations to govern digital platforms and services to ensure a safer and more transparent online environment.

Digital Markets Act (DMA)

The Digital Markets Act (DMA) complements the DSA by addressing anti-competitive behaviors among the largest digital platforms, referred to as gatekeepers. These platforms have a substantial impact on the internal market, act as crucial gateways for business users to access customers and hold a dominant and enduring position. The DMA introduces obligations aimed at promoting fair competition and preventing gatekeepers from exploiting their market position. Key provisions include prohibiting self-preferencing of their own services,

⁵⁷ O'Donnell, M. (2024). When Will the Digital Services Act (DSA) Come Into Force? A DSA Timeline. Trolley. Available at: <https://trolley.com/learning-center/dsa-timeline/#:~:text=very%20large%20platforms.-,Full%20implementation%3A%20February%2017%2C%202024,all%20aspects%20of%20the%20DSA.>

mandating interoperability with third-party services, and enabling users to uninstall pre-installed software or apps⁵⁸.

Cybersecurity Threats Measures in the EU⁵⁹

In response to the increasing cybersecurity threats, the European Commission and the High Representative of the Union for Foreign Affairs and Security Policy unveiled a new EU Cybersecurity Strategy at the end of 2020. Recognizing that cyberattacks often transcend national borders and can impact the entire EU, the strategy emphasizes the need for robust national cybersecurity bodies that collaborate across Member States. To tackle these challenges, the Directive on Security of Network and Information Systems (NIS Directive) was introduced, ensuring the establishment and cooperation of national cybersecurity authorities. Following a review of this directive, the proposal for the NIS2 Directive was put forward, aiming to further enhance the cybersecurity framework across the EU. Officially published in December 2022, the NIS2 Directive came into effect on January 16, 2023, with Member States required to incorporate its provisions into national law by October 18, 2024.

In addition to legislative measures, the EU focuses on fostering collaboration within the cybersecurity community through Information Sharing and Analysis Centres (ISACs). These centers are crucial for enhancing sector-specific cybersecurity measures and facilitating information exchange. The European Commission, in partnership with the European Union Agency for Cybersecurity (ENISA), prioritizes the development and support of ISACs, including the creation of new centers in previously uncovered sectors. The "empowering EU ISACs consortium," overseen by the Commission, offers essential legal, technical, and organizational assistance to bolster the effectiveness and reach of these collaborative efforts.

⁵⁸ European Commission (2024). About the Digital Markets Act. Digital Markets Act (DMA). Available at: https://digital-markets-act.ec.europa.eu/about-dma_en.

⁵⁹ European Commission (2024). Cybersecurity Policies. Shaping Europe's Digital Future. Available at: <https://digital-strategy.ec.europa.eu/en/policies/cybersecurity-policies>.

Foreign Information Manipulation and Interference (FIMI) measures⁶⁰

The European External Action Service (EEAS) has bolstered its capabilities to counter Foreign Information Manipulation and Interference (FIMI) through mechanisms such as the Rapid Alert System (RAS) and the Information Sharing and Analysis Centre (FIMI ISAC). These endeavors enable coordinated actions, systematic evidence gathering, and robust countermeasures against disinformation across EU Member States. Collaborating with the European Commission and Member States, the EEAS continually enhances the FIMI Toolbox to impose consequences on perpetrators, ensuring a cohesive and efficient defense against disinformation.

A pivotal component of these endeavors is the EUvsDisinfo program, initiated by the East StratCom Task Force in 2015 to counter pro-Kremlin disinformation. The program systematically monitors and analyzes disinformation trends, curating a vast database comprising over 15,000 instances of disinformation. Employing a blend of fact-checking and data analysis, it bolsters Europe's resilience by heightening public awareness and furnishing tools to identify and combat false narratives. These measures play a substantial role in advancing the EU's strategic communication and security goals, safeguarding democratic processes, and shielding citizens from foreign information threats⁶¹.

⁶⁰ European Union External Action (2021). Tackling Disinformation, Foreign Information Manipulation & Interference. Available at: https://www.eeas.europa.eu/eeas/tackling-disinformation-foreign-information-manipulation-interference_en.

⁶¹ EUvsDiSiNFO (2023). 'To Challenge Russia's Ongoing Disinformation Campaigns': Eight Years of EuvsDisinfo. Available at: <https://euvsdisinfo.eu/to-challenge-russias-ongoing-disinformation-campaigns-eight-years-of-euvsdisinfo/>.

CONCLUSION AND RECOMMENDATIONS

This study on Alternative Business Models for a Less Polluted Ecosystem aims to explore the link between dominant media business models and the spread of misinformation and disinformation. To identify this link and suggest ways to mitigate the negative impacts of modern media, we conducted an in-depth analysis of the mechanisms shaping current platforms. This involved reviewing scientific publications on the topic, analyzing twelve case studies from six different business models, and conducting expert interviews with practitioners in the media and fact-checking industries.

The study revealed that the current media landscape is dominated by ad-driven platforms that heavily rely on user information collection for targeted advertising. This model is the least healthy regarding the spread of deceptive content, and its reliance on recommender systems based on personal preferences may foster polarization. In contrast, freemium, subscription-based, peer-to-peer, open-source, and mixed business models for digital media offer healthier alternatives to the ad-based model. The convergence of regulatory advancements in the EU and the popularization of more innovative models, especially decentralized ones, present a unique opportunity to reshape the European information ecosystem.

The seven following recommendations aim to foster a healthier, more transparent, and user-centric media environment. By addressing core issues such as disinformation, polarization, and user trust, they pave the way for sustainable growth and improved public discourse. Their implementation, which seeks to create a space less susceptible to malicious activities and to deter or mitigate polarization on the web, requires collaboration from regulators, media platforms, academia, civil society, and the public.

1. Promote Alternative Business Models

Encourage the exploration of sustainable and healthy business models that move away from advertising-based revenue and focus on user engagement through compelling storytelling rather than clickbait. These models should consider the integration of the key elements of the aforementioned successful alternative media platforms. These should state clearly their intention not to exploit users' identity, views, religion, privacy or time to start building trust with their audience, offering a user tools to control their experience.

These alternative business models should counter the traditional market of personal data that fuels the big tech companies' business, and exclude these practices from their revenue generation streams. Ideally, this business model should be a combination of "freemium" or subscription and crowdfunding revenue sources.

Crowdfunding will be a further support to underpin specific initiatives or features that resonate with the community's values, such as the development of new content verification tools or educational programs to enhance media literacy. The growth model should certainly embrace the Product Led Growth concept⁶², where users are attracted to the platform by the value it offers and the trust it inspires, rather than through aggressive marketing or intrusive ads. This strategy not only diversifies revenue streams but also strengthens user engagement and their investment in the platform's success.

EU regulators should play a key role in promoting this regeneration of the European media platforms landscape and the adoption of the DSA with its requirement for transparency in targeted advertising and alternative recommender systems offers an break-through opportunity for a new quality of information market in Europe.

Additionally, DSA's provisions should be used to support emerging social media platforms, avoiding industry monopolization by a few big companies. Platforms like *Mastodon*, which prioritize privacy and manage sensitive content through small, community-based

⁶² Product-led growth is a business strategy that relies on using your product as the main vehicle to acquire, activate, and retain customers.

networks, serve as excellent models. These platforms, free from advertising and optimization algorithms, offer a decentralized and user-focused alternative⁶³.

The above-described alternative models will not only address the immediate concerns about disinformation but also establish a new benchmark for the media industry at large. Launching calls for ideas in collaboration with tech platforms and leveraging start-ups' creativity could yield innovative solutions.

2. Inform Europeans about existing media regulations

In order to mitigate the polarizing effects of the disinformation narratives, it might be beneficial to design and implement measures aimed at informing the European population about the recent and future developments in the field of media regulation, including the Digital Services Act (DSA), illustrating its role in enhancing transparency and generally protecting users' interests. These measures should reduce distrust which is one of the factors fueling polarization.

Additionally, it might be beneficial to develop an accessible platform or mobile application to other EU regulations in the field of digital media. This could be modeled after existing platforms like *Countable* in the US, which helps users track legislation and engage with representatives, or *CitizenLab* in the EU, a digital democracy platform facilitating civic engagement. Other examples include *Parltrack*, providing detailed legislative information, and *YourPriorities*, a social networking platform promoting direct democracy.

3. Media Literacy Education

Educating people on how to critically evaluate information and recognize propaganda and fake news can help individuals become more discerning consumers of media. This could be done through schools, community programs, and media literacy campaigns. Tools like *Bias-o-meter* could be helpful as well – this is a Google Chrome

⁶³ Expert Interview with Alex Fedorov, Senior Product Designer at Social Discovery Group, 31 January 2024.

extension capable of analysing news (blogs, etc.), assign a partiality and comment on why an article is biased.

4. New Recommender Systems

Recommender systems should incorporate mechanisms that expose users to diverse viewpoints, mitigating the echo chamber effect. This involves adjusting profiling methods and integrating a broader range of news and interactions into recommendation algorithms, fostering critical thinking and a balanced information ecosystem⁶⁴. The provision of DSA requiring platforms to provide users with at least one alternative recommender system that does not rely on profiling and to be highly transparent about targeted advertising, has been an important step forward.

A good example for a more sustainable business model comes from alternative social media platforms, which excluded or virtually withdrew recommender systems from their platforms (e.g., *Reddit*), giving the user the chance to turn it on whenever they want⁶⁵. Additionally, the user can enable general recommendations which provide the most trending content not connected to user preferences, therefore providing exposure to various opinions, which might be a useful tool to mitigate polarization.

Additionally, a so-called “exit strategy” needs to be further explored⁶⁶. This social behavior phenomenon prevents polarized categories of users to perceive alternative views, as the groups of people surrounding them usually react in an unsupportive way to changing beliefs, leading to social isolation of these individuals or even open hostility. This phenomenon further reinforces echo-chambers, creating a vicious circle, and therefore needs to be addressed.

To further improve the EU policy regarding the recommender systems, which are one of the key reasons for polarization, a

⁶⁴ Idem.

⁶⁵ Expert interview with Reddit representative, 26 February 2024.

⁶⁶ Expert Interview with Maya Stravinskaya, Founder of XZ Foundation, 29 February 2024.

collaboration in the intersection of tech platforms, civil society organizations and academia is required.

5. Fact-Checking Practices

Integrate fact-checking mechanisms into social media platforms through partnerships with credible organizations and AI-driven tools. Importantly, while AI can flag questionable content, human fact-checkers are essential for nuanced understanding, ensuring a transparent and accountable process that maintains user trust⁶⁷. This mechanism should be transparent, accountable, open to challenge to avoid unintended consequences, such as overly aggressive or flawed fact-checking leading to censorship or the creation of new echo chambers.

Fact-checking practices are considered by industry experts as a vital tool for the health of public discourse⁶⁸ and a basic hygiene tool for information consumption⁶⁹. The realization of such mechanism might require significant investment, but it is justifiable considering the long-term benefits of sustaining a credible and trustworthy platform. Alternatively, a crowdfunding option might be explored to build additional trust in the platform and foster a sense of belonging and community.

Another interesting example to consider, particularly for decentralized or fragmented platforms like Reddit, is the local voting system. This system prioritizes certain publications over others based on community members' votes. It leverages the "wisdom of the crowd" and generally only requires moderator intervention in extreme cases. This system has proven efficient in moderating undesired content while simultaneously fostering platform democratization⁷⁰.

⁶⁷ Expert Interview with Alex Fedorov, Senior Product Designer at Social Discovery Group, 31 January 2024.

⁶⁸ Ibid.

⁶⁹ Expert Interview with Maya Stravinskaya, Founder of XZ Foundation, 29 February 2024.

⁷⁰ Expert interview with Reddit representative, 26 February 2024.

Encouraging such forms of self-organization aligns with the DSA's provisions aimed at preventing unclear content moderation policies.

Additionally, there might be an issue beyond the scope of this study, concerning the socially deprived communities, or those who perceive themselves as such, that tend to distrust fact-checking efforts by media platforms, according to Maya Stravinskaya from the XZ Foundation during an expert interview. As a result, labeling fact-checked news may not be effective for certain polarized groups of users.

This social behavior issue warrants further exploration. However, initiatives to build trust and engage with diverse user groups could be beneficial. For instance, funding projects that deliver verified information in a customized manner – such as using creative approaches to reach the younger audience on TikTok – might help build trust and effectively communicate with these groups.

6. Focus on user authenticity

In addition to fact-checking practices, another important approach is encouraging media platforms to focus on user authenticity. Users who pretend to be authentic and publish misleading content can often be identified by platform algorithms through their specific behaviors, known as "behavior triggers." Implementing such measures is particularly relevant because content policies and fact-checking alone can never be comprehensive enough to cover every aspect of misinformation⁷¹.

7. Further promote public reporting on moderation policy

Requiring leading media platforms to regularly submit content moderation reports, as mandated by the DSA, is an important step towards greater transparency in the EU information market.

Considering further steps, encouraging established and emerging companies to formulate and publish their internal policies regarding

⁷¹ Idem.

content moderation and algorithms on their websites could be beneficial. Industry experts emphasize that the complexity of analyzing media platform performance is determined more by the organization of work than by the platform's volume⁷².

Evidence from Reddit, which has been publishing biannual reports on its platform's performance, including moderation activities and code of conduct, shows that such transparency enhances user experience, adherence, and sense of belonging.

By embracing these recommendations and adopting sustainable business models, media platforms can play a pivotal role in mitigating the spread of disinformation and nurturing public confidence in digital media, thereby fostering a more informed and resilient society.

⁷² Expert interview with Reddit representative, 26 February 2024.

SOURCES

- Backlinko (2024). Reddit User and Growth Stats. Available at: <https://backlinko.com/reddit-users>.
- Bakir, A. & McStay, M. (2018). Fake News and The Economy of Emotions. Problems, causes, solutions.. Digital Journalism, Vol 6, no 2, pp. 154-175. Available at: <https://doi.org/10.1080/21670811.2017.1345645>.
- Basch, C.H., Yalamanchili, B. & Fera, J. (2022). #Climate Change on TikTok: A Content Analysis of Videos. J Community Health 47, 163–167. Available at: <https://doi.org/10.1007/s10900-021-01031-x>.
- Bell, E. J., Owen, T., Brown, P. D., Hauka C. & Rashidian, N. (2017). The Platform Press: How Silicon Valley Reengineered Journalism. Tow Center for Digital Journalism, Columbia University. Available at: <https://academiccommons.columbia.edu/doi/10.7916/D8R216Z>
- Biesaga M., Caldarelli G., Iaconesi S., Lipparini F., Napiorkowski M., Nowak A., Persico O., Talaga S., Widegren E., Ziembowicz K. (2021). Mechanisms that Shape Social Media and their Impact on Society. Available at: <https://digital-strategy.ec.europa.eu/en/library/mechanisms-shape-social-media-and-their-impact-society-report-state-art-research>.
- Bradshaw, S. & Howard, P. N (2018). Challenging Truth and Trust: A Global Inventory of Organized Social Media Manipulation. Computational Propaganda Research Project. Internet Institute, University of Oxford. Available at: <https://demtech.oii.ox.ac.uk/wp-content/uploads/sites/12/2018/07/ct2018.pdf>.
- Bridge, J. A., Greenhouse, J. B., Ruch, D., Stevens, J., Ackerman, J., Sheftall, A. H., Horowitz, L. M., Kelleher, K. J. & Campo, J. V. (2020). Association Between the Release of Netflix’s 13 Reasons

Why and Suicide Rates in the United States: An Interrupted Time Series Analysis. *Journal of the American Academy of Child & Adolescent Psychiatry* 59, 2, 236–243. Available at: <https://doi.org/10.1016/j.jaac.2019.04.020>.

- Buschow, C. & Wellbrock, C. M. (2023). "Spotify for News"? User Perception of Subscription-Based Content Platforms for News Media. *Journal. Media*, 4, 1-15. Available at: <https://doi.org/10.3390/journalmedia4010001>.
- Dennis, J. & Sampaio-Dias, S. (2021). "Tell the Story as You'd Tell It to Your Friends in a Pub": Emotional Storytelling in Election Reporting by BuzzFeed News and Vice News. *Journalism Studies*, 22:12, 1608-1626. DOI: 10.1080/1461670X.2021.1910541.
- European Commission (2024). About the Digital Markets Act. Digital Markets Act (DMA). Available at: https://digital-markets-act.ec.europa.eu/about-dma_en.
- European Commission (2024). Cybersecurity Policies. Shaping Europe's Digital Future. Available at: <https://digital-strategy.ec.europa.eu/en/policies/cybersecurity-policies>.
- European Commission (2024). Towards a safer, more predictable, and trusted online environment. European Centre for Algorithmic Transparency. Available at: https://algorithmic-transparency.ec.europa.eu/index_en.
- European Union External Action (2021). Tackling Disinformation, Foreign Information Manipulation & Interference. Available at: https://www.eeas.europa.eu/eeas/tackling-disinformation-foreign-information-manipulation-interference_en.
- EUvsDiSiNFO (2023). 'To Challenge Russia's Ongoing Disinformation Campaigns': Eight Years of EuvsDisinfo. Available at: <https://euvsdisinfo.eu/to-challenge-russias-ongoing-disinformation-campaigns-eight-years-of-euvsdisinfo/>.

- Expert Interview with Alex Fedorov, Senior Product Designer at Social Discovery Group, 31 January 2024.
- Expert Interview with Maya Stravinskaya, Founder of XZ Foundation, 29 February 2024.
- Expert Interview with Reddit Representative, 26 February 2024.
- Fletcher, R., & Nielsen, R. K. (2020). Are Netflix and Spotify subscribers more likely to pay for online news? comparative analysis of data from six countries. *International Journal of Communication*, 14, 3439–3457.
- Haensch, A. C., Ball, S., Herklotz, M. & Kreuter, F. (2023). Seeing ChatGPT Through Students' Eyes: An Analysis of TikTok Data. Haensch, Anna et al. "Seeing ChatGPT Through Students' Eyes: An Analysis of TikTok Data." 2023 Big Data Meets Survey Science (BigSurv): 1-8.
- Hase, V., Boczek, K. & Scharrow, M. (2022). Adapting to Affordances and Audiences? A Cross-Platform, Multi-Modal Analysis of the Platformization of News on Facebook, Instagram, TikTok, and Twitter. *Digital Journalism*, DOI: 10.1080/21670811.2022.2128389.
- Jaipong, P. (2023). Business Model and Strategy: A Case Study Analysis of TikTok. *Advance Knowledge for Executives*, 2(1), No.12, 1-18 (2023). Available at: <https://ssrn.com/abstract=4335962>.
- Kan, M. (2022). EU Joins Mastodon Social Network, Sets Up Its Own Server. *PC MAG*. Available at: <https://www.pcmag.com/news/eu-joins-mastodon-social-network-sets-up-its-own-server>.
- Larsen, R. (2024). The Business Model and Revenue Streams of LinkedIn Explained. *Untaylored, Business Design*. Available at: <https://www.untaylored.com/post/the-business-model-and-revenue-streams-of-linkedin-explained#:~:text=LinkedIn's%20business%20model%20revolve>

s%20around,recruiters%2C%20advertisers%2C%20and%20businesses.

- Lindner, J. (2024). Facebook Decline Statistics: Latest Data & Summary. WifiTalents: Statistics: Social Media and Online Communities. Available at: <https://wifitalents.com/statistic/facebook-decline/>.
- Lotz A. L. & others (2022). Netflix, library analysis, and globalization: rethinking mass media flows. *Journal of Communication*, Volume 72, Issue 4, Pages 511–521. Available at: <https://doi.org/10.1093/joc/jqac020>.
- Lyons, T. (2017). Replacing Disputed Flags With Related Articles. Meta. Available at: <https://about.fb.com/news/2017/12/news-feed-fyi-updates-in-our-fight-against-misinformation/>.
- Naughton, j. (2022). For the first time in its history, Facebook is in decline. Has the tech giant begun to crumble? *The Guardian*. Available at: <https://www.theguardian.com/commentisfree/2022/feb/06/first-time-history-facebook-decline-has-tech-giant-begun-crumble>.
- O'Donnel, M. (2024). When Will the Digital Services Act (DSA) Come Into Force? A DSA Timeline. Trolley. Available at: <https://trolley.com/learning-center/dsa-timeline/#:~:text=very%20large%20platforms,-,Full%20implementation%3A%20February%2017%2C%202024,a ll%20aspects%20of%20the%20DSA>.
- Pereira, D. (2023). Reddit Business Model. *The Business Model Analyst*. Available at: <https://businessmodelanalyst.com/reddit-business-model/>.
- Pryor, J. J. (2020). How Big is Your Piece of the \$2 Million Medium Pie? *Medium*. Available at: <https://medium.com/feedium/how-big-is-your-piece-of-the-2-million-medium-pie-38e8d5385c3d>.

- Rotblut, C. (2023). How Streaming Services Netflix, Disney and Spotify Stack Up. Forbes. Available at: <https://www.forbes.com/sites/investor/2023/11/09/how-streaming-services-netflix-disney-and-spotify-stack-up/>.
- Schaffner, B., Stefanescu, A., Campili, O. & Chetty. M. (2023). Don't Let Netflix Drive the Bus: User's Sense of Agency Over Time and Content Choice on Netflix. Proc. ACM Hum.-Comput. Interact. 7, CSCW1, Article 128. Available at: <https://doi.org/10.1145/3579604>.
- Similarweb (2024). Joinpeertube.org. Available at: <https://www.similarweb.com/website/joinpeertube.org/#overview>.
- Similarweb (2024). Mastodono.social. Available at: <https://www.similarweb.com/website/mastodon.social/#overview>.
- Similarweb (2024). Sustack.com. Available at: <https://www.similarweb.com/website/substack.com/#overview>.
- Sun T., Lim C.C., Chung J. & others (2023). Vaping on TikTok: a systematic thematic analysis. Tobacco Control; 32:251-254. Available at: <http://dx.doi.org/10.1136/tobaccocontrol-2021-056619>.
- Tucker, J. A., Guess, A., Barberá, P., Vaccari, C., Siegel, A., Sanovich, S., Stukal, D. & Nyhan. B. (2018). Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature. William Flora –Hewlett Foundation.
- Wayne, M, L (2022). Netflix audience data, streaming industry discourse, and the emerging realities of 'popular' television. Media, Culture & Society, Vol. 44(2) 193–209. Available at: <https://doi/10.1177/01634437211022723>.
- Weimann, G. & Masri, N. (2023). Research Note: Spreading Hate on TikTok. Studies in Conflict & Terrorism, 46:5, 752-765. DOI: 10.1080/1057610X.2020.1780027.

- Zeng, J. & Kaye, D. B. V. (2022). From content moderation to visibility moderation: A case study of platform governance on TikTok. *Policy & Internet*, 14, 79– 95. Available at: <https://doi.org/10.1002/poi3.287>.