

Seeing through opacity: The limitations of digital ad transparency in Brazil

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ABSTRACT

Digital platforms provide a deregulated and opaque environment suited to the maintenance of their business model, in which ads are efficiently served by opaque algorithms to meticulously profiled users based on their behavioral data. The advertising infrastructure provided by these platforms made advertising more segmented and scalable, creating new opportunities and allowing for a profit-oriented influence industry to develop worldwide. Some platforms have invested in transparency measures for digital advertising, but there is still a gap between what is applied in the Global South and the Global North. In Brazil, despite evidence of an online ecosystem of suspicious, inauthentic, scam, and other types of fraudulent ads, regulatory proposals have faced a hard opposition from tech companies. Against this backdrop, there is a need to evaluate advertising transparency archives currently offered by online platforms in Brazil as a means to measure the quality of libraries and the available data.

Thus, the main objective of this work is to account for transparency measures and means of accessing data of some of the largest online platforms and search engines in the country, in order to establish a general comparative diagnosis of ad transparency in Brazil. Based on the platforms' public documentation, policies and terms of use for the Brazilian market, we perform a comparative analysis of six companies: Meta, Google, Twitter/X, Telegram, TikTok, and Spotify. Particular consideration is given to whether these companies do or do not have ads repositories, or a means to assess the disseminated advertisements. In an environment of low transparency and difficulty in accessing data, we found that the Meta Ad Library, although providing very limited data, is the most reliable source for systematic investigations of the digital advertising ecosystem. Even though Google offers an advertisement repository in Brazil, it lags considerably behind that offered by Meta and imposes greater difficulty in carrying out systematic analyses. On the other hand, Telegram, TikTok, Twitter/X and Spotify do not present any advertising repository or transparency center in order to analyse the Brazilian scenario. Although the scenario in the

Global South can be characterized by a lack of transparency from platforms and by difficulties in accessing data, recent measures implemented elsewhere have demonstrated that this condition is reversible.

CCS CONCEPTS

• **Information systems** → Information systems applications; Computational advertising; Information systems applications; Digital libraries and archives; • **Human-centered computing** → Collaborative and social computing; Collaborative and social computing systems and tools; Social networking sites.

KEYWORDS

Advertising regulation, Data access, Political advertising, Transparency

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1 INTRODUCTION

With the capability to infer the tastes and interests of billions of users by processing their data, online platforms and ad networks have brought in a new form of advertising. Personalized advertisements can now be directed according to the specific profile of each consumer through a set of techniques known as microtargeting. The predictions about user behavior formulated from the modeling of personal data have become the main capital of big tech companies [114], as their business model is essentially based on selling their services for personalized and targeted messages to hyper-segmented audiences according to the strategy of advertisers and the action of opaque algorithms [18]. The advertising infrastructure provided by these companies made advertising more segmented and scalable, creating new opportunities and allowing for a profit-oriented influence industry to develop worldwide.

The unregulated and opaque environment of online advertisement is conducive to the actions of deceptive actors, who are granted easy and low-cost access to microtargeting tools for reaching "ideal victims". Advertisements promoting coups d'état proposals [74], weapon purchases [45], and financial frauds [72] are easily run on online ad networks, which profit from this type of toxic



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and harmful advertising. However, despite the evidence that these ads easily circulate on digital platforms, it is difficult to estimate the reach and true impact of this type of harmful advertising, as ad networks do not invest in truly effective ad transparency data measures, especially in the Global South, leaving researchers and other external auditors to fend for themselves.

Although the scenario in the Global South can be characterized by a lack of transparency from platforms and by difficulties in accessing data, recent measures implemented elsewhere have demonstrated that this condition is reversible. Enhanced transparency of advertising networks is one of the imperatives of various online platform regulation projects around the globe. The main objective of this work is to present the digital advertising networks of some of the largest online platforms and search engines and to establish a general comparative overview of them. Particular consideration is given to whether these companies do or do not have ads repositories, or a means to assess the disseminated advertisements. We developed an analytical framework to compare the advertising systems, policies and transparency measures of six companies: Meta, Google, Twitter/X, Telegram, TikTok and Spotify. In this environment of low transparency and difficulty in accessing data, we conclude that Meta Ad Library, although providing very limited data, is the most reliable source for systematic investigations of digital advertising ecosystems.

2 BACKGROUND

The targeting policies of digital advertising networks have been the subject of controversy regarding their lack of transparency and the potential for user privacy violations, as well as their use in hate campaigns and political manipulation [4, 37]. Unlike advertising in traditional media, which can be under public scrutiny as it is displayed equally to the entire audience, advertising on digital platforms is distributed by algorithms that operate opaquely. There is little to no transparency concerning the content of the ads or their distribution criteria, making it impossible to identify which ads are shown to each user [37]. Since ads are not public and their respective targeting strategies are opaque, they can cause or exacerbate various social problems. For instance, [14], [40] and [63] have indicated that digital advertising systems can reinforce stereotypes, alienate voters, and aggravate social inequalities.

According to [69], the ad tech industry has made the dissemination of problematic information economically viable, as it allows large advertisers to direct financial resources to low-credibility websites, regardless of whether they directly consent to it or not. While these websites benefit from the revenues of programmatic media intermediaries, other malicious actors use online platforms to serve manipulative advertisements loaded with false or misleading information. For one, [37] indicated that Meta platform users from specific regions of the United States were heavily impacted by microtargeted ads that spread anti-vaccine messages. Similarly, political parties took advantage of the same advertising networks to disseminate problematic content on key topics such as climate change and the European migration crisis during general elections in Spain [10]. It is important to note that ad networks still profit from irregular advertising, as it is only moderated after it has been

served, by the time it was already paid for, and has reached other users.

Digital advertising marketing in Brazil shows a significant yearly growth rate, whereas spending in traditional media has stagnated. Recent estimates show that the digital ad market generates around US\$6.4 billion annually, of which 67% is intermediated by advertising agencies [38]. This means that 33% of all investment in digital advertising in the country is negotiated directly with digital platforms and ad networks, thus hindering auditing by regulatory bodies and other authorities. Social media platforms are strategic for advertisers due to their audiences: for instance, Facebook and Instagram ad networks, Meta's main platforms for ad serving, reach 61.8% and 71.6% of the Brazilian internet user base, respectively [39]. YouTube's numbers are even more impressive: up to 76.6% of all internet users in Brazil can be reached by its ad network [39].

However, recent studies [70, 72] reveal an online ecosystem oriented towards financial scams, data theft and other digital frauds, formed by suspicious sites and inauthentic profiles and sustained by harmful and targeted advertisements served on online platforms to Brazilian users. Disinformation and deception also play a fundamental role in this lucrative industry: frequently observed strategies to deceive the public include the use of manipulated and distorted clips from journalistic articles, out-of-context statements attributed to doctors and experts, as well as adulterated scientific data and false testimonials [73]. To lend a sense of credibility to these scams, advertisers recurrently impersonate other individuals, digital influencers, government institutions, and trusted brands [25, 43, 70, 73].

It is only possible to gather such evidence due to limited advertising transparency measures, mainly materialized in online ad repositories and archives. Big Tech companies, in general, do not proactively promote significant advertising transparency measures in Brazil or other Global South territories whatsoever, a scenario which remains characterized by difficulties in accessing ad serving data. We adopt the understanding of transparency from [112:1], who define it as the "practice of providing internal information 'on matters of public concern'", in order to allow external agents, such as researchers, government agents and stakeholders, to evaluate whether platforms are complying with local legislations and their own policies. Such measures are also important to understand the use that platforms are making of their users' data [112], as users often do not even know that they are being targeted through advanced audience segmentation techniques [18]. Besides, without effective transparency, it is impossible to ascertain how much platforms and ad networks profit from illicit, suspicious and toxic sponsored content.

In 2018, following the Cambridge Analytica scandals regarding the misuse of its users' data in harmful microtargeted campaigns, Meta was one of the first big tech companies to make an online ad repository available, but not without accumulating criticism from researchers due to limitations in access to data [8]. Formally, online ad archives are self-regulated and unaudited due to the few commercial incentives and regulatory frameworks in place [42]. Overall, these tools only provide access to a restricted subset of advertisements, of which we do not know the sample population, its representativeness, the criteria for classification and selection, in addition to presenting incomplete and unreliable information

[4]. Digital advertising libraries still fail to provide the necessary information for meaningful scrutiny, shielding researchers, journalists and civil society organizations from extensive internal research into the potential harm caused by their platforms [61].

Furthermore, some platforms only allow consistent access to data of ads classified as social or political, while others exempt themselves from the need to promote greater transparency measures by claiming not to allow the serving of political advertising [36]. However, the definition of political ads is not a consensus [19, 78] and the task of classifying ads as such is often left to advertisers themselves, leading to frequent mistakes, whether due to advertisers' negligence or the lack of well-defined criteria [41]. For instance, [41] demonstrated that only a small fraction of political or social ads served on Meta platforms are correctly categorized. These reasons lead [78] to advocate for platforms to promote the opening of data on all advertisements served by them and not just those classified as political.

It is important to note that platforms allowing the serving of political and electoral advertisements should not be seen as inherently negative, as long as adequate advertising transparency measures accompany this permission. The overall ineffectiveness of ad libraries can be attributed to what [113] refers to as “transparency-washing” — that is, corporate solutions to public matters in order to avoid stricter regulations. In the case of big tech companies, this implies a greater platform control over what data researchers and policy-makers are able to effectively access and scrutinize, while keeping up appearances to the general public [113].

3 METHODOLOGICAL APPROACH

Between August and November 2023, we developed a systematic analytical framework to compare the functionalities, policies, terms of use and transparency measures of ad networks from six big tech companies, online platforms and search engines operating in the Brazilian market: Meta, Google, Twitter/X, Telegram, TikTok and Spotify. Our framework was largely based on [44] and [112], who argue that researchers are going through a time of low transparency and significant restrictions over data access imposed by online platforms and big tech companies.

Thus, we aim to understand how these networks claim to avoid and protect themselves against the actions of harmful actors and the distribution of suspicious and irregular advertising. We also analyse the means available through which researchers and other external auditors can check whether these protocols are being carried out appropriately. Based on the public documentation of each ad network, evidence found in journalistic reports and the existing academic literature, we present the responsibilities these ad networks delegate to advertisers, the permissions and restrictions of their targeting systems, their advertiser verification processes and the topics that can or cannot be promoted by advertisers.

In particular, we pay attention to whether or not digital advertising repositories are available and the possibility of carrying out systematic investigations based on the provided data. That is, we consider that it is not enough to simply display and present the content of the advertisements to users, but to allow for systematically collecting available data and performing analysis in depth. In the

cases in which ad repositories are available, we compare their limitations regarding their searchability affordances and data access. According to recommendations given by [78], we take into account whether the repositories separate ads between those categorized as political and those that not. This point is particularly important, since what constitutes a “political advertisement” is a matter of contention [19] and has influenced platforms' protocols on data availability. Although we primarily considered the Brazilian market scenario in our analysis, we also present how these ad networks implemented protocols elsewhere that contribute to the deepening of regional disparities with regard to access to technology.

As a means to detail and compare these advertising policies, transparency measures and means of accessing data from the selected ad networks, we analysed how each of them assessed seven different analysis criteria, depicted in Table 1.

Each criteria was assessed according to one of the four following categories: (i) satisfactory compliance with the issue, which can indicate that the ad network allows data collection under the specified terms, or details the specific topic in depth in its policies and terms of use; (ii) partial compliance with the issue, which can indicate that the ad network imposes some barriers to data collection, but without compromising it, or presents the specific topic indicated in its usage policies, although not with the expected depth; (iii) unsatisfactory compliance with the issue, which indicates that the ad network imposes significant technical barriers to data collection, or addresses the specific topic in a very superficial way in its policies and terms of use; and (iv) non-compliance with the issue or that an evaluation was not possible, which indicates that the ad network does not provide the necessary means to answer the question, either by not allowing data collection, or by not addressing the indicated topic in its policies and terms of use.

4 TRANSPARENCY MEASURES FOR DIGITAL ADVERTISING ON PLATFORMS AND SEARCH ENGINES

In the Appendix Section A, we present a table in which we summarize the results of our comparative analysis. In the following subsections, we present a detailed look at each of the analysed ad networks and their respective ad distribution systems. Since it presents the most robust and transparent advertisement repository among the mapped companies, we will first introduce Meta. Subsequently, we will present the advertising networks of Google, Twitter/X, Telegram, TikTok, and Spotify, ordered from the most to the least transparent, according to our evaluations.

4.1 Meta

Meta is the largest social media platform company by number of users, encompassing Facebook, Instagram, and WhatsApp. Combined, its platforms boast over 7 billion monthly active users worldwide [17] and nearly 98% of its revenue comes from serving ads [49]. As of January 2024, any individual with a registered account on Facebook can promote content within the company's advertising ecosystem, which also includes Instagram, Audience Network, and Messenger. Although WhatsApp does not display advertisements

Table 1: Analysis criteria used to assess and compare the transparency measures of the analysed ad networks.

Analysis criteria	
Q1	Does it present a clear definition of political, electoral, and/or sensitive advertising?
Q2	Does it authorize the political, electoral, and/or sensitive use of its advertising network?
Q3	Does it present a searchable repository of political, electoral, and/or sensitive advertising?
Q4	Does it allow for the systematic collection of data from political, electoral, and/or sensitive advertising?
Q5	Does it present a searchable repository of general advertising?
Q6	Does it allow the systematic collection of data from general advertising?
Q7	Does it present consistent criteria for verifying advertisers?

on its interface, it allows for the mapping of user behavior, contributing to the generation of more precisely targeted advertisements on the company's other platforms [5].

When creating an advertising campaign, the user must select the theme of their campaign if the advertisements involve a special topic stipulated by Meta: (i) credit; (ii) employment; (iii) housing; and (iv) social issues, elections, or politics. The company asserts that the themes of the advertisements are used to prevent excessive discrimination on subjects that may deepen socioeconomic segregation [48]. However, these anti-discrimination mechanisms are available only in the United States, Canada, and parts of Europe [50]. In these regions, advertisers addressing themes related to housing, employment, and credit offerings are prohibited from "targeting by age, gender, ZIP code, multicultural affinity, or any detailed options describing or appearing to relate to protected characteristics" [48]. This decision highlights the disparity in policies implemented by Meta to prevent the predatory boosting of advertisements in these countries when compared to the rest of the world.

When submitting an advertisement, Meta does not check identity or require any supplementary information from all its advertisers, who generally only need to present a valid payment method [4]. Advertiser verification is only mandatory for profiles that wish to disseminate advertisements about social issues, politics, and/or elections [50, 51], referred to as "sensitive". The lack of a stringent policy for verifying other types of advertisements allows false pages advertising in the name of public and private institutions, as demonstrated by [70, 72, 73]. Therefore, Meta's ad network only unsatisfactorily meets criterion Q7.

Meta considers political and electoral advertisements as those

"made by, on behalf of, or about a candidate for public office, a political figure, a political party, a political action committee or advocates for the outcome of an election to public office; or **about any election, referendum, or ballot initiative, including 'go out and vote' or election campaigns.**" [52, emphasis added]

Advertisements about social issues are those concerning "topics that are heavily debated, **may influence the outcome of an election** or result in/relate to existing or proposed legislation" [53, emphasis added]. In its documentation, Meta lists and defines ten themes considered social for the dissemination of advertisements in Brazil: (i) civil and social rights; (ii) crime; (iii) economy; (iv) education; (v) environmental politics; (vi) guns; (vii) health; (viii) immigration; (ix) political values and governance; and (x) security

and foreign policy [54]. According to the documentation, the criteria for classifying advertisements as sensitive in Brazil are very close to those in countries such as the United States and Canada and, at times, more comprehensive than those of the European Union [54]. As Meta clearly describes and exemplifies the requirements for classifying political, electoral and sensitive ads and allows them to be served on its platforms, we consider that its ad network satisfactorily complies with criteria Q1 and Q2.

The definition of an ad's theme depends exclusively on the advertiser when creating an ad, impacting its categorization as "sensitive" or not. Meta claims that all ads served on its platforms are subject to revision according to their classification, a process combining automation and human curation [55] which does not necessarily mean that all advertisements are in fact reviewed. In some instances, these reviews occur long after the advertisements have already been disseminated and displayed to users [26].

Despite Meta's claims of conducting reviews, errors are commonly found in the classification of advertisements. [41] demonstrated the extent of these limitations: among 33.8 million advertisements served globally from July 2020 to February 2021, only 17% were correctly categorized as sensitive on Meta's platforms. The study also revealed that over 13,000 sensitive advertisements served in Brazil were not correctly identified by Meta, which tends to make more errors in categorizing advertisements served outside the United States and in languages other than English [41].

Since 2018, Meta has provided an Ad Library as a means to promote transparency in digital advertising on its platforms, available in over 200 countries as of January 2024 [56]. The library functions as a searchable repository, where users can locate advertisements using keywords or by searching for specific advertisers of interest. The keyword search locates advertisements that mention the specified terms in the text, image, or video associated with the advertisement.

The Brazilian version of the Ad Library archives all advertisements related to social issues, politics, and/or elections, served within the company's ecosystem over the previous seven years. These advertisements serving metadata, which includes information such as expenditure, audience and sponsorship, can be systematically collected through its user interface or accompanying API, causing the Meta ad network to satisfactorily comply with criteria Q3 and Q4. Since 2019, advertisements not categorized as sensitive are also displayed in the library while they are being served to the public [47], but they cannot be systematically collected and their serving metadata is not disclosed. Since ad content can only be

retrieved by querying the library interface while they are still being served to the public, making it impossible to systematically collect their data, we consider that the Meta ad network only partially meets criterion *Q5* and does not meet criterion *Q6* at all.

Meta does not disclose precise values of expenditure and impressions in advertisements, only estimates within ranges. As the variation between the minimum and maximum values is significant, it is not possible to ascertain the exact amount of money spent on specific advertisements, which impedes public auditing of campaign financing reports. The criteria for pricing and ad delivery, influenced by the algorithmic ad distribution system, are not known to the advertiser nor the public. [2] concluded that the cost of advertisements decreases substantially if a particular page advertises to an audience it has already captured. This behavior can create unfair competition among advertisers, who need to pay different amounts to impact the same target audience, a situation that becomes more critical in political campaigns, potentially compromising the equity of the electoral process. In India, for example, researchers found that Meta charged lower rates for advertisements served by the ruling party during the selected period compared to those of the opposition, attributing this to the performance of the algorithm responsible for ad circulation [68].

By comparing the targeting options offered by the company to advertisers with the information available in the Ad Library, [22] assert that Meta's repository provides little valuable information about the personalized targeting strategies selected by advertisers. The Ad Library does not disclose the targeting criteria advertisers have set to reach users, even in the case of sensitive advertisements. For these, Meta only discloses the demographic profile of the audience — age, location, and gender [42]. This limitation precludes the identification of users impacted by the ads and the true objectives of the advertisers, given that the available information does not necessarily reflect the chosen targeting criteria.

The Meta Ad Library exhibits regional disparities, which compromises investigations into issues in countries with less stringent or non-existent regulatory frameworks. In Europe and the United States, for instance, it is possible to filter queries by categories such as “issues, elections, or politics”, “housing”, “employment”, “credit” and “all ads”. In contrast, in Brazil, only the options “issues, elections, or politics” and “all ads” are available [57], which impairs the auditability of platforms in the country. As a result of the European Union Digital Services Act (DSA) of 2021, which measures came into effect on August 2023, users in the European Union have access to archived content and transparency information for all advertisements, including those that do not involve special themes, served within the territory over the previous year [58].

Lastly, another feature of the Meta Ad Library is its report section [59]. Through it, one can access statistics on expenditure for ads categorized as sensitive, which have been served since August 2020 by specific advertisers and by geographic location of serving. Data can be collected through its user interface, but there is no API available to automate this task. Another limitation is that one can only explore the data according to pre-established time periods, which cannot be customized: (i) last day; (ii) last 7 days; (iii) last 30 days; (iv) last 90 days; and (v) all dates. While the Ad Library archive discloses expenditure information in intervals, the reporting section presents it in a precise manner. However, as it only presents

aggregated information, it is not possible to ascertain how each ad costs with accuracy.

4.2 Google

Within its extensive array of services beyond its search engine, Google allows for advertisements placement on search pages, third-party websites and applications, YouTube videos, Google Discover, the Play Store, Google Maps, Google Shopping, and Gmail [28, 29]. Nearly 80% of Alphabet's (Google's parent company) annual revenue is generated by its advertising services [3].

The company states that all of its advertisers have to complete identity verification processes at some point to protect consumers from potentially deceptive, abusive, and fraudulent ads [30, 31]. Additionally, it offers certification programs for advertisers in specific sectors, such as health, entertainment, and gambling, to ensure compliance with the best practices of their respective markets [30]. In Brazil, individuals must provide a valid identification document and businesses must present a commercial license [31]. However, the company states that there are cases in which “advertisers may continue running ads if they did not initiate or complete the verification or **if they had failed to meet the requirements of the verification program**” [32, emphasis added]. As Google does not require that all advertisers registered in its ad network go through verification processes and does not disclose how many are authorized to serve ads in these circumstances, we consider that the company only partially meets criterion *Q7*. The platform also delegates the responsibility for the placement of advertisements entirely to the advertisers, stating that it “uses its best efforts to review and validate the information provided by advertisers as part of these verification programs, but in doing so does not guarantee or assume responsibility for advertiser content or activity” [32].

Google allows the serving of ads with political and electoral themes, fulfilling criterion *Q2*, but does not rigorously distinguish between political ads and electoral ads. In its official documentation, Google directly defines only electoral ads: in Brazil, these served by “**a political party, coalition, federation, current elected officeholder or candidate** for President, Vice President, the Federal Senate, or the Chamber of Deputies” or “**a political party, coalition, federation, current elected office holder or candidate** for Governor, Vice Governor, the State Legislative Assemblies, or the Federal District Legislative Chamber.” [33, emphasis added]. To serve these ads, Google requires advertisers to explicitly declare their intention and verify their identities [33, 34]. Google states that Brazilian electoral advertisers are subject to specific rules, such as the ban on advertising during legally defined periods [33], but [77] indicate that this was not strictly adhered to throughout the 2022 General Elections.

In contrast to electoral advertisements, Google does not establish a particular definition for general political and sensitive ads, declaring that the understanding is subject to local legislation [33], so we consider that its ad network only partially meets criterion *Q1*. Based on legal definitions concerning electoral campaigns, Google only specifies explicit restrictions for political advertisements in Canada, France, the Philippines, Singapore, and South Korea [33]. According to the company, if advertisements “contain political content that is not restricted here or by the local legal requirements

for a given region, [they] may run as long as they are compliant with all other Google Ads policies and local laws and regulations” [33]. Despite asserting adherence to the prevailing legislation of each country, Google does not specify which Brazilian legislation it adheres to in order to classify an advertisement as political.

Google also maintains its own repository of digital advertising, the Ads Transparency Center. Initially accessible in regions such as the United States, the European Union, and the United Kingdom, the tool was made available in Brazil on the eve of the 2022 electoral campaign for national-level elections only. The pressure from civil society activists led to the expansion of the repository to also include state and district-level candidacies [1]. Although Google claims that electoral advertisements are limited to institutional political entities, researchers and journalists have identified ads published by other companies while using the tool [60, 75, 76]. Similarly to Meta, if an advertisement is categorized as political, information on expenditure and reach is presented in ranges of values which are not very specific. On the other hand, although Google does not detail the demographics of the audience that received an ad as Meta, it does present information about the demographic targeting criteria determined by advertisers. Unlike Meta, which allows for searches by keywords present in the content of the advertisements, Google only permits searches by advertiser name, who must be previously known by users and researchers. This limitation poses substantial obstacles to data access and the subsequent analyses of ads served on Google platforms, making compliance with criterion Q3 unsatisfactory.

The company also allows data extraction through its own data transfer system, Google BigQuery [35]. Extracting data from political and electoral advertisements, whether conducted via a user interface or through Google BigQuery, yields metadata on expenditure, targeting and reach. Contrary to Meta’s approach, Google does not allow the systematic collection of the content of the advertisements, only a link to the page where it is hosted in the transparency center. However, if an advertisement is removed for violating the company’s advertising policies, its content becomes inaccessible [75], which hinders a rigorous investigation of the ads that circulated at a given time, leading only to a partial compliance with criterion Q4.

At the beginning of 2023, Google launched a general repository for commercial advertisements that had been served by verified advertisers in the previous 365 days [7]. As with the political Ads Transparency Center, advertisements cannot be searched for by terms of interest, only by advertisers. Given that there is no publicly available list of advertisers, navigation through the promoted contents is significantly impaired, leading to unsatisfactory compliance with criterion Q5. Although the content of each advertisement can be viewed, the only metadata that Google provides is the last date on which it was displayed. As with the Meta Ad Library, these advertisements can only be archived and recorded manually by those who wish to do so and there is no way to systematically collect their data, meaning that the company’s ad network does not meet the minimum required for criterion Q6.

Google announced the expansion of its ad transparency measures in the European Union in August 2023 to comply with the DSA [67]. In these countries, its general commercial advertising repository began to include information pertaining to the entire period an

advertisement was served and the audience targeting criteria. Data on the reach of the advertisements, however, are not yet available for all archived pieces. Although the DSA stipulates customizable searches in ad repositories, searches by keyword are not available in the tool. The company has not indicated whether they will expand these new transparency measures to include other countries [67].

4.3 Twitter/X

Since its acquisition by Elon Musk in October 2022, the platform formerly known as Twitter has undergone changes in its operations and branding [27], such as its renaming to X. In general, to reach their target audiences, advertisers on Twitter/X can segment their campaigns based on a list of topics, the accounts a user follows, and events of interest [96]. However, it is prohibited to target audiences based on what the platform refers to as “sensitive categories”, which includes financial status, ethnicity, sexuality, political beliefs, and union affiliations, for example [97].

In its official documentation, the company distinguishes between what it calls “political content ads” and “political campaigning ads”. According to their definition, the former are those that “**reference** a candidate, political party, elected or appointed government official, election, referendum, ballot measure, legislation, regulation, directive, or judicial outcome” [98, emphasis added]. Political campaigning ads, on the other hand, are those “**that advocate for or against, appeal directly for votes**, or solicit financial support for a candidate or political party [or] an election, legislation, referendum, or ballot measure; [...] from registered PACs and SuperPACs” [98, emphasis added]. As it describes different forms of political advertising, we consider that the platform’s ad network satisfactorily meets criterion Q1.

In January 2023, the platform began to allow ads with political content, but not political campaigning ads in the United States [65]. By August, the decision was extended to other countries and included political campaigning ads [15]. One of these countries was Brazil, where, as of January 2024, political content ads are permitted, albeit not political campaigning ones [98], leading the platform’s ad network to only partially meet criterion Q2. In countries where this use is not recognized by the platform, media outlets may request permission to disseminate political content ads, provided they do not express favor or opposition to a particular political issue [99].

In March 2023, the platform began to allow certain pages to request data on political ads compiled in reports, if they have prior authorization and are based in the United States. However, journalists have already identified inconsistencies in this measure [66], resulting in continuing low data transparency. In the European Union, to comply with the DSA, Twitter/X made its own ads repository available [100], but did not state any expectation to extend the measure to other territories [101]. This repository can be used to find ads by selecting advertisers and access transparency information on them, such as their targeting criteria and reach. As with Google, the tool cannot be used to search for specific terms of interest. As this repository was not made available for the systematic investigation of ads aimed at Brazilian users, the platform does not comply with criteria Q3, Q4, Q5 and Q6.

In its official documentation, Twitter/X does not present strict protocols for advertiser verification, which means it does not meet

the expected requirements for fulfilling criterion Q7. Users verified through Twitter/X Blue can advertise without significant issues by subscribing with a monthly payment for the display of a badge on profiles and access to specific functions [102]. For this verification, the platform requires that the user has held the account for more than 30 days, has a valid mobile number, and submits a government-issued ID [103]. However, journalists have reported that the platform is being overrun by fake accounts that have passed through the verification processes [64, 95]. Non-governmental organizations, government and state institutions, and various companies may advertise if they have undergone the specific verification process for this segment, which also requires recurring payments [104]. Conversely, the platform prohibits profiles affiliated with state media outlets from promoting ads, as these “frequently use their news coverage as a means to **advance a political agenda**” [105, emphasis added].

Furthermore, the platform states that “ads **can be** reviewed prior to running in campaigns” [106, emphasis added]. According to its official documentation, the entire review process, when applied, is entirely automated, taking into account aspects such as the user’s activity history on the platform and the ad’s targeting criteria [106]. Similarly, profiles that wish to advertise may also undergo a similar automated review process. Should the profile not be approved in this process, it loses the permission to promote any other ads in the future [106].

Twitter/X also prohibits commercial practices deemed unacceptable, such as “content that is associated with fraudulent or scam-like behavior”, or the “promotion of offers or deals that are not available” [107]. Similarly, it forbids the promotion of content that promotes hate speech [108], adult content [109], and illicit substances [110]. We did not find any policies regarding auditability, control, and punishment by Twitter/X itself to prevent the dissemination of such content in the advertising system after they have been published. On the contrary, the company claims no responsibility for the advertisements circulated, stating in its policy for advertisers: “Review our guidelines and make sure you understand the requirements for your brand and business. **You are responsible for all your promoted content on X.** This includes complying with applicable laws and regulations regarding advertisements.” [111, emphasis added].

4.4 Telegram

Available for mobile and desktop devices, Telegram is a messaging and broadcasting application, structured in groups and channels, where users can make video calls, send messages, and exchange photos, videos, and files of any type. On the platform, channels function as a broadcast list where messages are sent by the administrator(s) to an unlimited number of subscribers, without participant interaction. Groups, on the other hand, can have up to 200,000 members, and participants can interact and send messages to each other, depending on the settings defined by the administrator(s).

Telegram offers access to its advertising network, the Telegram Ad Platform [87]. According to the platform’s policies and guidelines for advertisements [88], each advertisement is constructed from a text and a button with a link. The links must redirect users to channels on Telegram, thus links to external websites are not

permitted [89]. Moreover, advertisements can only be served in public channels with more than 1,000 members and are limited to 160 characters including spaces. The platform’s policies and terms of use do not provide information on whether channel administrators can choose to receive advertisements. Telegram states that there is a project to share advertisement revenues with the administrators of the channels where they are served, but only when its advertising system is fully established, in order for the company to cover its basic operational costs [87].

For an advertisement to be approved, it must meet minimum requirements that include standards of style, clarity, spelling, and punctuation, as well as the correct use of numbers, brands, and symbols [88]. Regarding political advertisements, the official documentation specifies that the promotion of campaigns, elections, parties, candidates, and/or political movements is prohibited and that ads related to sensitive events or topics can be suspended. However, sensitive ads are only alluded to and are not clearly described or exemplified by the company, causing its ad network to only partially comply with criterion Q1. Moreover, as political, electoral and sensitive advertisements are not allowed, Telegram’s ad network does not comply with criterion Q2. It also defines other content that cannot be promoted, such as visually shocking or sexual content, hate speech, violence or harassment, deceptive or predatory content, religious content, and promotion of gambling, unverified medical services and medications/supplements, drugs, alcohol, tobacco, firearms, and explosives [88]. Despite these specifications, Telegram does not refer to any advertiser verification processes in its official documentation, and thus does not comply with criterion Q7: a user only needs to have a registered business account on the application in order to promote paid ads [89].

Advertisements on the platform are served through automated auctions based on an algorithmic system [90]. An advertiser can individually define the channels they wish to reach when an advertisement is created, which requires prior knowledge of their existence. The targeted channels can also be defined based on themes of interest. However, Telegram differs from the other platforms we present here by dispensing the use of microtargeting techniques: once an advertisement is directed to a public channel, all its members have equal access to it [87]. Generally, channels are separated by language, which allows advertisers to access channels in different countries by selecting specific languages.

The platform does not provide specific means to access its advertising data, nor does it offer any means to retrieve general information about advertisements such as expenditures and reach, as is the case with Google and Meta, for example. Although an endpoint is made available in its API for the collection of advertisements, it is only possible to retrieve the content of the ads if the user already knows and/or monitors specific channels where ads are being served at a specific moment. As a result, the Telegram ad network meets criterion Q6 unsatisfactorily and does not meet Q3, Q4 and Q5 at all. Furthermore, the API documentation is not available in Portuguese and does not furnish essential technical data regarding its operation, such as a detailed description of the response format for each available endpoint.

4.5 TikTok

Boasting approximately 4.8 billion users globally [11], this Chinese platform focused on short videos was launched in 2016 by the company ByteDance and is accessible on smartphones, tablets, computers, and web applications. Ads served on TikTok may take the form of images or videos, with a minimum duration of five seconds and a maximum of sixty seconds, accompanied by texts and associated hyperlinks. Advertisers have the option to entrust the identification of their target audience entirely to the platform's algorithms or to specify parameters of interest, such as country and language [91]. TikTok provides its advertisers with a dashboard for campaign management known as TikTok Ads Manager [92]. According to the company, only advertisers residing or operating in one of thirty-two selected European countries are required to undergo verification [93]. This indicates that while TikTok has mechanisms in place for advertiser verification, it elects not to implement them globally, thereby reinforcing regional disparities, thus indicating a non-compliance with *Q7*.

The platform enforces certain restrictions concerning content that may be promoted through advertisements, which includes political content, adult sex services, gambling, cigarettes and tobacco products, piracy, drugs, and weapons [94]. In addition to these general definitions, there are geographical variations regarding what may or may not be boosted. The platform structures these variations into eight regions: North America, Latin America, Europe and Israel, Eastern Europe, the Middle East, North Africa and Turkey, Oceania, and Northeast and Southeast Asia. In Brazil, a distinction is made between advertising content that is prohibited and that is considered restricted. Prohibited content includes references to speculative investment products such as loans, promotions of Non-Fungible Tokens, auctions, gambling, pyramid schemes, medications and supplements, alcoholic beverages, dating and relationship services, or advertisements targeted directly at children [94].

Regarding political advertisements, the platform articulates within its advertising policies that “candidates or nominees for public office, political parties, and elected or appointed government officials are **prohibited from advertising**” [94, emphasis added]. In a statement, Blake Chandler, Vice President of Global Business Solutions at TikTok, asserts that the company has “chosen not to allow political advertisements” [12]. Furthermore, the platform states that advertisements “**that promote or oppose** a candidate, current leader, political party or group, or issue at the federal, state, or local level – including election-related ads, advocacy ads, or issue ads” are prohibited [12, emphasis added]. Therefore, by presenting an expanded definition of what are considered political advertisements, the platform satisfactorily complies with criterion *Q1*, but does not comply with *Q2* by not allowing them to be served.

Despite the platform's seeming proactivity, such measures are not sufficient in deterring advertisements that violate and circumvent the established rules. Following the DSA, TikTok announced the creation of an advertisement repository, the Commercial Content Library, and an associated API, which are accessible solely within the European Economic Area, Switzerland, and the United Kingdom, containing data on advertisements served since October 2022. As it is not possible to use them to systematically retrieve

and collect data from advertisements that were served to Brazilian users, TikTok does not comply with criteria *Q3*, *Q4*, *Q5* and *Q6*. However, by utilizing the Commercial Content Library, researchers were able to identify advertisements supporting Brazilian presidential candidates served to users on Portugal by TikTok throughout the period of the second round of the 2022 elections [46].

4.6 Spotify

With 551 million users [79], Spotify is one of the most prominent streaming platforms for music, podcasts, and video content globally. According to its advertising policy [80], Spotify defines two categories of problematic advertisement content: prohibited content and restricted content. Prohibited content includes dangerous, illegal, and deceptive products and services, such as firearms, explosives, cigarettes (including electronic ones), recreational drugs, scams, misleading and fraudulent offers, as well as counterfeit or pirated products. As for restricted advertisements, the platform considers those pertaining to financial products and services, gambling, alcoholic beverages, politics, and health.

Political advertisements are currently permitted solely in the United States and must be arranged directly through a Spotify representative [80]. To serve this type of advertising, advertisers must undergo a process to verify their identity, but the company does not provide further details regarding this. Beyond this specific verification for political advertisements, there is no information available regarding the prior verification of advertisers in general. Among the platform's rules, one stipulation asserts that “content attempting to manipulate or interfere with electoral processes” is not permitted [81, translation by the authors]. Given that these are the only references they make to the political use of their advertising network, the company's definition of what constitutes political advertisements remains unclear and thus its ad network unsatisfactorily complies with criterion *Q1* and does not meet criteria *Q2* and *Q7*.

The platform provides the Spotify Ad Studio so advertisers can create their ads [82]. The possible types of advertisements are audio, video, and display, which consist of images in three different formats, such as banners, the minimum investment threshold for these being approximately 200 USD. Clients can analyse the performance of their campaigns using the Spotify Ad Analytics [83]. Although the platform does not offer an interface for the collection of advertising data, it does provide an API that enables advertisers to manage and access data regarding their own advertisements [84].

The distribution of these advertisements involves auctions that operate through continuous and real-time bidding, algorithmically managed. A number of intermediary companies are involved in the process by which Spotify offers advertising spaces to interested buyers [23]. Thus, audience reach is determined by the platform through targeting options, using “Spotify's proprietary contextual data” associated with “the different mindsets and activities of listeners” [85, translated by the authors].

By not archiving or displaying them in a public repository, Spotify's lack of transparency regarding the advertisements it serves and their investment, audience, and targeting information is undeniable. Consequently, its ad network does not meet criteria *Q3*, *Q4*, *Q5* and *Q6*. It is important to note that this does not imply

that there are no improper uses of its advertising platform. For instance, Google recently promoted political advertisements in its campaign against Bill 2630/2020 [71], a proposal to regulate online platforms that is being analysed by the Brazilian Congress, during podcasts, even for users who subscribe to paid plans [13]. Despite not recognizing the political use of its advertising network in Brazil, the platform did acknowledge the improper circulation [16].

5 DISCUSSION

Our research finds that Meta provides the most comprehensive advertising transparency measures among the major online platforms, despite substantial limitations, at least when analysing the Brazilian case. In our analysis, the company satisfactorily complied with four out of seven analysed criteria, in addition to providing access to general advertising data, albeit with restrictions. As the only entity offering minimal measures for auditing advertisements circulated on its platforms in Brazil, most research on advertisements promoting misinformation, scams, and fraud is primarily based on Meta platforms [70, 72, 73].

Although Google acknowledges the use of its advertising network for political ads, it presents a series of limitations in other aspects. Its advertisement repository only allows searches for advertisers, which hinders the identification of fraudulent and disinformation content, for example, requiring prior knowledge of the name registered by advertisers on the platform. Similarly, the data collection solutions made available by Telegram are very limited. On the other ad networks analysed, conducting investigations with the same scientific rigor is, for all intents and purposes, unfeasible – at least in Brazil. The absence of auditing mechanisms does not prevent malicious advertisers from operating on other platforms. To the contrary, it means that they cannot be easily identified in the same way, ensuring them greater freedom. The lack of transparency by platforms that claim not to allow political advertisements, such as Spotify [13] and TikTok [46], despite evidence that they are in fact served on them, poses even more challenges to researchers.

Experiences such as the Meta Ad Library inaugurate transparency and data accessibility measures that need to be adopted and deepened by competing platforms. However, none of them offer ideal conditions that ensure transparency when it comes to advertising with sensitive content, nor do they give the ideal conditions for constant monitoring in Brazil. Furthermore, the platforms present few or no processes for advertiser verification, contributing to the lack of general transparency. Only Meta and Google demonstrably require the submission of documents from advertisers for the dissemination of certain types of ads, but it is difficult to estimate the reach or the effective compliance of this verification effort. This allows anyone, even anonymously, to advertise on other platforms.

Lastly, it is worth highlighting some of the limitations of our proposed framework. The first is that we did not look at all sectors of the digital advertising market in Brazil. As we focused on ads that are served on online platforms, with examples from social media, messaging applications and streaming services, we left programmatic advertising networks out of our analysis. Programmatic advertising networks constitute a significant portion of the ad tech market and their exploitation by those who wish to mislead users is

an emerging research agenda [9, 20, 21]. In addition, as we primarily based our analysis on the platforms' documentation and terms of use, in addition to the literature surrounding the subject, we did not evaluate the quality of the data provided by the platforms in depth, in the case of platforms that allow its retrieval and collection at some level. High-quality digital data is essential for ensuring the reliability and reproducibility of studies in social research [86]. Evaluating the quality of data available for the analysis of the digital advertising market is a research agenda in itself, but one that follows our diagnosis of the scenario of data shutdown.

Our work reinforces the conclusions presented in the international academic literature on the subject [6, 42] that big tech companies have been making it difficult to access data that allow the development of research and the auditability of their services. For this reason, advertising transparency rules should not be defined solely by the platforms, since self-regulation has shown substantial failures and has put consumers at risk. Although the companies analysed in this study promote greater transparency measures in the Global North, they are the result of regulatory frameworks that have recently come into force, showing that these companies have the means to implement similar protocols in other locations, but choose not to do so, which supports the accusations of "transparency-washing" [113]. Despite big tech companies' efforts to position themselves as decision-making and lobbying authorities in order to avoid legislative regulation [113], enhanced transparency of advertising networks is one of the imperatives of various platform regulatory frameworks around the globe. For instance, the DSA acknowledges the necessity for implementing navigable and searchable repositories for all advertisements circulating on digital platforms [24], which would allow for personalized searches and data collection through APIs for the entire duration that an advertisement is served and up to one year after its exhibition [62]. Given the current scenario, platform regulation projects in Brazil must ensure that these companies act in favor of transparency and responsibility for their services, respecting the Brazilian Consumer Defense Code and serving the public interest.

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A COMPARISON OF THE POLICIES, TRANSPARENCY MEASURES AND MEANS OF ACCESSING DATA FROM ADVERTISING NETWORKS OF DIGITAL PLATFORMS AND SEARCH ENGINES IN BRAZIL

Evaluation parameters	Meta Ads	Google Ads	Twitter/X Ads	Telegram Ads	TikTok Ads	Spotify Ads
Q1: Does it present a clear definition of political, electoral, and/or sensitive advertising?	Satisfactory compliance	Partial compliance	Satisfactory compliance	Partial compliance	Satisfactory compliance	Unsatisfactory compliance
Q2: Does it authorize the political, electoral, and/or sensitive use of its advertising network?	Satisfactory compliance	Satisfactory compliance	Partial compliance	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate
Q3: Does it present a searchable repository of political, electoral, and/or sensitive advertising?	Satisfactory compliance	Unsatisfactory compliance	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate
Q4: Does it allow for the systematic collection of data from political, electoral, and/or sensitive advertising?	Satisfactory compliance	Partial compliance	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate
Q5: Does it present a searchable repository of general advertising?	Partial compliance	Unsatisfactory compliance	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate
Q6: Does it allow the systematic collection of data from general advertising?	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Unsatisfactory compliance	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate
Q7: Does it present consistent criteria for verifying advertisers?	Unsatisfactory compliance	Partial compliance	Unsatisfactory compliance	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate	Non-compliance or impossible to evaluate