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Use of Facebook Accounts with Inauthentic Behavior in Elections: The Romanian Presidential Election Case

Abstract

Astroturfing, trolling, bots, false amplifiers and social media accounts with inauthentic behavior are used in online political communication even if they have a real-world dangerous effect on democratic systems. Some of these activities are involving users that are over-proportionally active in relation to the mean. This explanatory research sought to determine whether such hyperactive users are utilized to share political posts to create an impression of popularity for a specific political message and, thus, to influence the recommendation algorithms of social networks in order to increase the exposure of political messages. In this study, I analyzed the most shared posts during the election campaign on the official Facebook pages of the first three ranked candidates in the 2019 Romanian presidential election. The research revealed an average of 18.3% of shares were made by hyperactive users on their own timeline or in different Facebook groups, with users that shared the same post for 69 times. Furthermore, I identified some of the characteristics of hyperactive users' accounts based on their public social media profile, which may help understand the specifics of these accounts. The results show that election communication involves activities considered by Facebook to be a practice of „manipulating public opinion“ and of „manipulating political discussion“ (Weedon et al., 2017, p. 5).

Keywords: election campaign; fake accounts; manipulation; political communication; social media

Introduction

The Internet prevails more and more as a prominent communication and information medium in a world in which people spend on the Internet, on average, almost half of the time they are awake, 6 hours 37 minutes per day (DataReportal, 2023a). The Internet has dethroned all media except television. 67% of EU citizens, for example, say they use the Internet daily or almost daily, while 81% prefer television, 46%, radio and 26% read the print media (Eurostat, 2019a). Almost half of the EU citizens, 47%, say they use social media daily or almost daily (Eurostat, 2019a), and 21% put social media in the first place as a source of information about

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national policy (Eurostat, 2019b). If we are talking about political content, we need to know that it is dominant on the web; for example, political content accounts for more than a third of the most engaging content on Facebook in 2019 (NewsWhip, 2019). In addition to changing the habits of media consumption produced by the emergence of the Internet, social media has also produced changes in the way in which political messages can be transmitted to citizens. The use of the media means that politicians' messages are either not always considered by the media for broadcasting, so they are subject to a selection process, or they are not broadcast in the exact form in which they were transmitted because they are journalistically processed through a series of routine procedures and work rules, as explained by the traditional gatekeeping paradigm (Breid, 1955, as cited in Zelizer, 2007; Shoemaker et al., 2009, as cited in Wahl-Jorgensen & Hanitzsch, 2009; Gherghel, 2009; Coman, 2016). The reality of this classic paradigm has changed with the emergence of social media, which offers the possibility for a politician to communicate directly with the citizens. In addition, the success of an editorial content posted online depends not only on the initial editorial decision to make a subject a news product, but also on the decisions of users to increase or decrease the visibility of that product for a secondary audience, the so-called „two-step gatekeeping“ paradigm (Singer, 2014).

Considering the changes in the media consumption habits and the fact that politicians' messages can reach citizens directly, politicians have changed their public communication tactics and started to use online social networks (OSNs), such as Facebook/Meta, Twitter, Instagram and TikTok, to communicate with citizens (Papakyriakopoulos, Medina Serrano & Hegelich, 2020; Enli & Skogerbø, 2013). They have created OSNs accounts and public pages, which are increasingly used as channels of communication with the general public, but also with the media, highly discussed topics on social media often being featured in traditional media, which can consider interaction metrics as signals of newsworthiness (Giglietto et al., 2020; Zhang et al., 2018). We define interaction as the presence of responsiveness of a receiver to the message of a sender, so interaction occurs when users engage with Facebook posts, such as by sharing, liking, or commenting a post (Stromer-Galley, 2000; Heiss, Schmuck & Matthes, 2019). Moreover, politicians can derive an opinion climate from user engagement, which has a great potential to influence political decision-making (Bene, 2017; Heiss et al., 2019). Therefore, on politicians' official Facebook accounts and pages, citizens can find the non-intermediated messages of politicians, without any journalistic processing, and, at the same time, they can interact with these messages, through reactions, shares, comments etc. (Heiss et al., 2019). The main challenge for politicians remains the need to reach as many citizens as possible. If the media have a loyal audience and the political messages transmitted through these channels have a guaranteed minimum audience, the social media problem is to procure sufficient popularity of a post in order to ensure that it reaches as many users as possible. The recommendation algorithms of social media platforms decide on a number of factors (such as group memberships, friends and number, page likes, explicitly expressed user interests, implicitly expressed user interests, page relationships, platform priorities, etc.) how to index each post and include it in the news feed of users, so the recommendation algorithms are responsible for the visibility of a content on the social media platform (Bechmann & Nielbo, 2018; DeVito, 2016; Thorson et al., 2019; Gillespie, 2011; Horwitz & Seetharaman, 2020). However, we must not neglect the fact that algorithms are also useful for targeting political messages and/or electoral advertising (Bărgăoanu & Durach, 2019). In other words, recommendation algorithms are responsible for the process of amplification, considered as actions

of individual users that intentionally or unintentionally increase measures of engagement surrounding a person, a message, or an idea (Zhang et al., 2018).

The discussion about algorithms, and this is the most important argument for the present research, is related to algorithms and, particularly, to what some scholars call „the social power of algorithms“ (Beer, 2020, p. 3). The power of algorithms resides in their ability to make choices, to classify, sort, order and rank. Thus, algorithms can have an effect on people's lives, shaping what they know, who they know, what they discover, and what they experience. Algorithms play a crucial role in how information circulates, how people find and relate to each other, and what their specific behavior is; it would seem that algorithms decide what matters and what should be most visible (Beer, 2020; Rieder, 2020). Some scholars say that we are now entering „an era of widespread algorithmic governance“ and that algorithms „will play an ever-increasing role in the exercise of power“ (Kitchin, 2020, p. 15) because they „construct regimes of power and knowledge“ (Kushner, 2013, p. 1244). However, the studies show that people are not really aware about the extent to which these algorithms are involved in Facebook news feed curation (Gran, Booth & Bucher, 2021; Eslami et al., 2015; Rader & Gray, 2015). The algorithms represent the „secret recipe“ of each social media platform and, therefore, most platforms have not made them public. One can get an idea of the factors that index the contents of the posts in the information that platforms make public about how the „trends“ functionality works. Thus, for Facebook, one of such factors is the extent of the „topics that have a high volume of mentions and a sharp increase in mentions over a short period of time“ (Osofsky, 2017) and, for Twitter (rebranded as X), the number of tweets that are related to the trends (Twitter, 2022). In other words, algorithms prioritize the better-performing content (Giglietto et al., 2020). The popularity of a post on social media is given by engagements, the number of interactions users have with it (reactions, shares, comments, views etc.), a metric that can be considered by other entities as indicators of worthiness for some future action (Zhang et al., 2018). Thus, those who want to create a successful post, which will reach as many users' news feeds as possible, must provide the greatest possible number of interactions for the post. Sometimes the message itself is sufficient to ensure the popularity of a post. Other times, however, politicians have to turn to methods that deceive the OSNs recommendation algorithms in order to convince them that a post is popular. This can be done through the manipulation of the engagements or of user's interactions with posts, and via user accounts especially created to carry out this type of activity (Bay, 2018). Often, such accounts can be purchased on the Internet, their prices vary according to several characteristics related to the complexity of the account, such as the amount of content in timeline (accounts with no content, with a profile picture, with a profile picture and a few photos, and with a profile picture, photos and a range of posts), the level of basic public information on the profile and their age/history (Bay, 2018).

Facebook calls these accounts „fake accounts“ or „false amplifiers“. Fake accounts are set up „with malicious intent to violate our policies and personal profiles“ (Facebook Transparency Center, 2020). According to Facebook/Meta, these false amplifiers have an ideological rather than a financial motivation, and, in some instances, they „attempt to influence political opinions on social media with large numbers of sparsely populated fake accounts that are used to share and engage with content at high volumes“, but, „in other cases, the networks may involve behavior by a smaller number of carefully curated accounts that exhibit authentic characteristics with well-developed online personas“, „coordinated people who are dedicated to operating inauthentic accounts“; their activity „can include topics around political

figures or parties, divisive policies, religion, national governments, nations and/or ethnicities, institutions, or current events“ (Weedon, Nuland & Stamos, 2017, pp. 5-9). In the Community Standards, Facebook defines their behavior to be „inauthentic“ and defines it as „the use of Facebook or Instagram assets (accounts, Pages, Groups, or Events), to mislead people or Facebook (...) about the popularity of Facebook or Instagram content or assets“ and „to evade enforcement under our Community Standards“ (Facebook Transparency Center, 2020). So, the concept of inauthenticity is connected with the identification of malicious or fake actors on the platform (Bastos & Mercea, 2017; Giglietto et al., 2020). For a complete terminological coverage, we mention other concepts in the sphere of accounts with inauthentic behavior. We may refer to online political astroturfing, that was defined as hidden information campaigns in which a political actor mimics genuine citizen behavior by incentivizing agents to spread information online (Schoch et al., 2022). An other relevant concept is trolling, the malicious behavior of trolls, fake accounts operated manually, behavior intended to disrupt interactions, annoy interaction partners, and draw them into a pointless arguments (Coles & West, 2016; Coles & West, 2016, as cited in Pamment et al., 2018; Mazza, Cola & Tesconi, 2022). We have to mention, also, the activity of bots, computerized „actors“ in the digital environment that, at least in part, mimic human behavior (Pamment et al., 2018).

The scale of fake accounts in the Facebook/Meta platform is extremely large. From October 2017 to March 2023, Facebook/Meta officially reported the deletion of around 29.1 billion fake accounts (Meta Transparency Center, 2023), which represents almost 3.7 times the total population of the world (World Bank, 2023) and more that 9.8 times the total number of active users of the platform (DataReportal, 2023a).

Examining the interaction of accounts with inauthentic behavior in social media is a recent concern of researchers. Previous studies addressed the subject by approaching the coordinated inauthentic behavior (CIB), a concept introduced by Facebook/Meta in 2017 to describe the behavior of „false amplifiers“ (Weedon et al., 2017). Starting from this conceptualization, studies focused mainly on two aspects associated with online information manipulation, the coordination and the inauthenticity. Some studies approached the nature of the accounts in order to distinguish between malicious and legitimate actions, others shifted the focus on the actions and behaviours of the accounts (Schoch et al., 2022; Nizzoli et al., 2021; Cinelli et al., 2022; Giglietto et al., 2020; Papakyriakopoulos et al., 2020).

Current research focuses less on the Facebook platform because of its restrictive API policies, which blocks automated access to data, and more on other platforms, especially Twitter, where automated data access is possible. Previous work has showed that a certain extent of coordination is present in every online community (Nizzoli et al., 2021). A research conducted on the complete data released by Twitter/X as part of its *Information Operations Hub* initiative up until February 2021, that covered various political and cultural contexts across multiple continents and time periods, has concluded that 74% of all the involved accounts in each campaign were engaged in a simple form of coordination; this research also identified patterns of coordination among hidden agents involved in spreading information online by imitating genuine citizens (Schoch et al., 2022). These agents have little time to create distinctive online personas or to vary their behavior across the accounts they control, so patterns of coordination are difficult to camouflage because message coordination is inherent to any information campaign, and resources to mitigate principal-agent problems are usually limited (Schoch et al., 2022). Other patterns that may indicate coordination were identified by research conducted on Twitter/X data related to the 2019 United Kingdom general election.

The study revealed that many coordinated networks had a higher degree of automatization and that several accounts involved in such activities were later suspended (Nizzoli et al., 2021). Coordinated accounts tend to occupy higher positions in the information cascade, share information more rapidly and infect a higher number of users, as shown by a study that analyzed Twitter/X data from the 2019 United Kingdom general election (Cinelli et al., 2022).

Regarding the strategies used to amplify the content on social networks, a research conducted on Twitter/X content has identified attempts to influence political debate through strategies as amplification of content through retweets impersonating reputable accounts to infiltrate ongoing conversations, leveraging the hype surrounding specific events in order to gain visibility or using third-party content to build a network and then spam own contents (Mazza, Cola & Tesconi, 2022).

Fewer studies conducted on Facebook have focused mainly on activities related to political debates (Giglietto et al., 2020; Papakyriakopoulos et al., 2020; Giglietto, Righetti & Marino, 2019; Yu, 2021). Patterns that may indicate coordination were identified in hyperactive activities. Research conducted on Facebook shares of political news stories published in the run up of the 2018 Italian general election and the 2019 European elections, respectively, has demonstrated that rapid sharing of URLs by the same group of entities was associated with coordinated and inauthentic behavior (Giglietto et al., 2020). The study detected several networks of coordinated and inauthentic actors that cooperated to boost certain political news stories and showed that networks predominantly composed by political entities tend to share a wider variety of news outlets than networks including entities with deceptive non-political identities (Giglietto et al., 2020). A research conducted on all the posts in 2016 from the public Facebook pages of the main seven political parties in Germany found that hyperactive users had different attitudes and engaging behavior than the rest and that recommendation algorithms of OSNs were sensitive to hyperactive behavior (Papakyriakopoulos et al., 2020). The hyperactive users activity alters how the public opinion appears macroscopically; moreover, these users themselves become opinion leaders, their activity has an agenda-setting effect and creates an alternate picture of public opinion (Papakyriakopoulos et al., 2020). Other studies have revealed that hyperactive users are more likely to participate in politics and, as they see themselves as opinion leaders, they tend to be more likely to attempt to persuade others about politics (Weeks, Ardèvol-Abreu & Zúñiga, 2017). At the same time, hyperactive users externalize their political attitudes more than the other users and they have the potential to distort political communication; in other words, political issues that are important to them become overrepresented on social media platforms, while the views of normally active users become less visible (Papakyriakopoulos et al., 2020). Hyperactive users create an alternative image of public opinion, thus strongly influencing the recommendation systems Facebook uses to index posts (Papakyriakopoulos et al., 2020). Papakyriakopoulos et al.'s (2020) research also identified the share of these hyperactive users in the total number of users who interacted with the posts. Thus, 5.3% of the users who commented on the posts were hyperactive and 4.3% of users who reacted to the posts were also hyperactive users; the hyperactive users also generated 25.8% of all comments and 26.4% of all reactions (2020, p. 7).

There is a vast recent literature on identifying social media fake accounts using machine-learning methods (Kerrya & Utami, 2023; Goyal et al., 2023; Barde & Wankhade, 2023; Abilash & Sujitha 2023). These methods, even if they use a simple algorithm or a combination of algorithms (for example, convolutional neural network and an artificial neural networks model or support vector machine with an artificial neural networks model) proved per-

formance rates, for Facebook, between 79 and 99.28% (Kerryssa & Utami, 2023, p. 3795). However, these machine-learning methods only use publicly available account data, which remains limited due to Facebook's restrictive API policies.

Conversely, there has been little research on the effects of OSNs accounts with inauthentic behavior on the electorate. However, several authors consider that the use of such accounts? produce a manipulation effect (Weedon et al., 2017; Bay & Fredheim, 2019; Bay et al., 2020; Bentzen, 2018). Facebook's Security team defines coordinated activity by inauthentic accounts with the intent of manipulating political discussion as „false amplification“ and consider this practice of fake accounts (false amplifiers) to be one of „manipulating public opinion“ and „manipulating political discussion“, as discouraging specific parties from participating in discussion, or by amplifying sensationalistic voices over others) (Weedon et al., 2017, p. 5).

Given this context, the present study aims to identify whether accounts with inauthentic behavior were used in the 2019 Romanian presidential election campaigns on OSNs. This manipulation would be carried out through an inauthentic influence of Facebook recommendation algorithms (through shares made by accounts specially created for this purpose), which results in more users being exposed to political content than it would have happened by allowing the content to develop its popularity on the platform in an organic manner. This would happen because, as previous research shows (Thorson et al., 2019), the people who are algorithmically categorized as interested in politics are more likely to attract this kind of content into their news feeds, above and beyond their self-reported interest in these topics. This study sought to understand the existence of this practice of manipulation and, if any, the extent of it and how it manifests itself. Furthermore, this study aimed to examine whether accounts with inauthentic behavior, which were engaged hyperactively into the election campaign in favor of one candidate or another, were transparent about their political involvement or support.

To this end, the following research questions have been formulated:

RQ1: Were social media accounts with inauthentic behavior used in the 2019 Romanian presidential election campaigns and, if yes, how are they deployed?

RQ2: What is the scale of the use of accounts with inauthentic behavior?

RQ3: What are the characteristics of a social media accounts with inauthentic behavior?

To address the above research questions, this study analyzed the most shared posts in the election campaign on the official Facebook pages of the top three ranked candidates in the first round of the 2019 Romanian presidential elections by number of votes obtained. The three candidates were the incumbent President of Romania, Klaus Iohannis, the then Prime Minister Viorica Dancila and the then leader of the opposition, Dan Barna (Central Electoral Bureau for the Election of the President of Romania in 2019). The individual politicians' Facebook pages were chosen for analysis, given that Facebook focuses on individual politicians rather than political parties (Enli & Skogerbø, 2013). I chose shares as the type of engagement because they are part of one of the two main types of measurements for online engagement and because they measure the explicit actions of a user with the content (Moro, Rita & Vala, 2016, cited in Corbu, et al., 2022). Moreover, shares were examined because they are the second most used form of engagement on Facebook (34% of the total interactions at the most popular 10,000 postings on the platform in 2019, after „like“, with 44%, and before „love“, with 8% and comments, with 6% [NewsWhip, 2019]), and also because a post is more popular as it gets more shared, which also increases its visibility on the platform. More vis-

ibility means including a post into as many users' news feeds as possible, which, in this case, means exposing as many citizens as possible to a specific political message. To expose their political messages to as many voters as possible, politicians or their supporters could use a number of social media accounts with inauthentic behavior specially created for this purpose, and this would mean, according to Facebook, a violation of Community Standards, but also a form of manipulation of public opinion and political discussion (Weedon et al., 2017) and a practice of misleading people (Facebook Transparency Center, 2020). Sometimes, politicians' accounts breach Facebook Community Standards not only by the multiple sharing of the same post, but also by using inauthentic accounts name or profile picture. In Facebook Community Standards it is stipulated that „authenticity is the cornerstone of our community. We believe that authenticity helps create a community where people are accountable to each other.“ and that Facebook wants to prevent „identity misrepresentation“ and, in this respect, „require people to connect on Facebook using the name they go by in everyday life“ (Meta Transparency Center, 2022). These are, therefore, other indicators of inauthenticity of Facebook accounts.

This study supports the findings of some previous research, such as the research made conducted on likes and comments from political parties' pages in Germany (Papakyriakopoulos et al., 2020). Our research, in turn, analyses shares on individual politicians' Facebook pages, knowing that this specific social media platform places the focus on individual politicians rather than political parties (Enli & Skogerbø, 2013). Moreover, the Italian research previously mentioned analyzed Italian political news stories shared on Facebook (Giglietto et al., 2020), while our research analyzes the inauthentic behavior of sharing post from the official Facebook pages of top politicians.

This work follows the current wave of research of the „dark participation“ (Quandt, 2018), that has been challenging until recently the one-sided approach of the social media engagement as a positive action. The use of accounts with inauthentic behavior becomes a „dark participation“ practice which enrolls the three central motives for politicians to use social media, namely marketing, mobilization and dialogue with voters (Enli & Skogerbø, 2013). To paraphrase Thorsten Quandt (2018), this research is about „dark sharing“, which refers to the share activity intended to mislead social media users and voters.

Methodology

Dataset: This research targeted the most used social media platform in the world and in Romania, Facebook (2.96 billion active users in January 2023, worldwide [DataReportal, 2023a] and, in Romania, 2.45 million of active users in January 2020 [Alpha, 2020], with 90.7% of Internet users aged 16 to 64 who use it each month in Romania in January 2023 [DataReportal, 2023b]). This explanatory research analyzed the most shared five posts in the election campaign on the official Facebook pages of the top three candidates in the first round of the 2019 Romanian presidential elections in 2019 in terms of number of votes obtained, according to the results of the elections, the incumbent President, the incumbent Prime Minister and the opposition leader (Central Electoral Bureau for the Election of the President of Romania in 2019). We analysed the „Klaus Iohannis“ page (belonging to the incumbent President), „Viorica Vasilica Dăncilă“ page (belonging to the incumbent Prime Minister) and „Dan Barna“ (belonging to the incumbent opposition leader) page and about the posts content was

posted between October 12, 2019, 00.00, and November 9, 2019, 7.00, according to the Romanian legislation in force („Law no. 370 of 20 September 2004 on the Election of the Romanian President, republished“, 2014). During said period, page „Klaus Iohannis“ had 12 posts, the page „Viorica Vasilica Dăncilă“ had 50 posts and the page „Dan Barna“, 82 posts. The distribution of the analyzed posts is presented in Table 1. In total, these posted accounted for more than 100,000 shares.

Table 1. Number of posts on the analyzed pages.

Name of the official Facebook page	Total number of posts
Klaus Iohannis	12
Viorica Vasilica Dăncilă	50
Dan Barna	82
Total	144

Data was collected manually, because it is the only way to access the data needed for this research, the shares and the Facebook accounts and groups in which they were distributed. Due to extremely restrictive Facebook policies, especially after the „Cambridge Analytica“ scandal, the platform restricted API’s (application programming interface) access, which greatly reduced the level of data a researcher can access using automated systems (Walker, Mercea & Bastos, 2019; Hothman, 2019). Neither the specialized data collection web services nor the software that uses programming languages such as Python and R, and that are done using an API, provides such data, and the use of web-scraping is illegal (Radford, 2019). CrowdTangle, the Facebook/Meta analysis tool, does not provide this data either (Fraser, 2022; Facebook Team, 2015). The author of this research took even more steps to get such data directly from Facebook, both in the questions section of the Facebook for Developers community and on the e-mail of Facebook support teams, but received no answer. Therefore, the data was collected manually and, in order to ensure its accuracy, a double verification was carried out.

The data was collected on Word documents and tabular spreadsheets in Google Sheets, for which the search function was applied for the names of the accounts that shared the posts in order to identify accounts that made multiple shares, and to monitor the number of shares for each account.

Because of the large amount of data and the impossibility of using an electronic data collection software, we operated a selective survey (Rotariu et al., 2012) and we chose the top five most distributed posts on each Facebook page during the election campaign. The research corpus thus covered 10.5% of all posts during the analyzed period. The posts included in the corpus have 12,591 shares in total, where we could view the account of the user who shared them and the place where they were shared (on their own timeline, on their own timeline and in one or more groups or only in several groups). In total, we collected a total of 24,481 data units (*n*), representing the names of Facebook accounts that shared the 15 total posts analyzed and the names of the Facebook accounts or groups where they were shared.

The data was collected using the author’s personal Facebook user account. Due to the privacy settings of the platform, not all the shared data could be accessed, the platform displaying at the end of the accessible shares the „Some posts may not appear here due to their

privacy settings“ the message. For this reason, for the page „Klaus Iohannis“, we could collect 47.6% (see Table 2), for „Viorica Vasilica Dăncilă“ page, 44.6% (see Table 3) and, for „Dan Barna“ page, 54.5% (see Table 4). Data could be collected on average for 48.9% of the total shares, however they provided sufficient to identify inauthentic behavior in the share activity on these political pages.

Table 2. Number of total shares and of shares about which data was collected from „Klaus Iohannis“ Facebook page.

	Total share verification date (22 July 2020)	Total share collection date (20 November 2019)	Total share data collected	Total share data collected (%)
1st post	5,410	5,562	2,444	45.2
2nd post	2,465	2,526	1,164	47.2
3rd post	1,922	1,988	1,008	52.5
4th post	1,707	1,445	786	46.1
5th post	1,200	1,231	640	53.3
Total	12,704	12,752	6,042	47.6

Table 3. Number of total shares and of shares about which data was collected from „Viorica Vasilica Dăncilă“ Facebook page.

	Total share verification date (22 July 2020)	Total share collection date (19 November 2019)	Total share data collected	Total share data collected (%)
1st post	1,757	1,610	666	37.9
2nd post	1,418	1,505	601	42.4
3rd post	1,277	1,323	581	45.5
4th post	1,217	1,266	625	51.4
5th post	1,153	1,194	570	49.4
Total	6,822	6,898	3,043	44.6

Table 4. Number of total shares and of shares about which data was collected from „Dan Barna“ Facebook page.

	Total share verification date (22 July 2020)	Total share collection date (13 December 2019)	Total share data collected	Total share data collected (%)
1st post	1,595	1,628	927	58.1
2nd post	1,531	1,565	818	53.4
3rd post	1,248	1,292	681	54.6
4th post	1,039	1,066	495	47.6
5th post	1,016	1,045	585	57.6
Total	6,429	6,596	3,506	54.5

It should be noted that on the „Dan Barna“ page, out of the ten most shared posts in the period under analysis, which existed at the time of the data collection, four were not found at the time of data verification, most likely because they were deleted from the page in the meantime. Therefore, we have extended the analysis to the following four posts in descending order of their number of shares.

We must also mention that, during the verification of the data collected, we noticed that some accounts changed their user name, but kept the profile picture, which was often a generic one and did not represent a human face, and appeared to be sharing exactly the same post in exactly the same Facebook groups, at the exactly same time as other accounts, with different user names, as at the initial collection of the data. This is an argument *per se* for the inauthentic behavior nature of the accounts in question, which we aimed to identify in this research. For these accounts we did a separate analysis of their shares. We also identified accounts with different user names that use the same profile picture. They were treated separately when analyzing the data.

Some of the accounts available at the time of data collection were no longer visible at the time of verification, either because they were deleted or because they were blocked on the platform. These accounts were not taken into consideration for the qualitative analysis of the profile of the inauthentic accounts.

We must say that, for the purpose of this research, the available data were taken into account when checking the posts?. The differences in the number of shares between the two moments, the initial collection and the verification, are due to the specific social media dynamics, because the posts in question were still accessible and users were able to interact with them, including by further sharing or by deleting the message from an account or group where it was shared. The dynamics might also be caused by the activity of deletion or blocking of accounts that shared a specific post from the network, but information about the operating mechanisms of social media algorithms in such situations is not known because they are not made public by Facebook.

Measures: We have carried out a selective research, which has allowed us to reduce the hundreds of posts of the 14 candidates in the first round of the 2019 Romanian presidential elections to a smaller representative number; the selection criteria was the highest number of votes and we chose the top three ranked candidates in terms of number of votes obtained, according to the results of the elections.

To analyze the data thus obtained, we chose a quantitative approach in order to evaluate the shares distribution and to identify the existing hyperactive users (users that over-proportionally interact on the platform compared to the mean). The research identified the following types of users in terms of Facebook posts sharing behavior (a typology that we propose to facilitate the identification of users in relation with their sharing behavior):

- normal user (NU): the account whose user has shared a specific post only once, either on their own timeline or in a group;
- moderately active user (MAU): the account whose user has shared the same post twice or three times, either on their own timeline or on their own timeline and into one or more groups, or only into one or more groups;
- hyperactive user (HAU): the account whose user has shared the same post four or more times, either on their own timeline or on their own timeline and into one or more groups, or only into one or more groups;
- super-active user (SAU): the account whose user has shared the same post ten or more times, either on their own timeline or on their own timeline and into one or more groups, or only into one or more groups.

Findings

Engagement of the accounts with inauthentic behavior: The study identified the existence of Facebook accounts with inauthentic behavior actively involved in the political campaign of the 2019 Romanian presidential election on official pages of the top three candidates in terms of the number of votes obtained after the first round of elections. We addressed the RQ1 and RQ2 by analyzing the relationship between the number of shares and the accounts that shared them from the perspective of the frequency with which the same post was shared multiple times by a single account.

A first finding of this analysis suggests that, in comparison with the usual posts on the respective Facebook pages outside the analyzed period, the posts we examined had a relative high level of popularity on the social media platform in terms of shares for a political post in Romania. The top five most shared posts had 5,410 shares, 2,465 shares, 1,922 shares, 1,757 shares and 1,595 shares respectively. The less shared posts had 1,153 shares, 1,039 shares and 1,016 shares, respectively. The data also shows a high commitment to sharing activity. 29.8% of the shares were multiple, which means that they were shared by the same user at least twice, on their own timeline's account, in a group or in several groups. In the case of some posts („Dan Barna“ page, 5th post), even 52% of them were such multiple shares. This is a valuable finding because it shows active involvement in the multiple sharing activity of posts on the official pages of the presidential candidates.

Another relevant finding is that an average of 18.3% of shares were made by hyperactive users, that is by users who shared the same post four or more times (either on their own account or on their own account and on one or more groups, or only into one or more groups). Some posts („Dan Barna“ page, 5th post) had even 41.4% of the total number of posts shared in such a hyperactive manner, which means that they were done by users who had shared them at least four times. Of the posts that we analyzed, the lowest rate of hyperactive shared was 6.5% („Viorica Vasilica Dăncilă“ page, 2nd post). The number of shares made by hyperactive users varied from 9.3% to 41.4%, for the „Dan Barna“ page, from 12.9% to 29%, for the „Klaus Iohannis“ page and from 6.5% to 16.3%, for „Viorica Vasilica Dăncilă“ page. These findings show a high level of hyperactive users' involvement in the sharing activity on this official pages.

Table 5. Multiple shares relative to the total shares on the pages analyzed (%).

	1st post	2nd post	3rd post	4th post	5th post
Facebook page name	Multiple shares relative to total shares (%) / Multiple hyperactive shares relative to total shares (%)				
„Klaus Iohannis“	33.5	21.1	41.6	30.9	22.5
	22.6	12.9	29	21	13.6
„Viorica Vasilica Dăncilă“	30.2	19.3	31	27.8	16.1
	15	6.5	15.7	16.3	9
„Dan Barna“	31.4	30.8	37.3	20.8	52
	20.3	20	21.7	9.3	41.4

The research also found that there were hyperactive users who shared the same post 20 or more times, 16.2% of them, and even 30 or more times, 9%. The data suggested that the most prolific hyperactive user on different Facebook pages shared the same post for 69 times, 53 times and, respectively, 51 times. Regarding the behavior of these users, usually they shared a post once on their account and then on several different groups. However, for example, the user who shared the same post 69 times did so on their own timeline's account and not on Facebook groups. This is a specific type of behavior for an inauthentic account.

The data we were able to gather show that social media accounts with inauthentic behavior were used in the political campaign for 2019 Romanian presidential election and that such was done through multiple sharing of posts from the official Facebook pages of the candidates (RQ1). This large proportion of shares made many times by the same account (18.3% of shares, made by users who shared the same post four or more times, 16.2%, made by users who shared the same post 20 or more times and 9%, by users who shared it for 30 or more times) shows the scale of this practice (RQ2). At the same time, this large number of shares indicates an action intended to deceive the Facebook recommendation algorithms that prioritize the better-performing content. Such a behavior has two direct consequences: (a) more users are exposed to a specific political message than it would have happened by allowing the content to develop its popularity on the platform in an organic manner and (b) the political message can gain an even greater level of exposure to the public by being featured in traditional media which can consider metrics of highly discussed topics on social media as signals of newsworthiness.

Profile of the accounts with inauthentic behavior: To address the RQ3, we analyzed the information that could be publicly seen on the accounts of the super-active users (SAUs), which shared the same post ten or more times, either on their own timeline or on their own timeline and on one or several groups, or only on one or several groups. Such an approach led the analyst to some interesting findings that could help profile this type of user. The first of these findings refers to the SAU's account name and profile picture. 6% of SAU's account name did not have a common name for a human user, in accordance with the community rules set by Facebook, and 17.9% did not have a profile picture or the one they had did not show a human person or had other indications of inauthenticity.

The timeline activity data shows that many super-active users display signs of inauthentic behavior. 46.3% of SAUs had more than ten posts/day or any post for more than 30 successive days in their timeline. 14.9% of SAUs had more than 20 posts/day and 4.5% of them had no post other than that which showed the loading of a profile or cover picture or the date of birth of the user. The results also show that there are super-active users who had even 79 different posts on the timeline in a single day, which, for a normal user, with an average day of 16 hours of wake up time (8 hours sleep) would mean a Facebook post made every 12 minutes. There are other accounts that posted on their one timeline's account in one day for 77 times, 76 times, 55 times or 47 times. At the same time, in terms of the subject of the posts, 43.3% of super-active users did not have, in the last 30 calendar days, any personal post on the timeline's account, but only posts related to political or civic activism.

A closer view of the appreciation activity (the use of „like“ functionality) of the super-active users revealed that 6% did not have any appreciation of all nine categories available for viewing in the account profile („Sport Teams“, „Athletes“, „Music/Artists“, „Movies“, „TV shows and series“, „Books“, „People“, „Restaurants“ and „Apps and games“).

The research also examined the level of transparency in terms of affiliation and support for a political party or candidate. 16.4% of super-active users declared their political affiliation or support was declared in the „Political views“ from the „Contact and basic info“ section, by mentioning the name of a Romanian party or European political group, which means that 84.6% were not transparent about a possible political affiliation or support, even if they shared the same post of a candidate in the presidential election 10 or more times on their Facebook account or groups. The support attitude was even more visible when we followed, in addition to the political views declared, the profiles and cover pictures and, also, the picture frames stating a political support. 53.7% of SAUs showed their political support through these functionalities of the platform.

The data also suggests that 32.8% of super-active users shared at least one time one of the other four analyzed posts from the same official Facebook page of a specific candidate.

This data helps us identify several dominant characteristics of the social media accounts with inauthentic behavior (RQ3), such as the prevalence of human/non-human username and profile picture, the type of activity on the timeline's account, the level of transparency in terms of affiliation and support for a political party or candidate and the level of involvement in the multiple distribution activities of the analyzed posts. All these traits can shape a profile of this type of social media accounts.

Another interesting result of this study shows that there are super-active users accounts that had not published on their timeline any posts for several weeks and even months, and then, during a certain period of time, became very active, with dozens of posts a day, most of them containing messages of political or civic support.

Furthermore, the study revealed a decreasing dynamics of the number of shares corresponding to a post from the initial moment of data collection (t1) compared to the later moment of verification (t2). In some cases, even more than 150 shares disappeared from the same post. Out of the 15 posts, only at 2 of them the number of shares increased in the seven and, respectively, eight months between t1 and t2. The normal effect, over time, is the increase of number of shares for a post, and not its decrease. We noticed, though, that, in 87% of the examined cases, the number of shares decreased over time. This result may indicate that several users deleted their initial share, which is unlikely, it is not a common behavior for a social media user to return on his timeline's account and delete shared posts. More likely, it indicates that the accounts that made those shares or the groups in which they were made were deleted from the network, which, overall, is a sign of inauthentic behavior.

Another form of inauthentic behavior can be considered the user name changes of some accounts between t1 and t2. They changed their username, but kept the profile picture, which was often a generic one and did not represent a human face, and appeared to share exactly the same post in the exactly same Facebook groups, at the exactly same time as other accounts, with different usernames, did at the initial collection of the data.

Discussion

The massive spread of digital manipulation has already been identified as a major threat to democracies. Scholars from all over the world examine the complexity of this phenomenon to provide a better understanding of its causes, the means by which it happens and of its impact. In this context, a first contribution of this paper is to reveal that Facebook accounts

may be used in an inauthentic manner to increase the exposure of political messages during the 2019 campaign for presidential elections in Romania. The Security team of Facebook, the platform on which such type of activity was performed, considers this a practice of „manipulating public opinion“ and of „political discussion“ (Weedon et al., 2017, p. 5). This activity targets the misleading of Facebook recommendation algorithms and is done through hyperactive users (users that are sharing specific posts on the platform in an over-proportionally manner compared to the mean). Another relevant contribution is that this work has identified several dominant characteristics of hyperactive user's accounts based on their public social media profile, which helps to better understand the specifics of these accounts and, also, makes them easier to recognize. These findings need to be put in the broader context of algorithms that shape the digital world, in which we, as human beings, are living almost half of the time we spend awake (DataReportal, 2023a). The question is how considerable is „the social power of algorithms“ (Beer, 2020, p. 1) as long as, as some scholars suggest, algorithms „construct regimes of power and knowledge“ (Kushner, 2013, p. 1244) and we live under an „algorithmic governance“ (Katzenbach & Ulbricht, 2019, p. 1). Manipulation of these algorithms by external forces becomes, thus, a matter of vast and yet unknown implications for human life.

This research makes two contributions to the exiting literature in the field. On the one hand, it shows that inauthentic behavior is used on the pages of top political leaders, not just political parties (see Papakyriakopoulos et al., 2020), and that it is also applied to the share activity. Regarding the shares, a post becomes even more visible on the newsfeed of users the more shares it has and, at the same time, the shares are considered as metrics that signals the newsworthiness by traditional media, which, thus, can broadcast the political message from that posts (Zhang et al., 2018). Therefore, increasing the number of shares of political posts becomes a *sine-qua-non* condition to enlarge public exposure to those political messages, even more so during an election campaign, when there are high political stakes. This paper does not state that this type of action is intentional or unintentional, nor that it is made by accounts specially created for this purpose. Even though other research have identified coordinated inauthentic behavior in sharing political content (Giglietto et al., 2020) and, as we know from empirical observations, political digital marketing specialists use false amplifiers, coordinated people who are dedicated to operating inauthentic accounts, to amplify social media content (Weedon et al., 2017), the present work did not intend to disclose the fake nature of these accounts. Thus, the examined accounts may be false amplifiers, fake accounts of bots or trolls, or accounts of ordinary users, which are simply political supporters, who, out of conviction, are sharing in this hyperactive manner the posts of their favorite politicians. The inauthentic nature of the behavior of such accounts is, however, empirically proven? and their actions violate Facebook's Community Standards.

A second contribution of this paper refers to the impact of this type of inauthentic behavior on OSNs. Data suggests that 18.3% of shares were made by hyperactive users which shared the same post four or more times, 16.2%, who shared the same post 20 or more times, and 9%, who shared it 30 or more times. These results are consistent with previous research. The study which analyzed comments and likes interactions on public Facebook pages of the main political parties in Germany measured the impact of hyperactive users at 25.8% of all comments and 26.4% of all reactions (Papakyriakopoulos et al., 2020). Thus, both studies outline a prevalence of this inauthentic behavior of hyperactivity engagement around +/- 20% of total Facebook interactions.

Another particularly interesting result of this work is the identification of several dominant characteristics of hyperactive users' accounts based on their public social media profile. Based on the findings we can create a general profile of super-active users (SAUs), accounts with inauthentic behavior who were involved in sharing the posts we analyzed in a hyperactive manner (have shared the same post ten or more times). These accounts use human names (94%) and most often a profile photo representing a human face (82.1%). Their Facebook timeline indicate signs of inauthentic behavior, they contain more than ten posts/day or any post for more than 30 successive days (46.3%). At the same time, a significant part of the SAUs (43.3%) did not have, in the analyzed period, any personal post on the timeline's account, but only posts related to political or civic activism. Although they are obviously involved in sharing political content on the platform (they shared the same post ten or more times), 84.6% of them were not transparent about a possible political affiliation or support. A third of the SAUs (32.8%) were also involved in sharing other posts on the same official page, which may indicate a degree of coordination. This finding is relevant in two ways. On the one hand, it allows a better understanding of the specifics of these accounts and helps to shape a profile for the inauthentic behavior accounts based on the prevalence of human/non-human user name and profile picture, the type of activity on the timeline's account, the level of transparency in terms of affiliation and support for a political party or candidate and the level of involvement in the multiples distribution activities of the analyzed posts. On the other hand, it makes this type of accounts easier to recognize by scientists, fact-checking journalists and the general public. These characteristics can be related also to the features by which the purchase price of fake accounts is fixed on the Internet black market and which varies depending on the account's complexity (the amount of content in timeline, the level of basic public information on the profile and their age/history) (Bay, 2018). Based on these findings, future research may help to establish even more precisely the characteristics that can differentiate fake accounts from those with inauthentic behavior. Given the difficulty in collecting the data, future studies are necessary in order to design even better the profile of social media inauthentic accounts. Future research may also lead to the development of algorithms for recognition of this type of accounts that can be widely utilized by ordinary social media users.

These results of our research shed light on the extent to which accounts with inauthentic behavior are used on official Facebook pages of top political leaders at times when public opinion is most sensitive to political messages, i.e., the election campaigns. Taking into consideration the scale of fake accounts on social media (Facebook/Meta only has reported the deletion of 29.1 billion fake accounts in the last five and a half years [Meta Transparency Center, 2023]), the OSNs should be more sensitive to such research and should make the scientific community a partner in finding solutions for reducing all actions of deception and manipulation of communication on social media platforms, as underlined by the European Commission in the assessments of the Strengthened Code of Practice on Disinformation 2022 (European Commission, 2022). The sustained efforts of the European Commission (Code of Practice on Disinformation 2018, strengthened in 2022, EDMO, Digital Services Act - DSA, etc.) (European Commission, 2023), to empower the research community with the necessary access to legal data on OSNs needs a stronger commitment from the platforms. In this respect, reviewing their strict API policies, would be a first step for Facebook that would help to a better understanding of this phenomenon by the scientists, but also for the development of digital tools or features allowing ordinary users to identify false amplifiers and fake accounts, as is already happening with other social media platforms (e.g., Twitter). Ultimately, given

the increasing „social power of algorithms“ (Beer, 2020; Kitchin, 2020), gaining access to the formulation of algorithms becomes a requisite for research in order to understand their implications for human life.

From the methodological perspective, this study creates a manual model for identifying accounts with inauthentic behavior on Facebook. Even though there are automated, machine-learning methods, models with performance rates of up to 99.28% (Kerryssa & Utami, 2023), these only use publicly available account data, which remains limited due to Facebook's restrictive API policies. Data, such as where a post was shared (on an account/page or on a group), are only accessible through manual searches, and this type of information can be relevant to understand the coordination character of some accounts, the behavior of accounts and some characteristics of hyperactive users' accounts.

Still, the data collection process for this research has several important limitations. First, the collection was done manually, so this leaves room for human error. In order to limit this risk, as we have already mentioned, a double check of the data collected has been carried out. However, the risk of errors could not be fully removed.

Another important limitation is the amount of data that could be analyzed. For the „Klaus Iohannis“ page 5 of 12 posts were analyzed, for the „Viorica Vasilica Dăncilă“ page 5 out of 50 posts were analyzed, and for the „Dan Barna“ page 5 out of 82 posts. Therefore, 10.1% of all the posts in our research period were analyzed. The limitation consisted in the fact that the access to the data (shares and where they were shared) was made using the researcher's personal Facebook user account, so some shares could not be viewed because of the operating algorithms of the platform.

Finally, a third limitation is related to the dynamics specific to OSNs, where accounts that have engaged in an interaction with a post can be deleted or blocked or where an interaction can be deleted (a like can be withdrawn, a share or a comment can be also deleted), and groups, they may also be closed. For example, in the case of the „Dan Barna“ page, there can be even completely deleted posts, which, at a certain moment, were ranked among the most shared posts of a candidate in the presidential elections. Therefore, this specific social media dynamics and the lack of transparency regarding the functioning mechanisms of social media algorithms are likely to affect any research on the Facebook platform.

Conclusions

In this paper, we show that Facebook accounts are used to increase the exposure of political messages posted on the official Facebook pages of three of the most prominent national politicians during the 2019 campaign for presidential elections in Romania. These accounts display an inauthentic behavior, as defined by the Facebook's Community Standards, which aims to mislead people about the popularity of a specific content (Facebook Transparency Center, 2020). This misleading activity consists of the multiple sharing of posts by a group of accounts either repeatedly on their own timeline or in multiple Facebook groups. The research also identified some of the inauthentic accounts' most dominant characteristics, which helps us to better understand how they are instrumentalized and how they can be more easily recognized. Thus, the findings can contribute to efforts to improve fact-checking techniques for both professional fact-checkers and ordinary social media users. An important contribution

of the current research is that, to our best knowledge, may represent the first research on accounts with inauthentic behavior on Romanian OSNs.

These results show that, in an unregulated or poorly regulated environment, unlike election campaigns in audiovisual media or outdoor, the election campaigns on social media end up using techniques that can be considered deceptive and manipulative. Whether intended or unintended, made by accounts special created for the multiple distributions of shares or by real political supporters, political messages are promoted based on techniques that may mislead people. Therefore, this paper supports the arguments for more accurate technical solutions of identifying fake and inauthentic accounts, which violate Facebook's Community Standards. Another possible solution may be to limit the number of shares of the same post that a single account can make. Last, but not least, this paper joins the other statements for a better self- and co-regulated environment of social media platforms, in general, or, following the model of the audiovisual media and outdoor campaigning, a regulatory framework specific to election campaigns.

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