

## **DISINFORMATION AND POLARIZATION IN THE ONLINE DEBATE DURING THE 2020 PRESIDENTIAL ELECTION IN POLAND**

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### **Abstract**

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The deliberate manipulation of public opinion, the spread of disinformation, and polarization are key social media threats that jeopardize national security. The purpose of this study is to analyze the impact of the content published by social bots and the polarization of the public debate on social media (Twitter, Facebook) during the presidential election campaign in Poland in 2020. This investigation takes the form of a quantitative study for which data was collected from the public domains of Facebook and Twitter (the corpus consisted of over three million posts, tweets and comments). The analysis was carried out using a decision algorithm developed in C# that operated on the basis of criteria that identified social bots. The level of polarization was investigated through sentiment analysis. During the analysis, we could not identify automated accounts that would generate traffic. This is a result of an integrated action addressing disinformation and the proliferation of bots that mobilized governments, cybersecurity and strategic communication communities, and media companies. The level of disinformation distributed via social media dropped and an increasing number of automated accounts were removed. Finally, the study shows that public discourse is not characterized by polarization and antagonistic political preferences. Neutral posts, tweets and comments dominate over extreme positive or negative opinions. Moreover, positive posts and tweets are more popular across social networking sites than neutral or negative ones. Finally, the implications of the study for information security are discussed.

### **Keywords**

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disinformation, polarization, fake news, social bots, Facebook, Twitter, information security, hybrid threats

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## 1. Introduction

Hybrid risks pose a threat to the contemporary security environment. They include a combination of conventional and irregular warfare, and political and information threats whose aim is to use hostile “measures that seek to deceive, undermine, subvert, influence and destabilize societies, to coerce or replace sovereign governments and to disrupt or alter an existing regional order” (Monaghan, 2019). The informational dimension of hybrid threats includes massive disinformation, ideological propaganda and using media for political purposes. Disinformation attacks are automatically and aggressively disseminated on a massive scale posing a serious cybersecurity threat and representing a serious hybrid threat to state security. Disinformation campaigns are not an end in itself, but a means for achieving financial or political gains, similarly to cyberattacks which use malware, viruses and social engineering to make a breach to security systems. Therefore, hybrid threats in the form of disinformation or cyberattacks hinder the stability of the security environment (Bajarūnas, 2020; Ivančík, Jurčák and Nečas, 2014).

When living in a network society where information plays a central role, information security should become a priority in the national security policy. The Internet is critical for ensuring state security as both society and economy are increasingly dependent on information technology and computer networks. The growing trends in the consumption of online content prove their increased impact on society, thus creating consumer behavior, political preferences and worldviews (Urych, 2013; Świerszcz, 2017; Benkler, Faris and Roberts, 2018; Colliander, 2019; Żakowska and Domalewska, 2019). The threats associated with social media include increased polarization, the deliberate manipulation of public opinion and the spread of disinformation (Arażna, 2015; Mustonen-Ollila, Lehto and Heikkonen, 2020), which is understood as a set of techniques used deliberately to manipulate people or entire societies for political or economic gains. Disinformation is spread on social media by social bots, that is, programs controlled by algorithms that mimic human behavior on social networks. Numerous studies have confirmed that they were used during the presidential campaign in the United States in 2016 (Bessi and Ferrara, 2016; Klimburg, 2018) and the pre-referendum debate on Brexit in 2016 (Howard and Kollanyi, 2016). However, there is a lack of research analyzing polarization and the use of social bots in public debate on Polish-language social networks. This study aims to fill this gap.

The main theoretical goal of this study is to reflect, based on empirical evidence, on the impact of content published by social bots and polarization of the public debate on social media (Twitter, Facebook) during the presidential election campaign in Poland in 2020, and particularly the two months before and a month after the presidential election. The study allows the following research questions to be answered: (1) to what extent were social bots used in the public debate on social media during the 2020 presidential campaign? (2) to what extent did the 2020 presidential election lead to polarization in Polish society? The general assumption of this study was formulated by using the hypothesis that the public debate on candidates running in presidential election would generate increased traffic from a significant number of social bots. We further hypothesize that the 2020 presidential election have led to polarization in Polish society.

## 2. Disinformation in online debate

Disinformation is “verifiably false or misleading information that is created, presented and disseminated for economic gain or to intentionally deceive the public” (European Commission, 2018). Disinformation campaigns are carried out to manipulate the information ecosystem for financial and political goals. Economic goals are met when sensational stories and catchy titles are meant to draw readers’ attention, increase readership and generate income. Political goals are realized in a variety of ways, such as discrediting a political opponent, undermining their credibility, spreading chaos, and increasing polarization. Disinformation can also lead to a social change by promoting populism, increasing intolerance of various ethnic or cultural groups. It is a serious threat to core values: democratic political and policy-making processes, trust in institutions and the media. Furthermore, disinformation attacks lead to the manipulation of society, influence political behavior and the way of thinking, and cause a number of emotions, such as uncertainty and hostility, which results in social tensions. These goals can be achieved by concealing the source and purpose of the information, distorting the interpretation of facts and one-sided depiction of events, using shocking images, dispersing the facts using a multitude of irrelevant information, or not providing all the facts.

Disinformation content is automatically and aggressively disseminated on a massive scale using social bots, artificial intelligence, trolling and micro-targeted advertising. Social bots are algorithm-controlled programs that share posts and engage in communication with human users (Howard and Kollanyi, 2016). Apart from useful bots used for communication with consumers (e.g., chat bots offer support to individuals in customer help desk situations and telephone answering systems), malicious bots may be employed to generate profit, circulate disinformation, manipulate content, and share spam. Bots can also reply to posts meeting certain criteria and track the activity of users who followed the bot or who publish specific content on the Internet. According to Woolley (2016), American politicians used social bots to increase their follower list, disseminate favorable tweets in order to influence public opinion and flood the hashtag promoted by the opposing party with bot-generated or bot-retweeted content. Automated accounts were also used to generate tweets or retweets around a specific topic to suggest a false sense of consensus around this opinion (astroturfing) (Ratkiewicz *et al.*, 2011; Węglińska, 2018).

Social media accounts that are run by bots can be identified if they exhibit the following features: (1) “a high volume of content in which reposts and retweets prevail over the original output; (2) the user account looks like a default account that has not been personalized by the user; (3) recent account creation date; (4) a random account name that has not been personalized; (5) avoidance of geotagging (social media users usually produce location-specific data); (6) duplicating posts by multiple accounts simultaneously or almost simultaneously; (7) lack of original output; (8) activity is centered on a very narrow thematic scope; (9) rapid reaction to certain articles or posts; and (10) user's demographic information that does not match the style of speech or the subject matter” (Domalewska and Bielawski, 2019).

Automated accounts can be difficult to identify, especially by individual social media users. Bessi and Ferrara (2016) found that bot produced content was retweeted at the same rate as human-generated content. During the 2016 US presidential election, 36,746 Russian bot accounts disseminated 1.4 million tweets that were seen 288 million times (Hudgins and Newcomb, 2017). Bot communication also played a role in generating traffic and misleading social media users during the Brexit debate (Howard and Kollanyi, 2016) and the Ukraine –

Russia conflict in 2014 (Hegelich and Janetzko, 2016). However, studies carried out in Germany (Brachten *et al.*, 2017) have not detected a statistically significant use of social bots in political contexts.

### 3. Polarization

Polarization takes place when viewpoints and preferences shift from acceptable moderate positions towards the extreme ends of the ideological spectrum. The extreme viewpoints stand in opposition and will always clash with each other. In democratic societies, a certain degree of polarization is expected as political parties differ in their programmatic agendas and seek a loyal electorate. The problem arises when polarization becomes so intense that it poses a threat to democracy. Hence, severe polarization can be defined as “a process whereby the normal multiplicity of differences in the society increasingly align along a single dimension, cross-cutting differences become reinforcing, and people increasingly perceive and describe politics and society in terms of ‘us’ versus ‘them’” (McCoy & Somer 2019).

Kligler-Vilenchik, Baden and Yarchi (2020) distinguish between positional and interpretative polarization. The former refers to people’s stance on political issues whereas the latter entails the contextualization or framing of a topic in opposing ways. In the case of strong interpretative polarization, different groups conceptualize the topic in contradictory ways so that reasoned debate between the groups is not feasible. An understanding can only be reached when groups share certain frames and opinions or agree that the arguments put forward by other groups are sound (Risse 2002). Interpretative polarization may strengthen positional polarization (Baden and David, 2018).

Poland has been experiencing growing polarization both among the elites, with two parties dominating the Polish political scene (Law and Justice, PiS, and the Civic Platform, PO), and among the electorate. In fact, as Tworzecki (2019) argues, polarization in Poland is a top-down process that has divided society on such contentious issues as social policy, the legal system and religious issues resulting in escalating tensions. The divide tends to be aligned with political leaning towards one party or the other.

Another significant question related to polarization needs to be considered, namely who drives this process. As McCoy & Somer (2019) argue, some deliberate policies and the discourse of political actors reinforce divides in order to consolidate supporters and weaken opponents. In this case, polarization is on the one hand a tool for power and domination, and on the other hand, a political strategy to realize far-reaching political goals. The mainstream media is another powerful driver of polarization. In fact, the balkanization of the media landscape has been well researched in the USA where the polarization of the media leads to the hardening of viewers’ ideological perspectives (Kaylor, 2019). Partisan media outlets provide biased coverage and amplify extreme viewpoints. Using different frames to report the events, biased media coverage manipulates public opinion. As a result, societal trust declines and mutual understanding across partisan divides is increasingly difficult to reach.

Social media also strengthen the cleavage by creating echo chambers, filter bubbles and using microtargeting to promote certain products, ideologies or opinions. What is more, social media users tend to reject information that conflicts with their opinions (cognitive dissonance) and seek information that confirms their beliefs (confirmation bias). Polarization takes place not only through active discussion but also through the mere exposure to the opinions of others (Sunstein, 2017, p. 73). Therefore, social media have become a tool for increasing polarization.

Growing polarization poses a threat to national security for several reasons. First, cyber-balkanization limits the individual's field of vision and focuses their attention on different issues, which hinders mutual understanding and reduces societal trust. Therefore, polarization leads to the decline of social capital, affects state security decision-making and results in political gridlock. Second, it weakens the international position of the country and makes it unable to respond to global challenges (Hawdon *et al.*, 2020, p. 243). As Carothers and O'Donohue (2019) note, polarization "reinforces and entrenches itself, dragging countries into a downward spiral of anger and division for which there are no easy remedies." It threatens democratic norms, undermines the legislature and weakens the apolitical status of the judiciary. Political cleavage also results in increased populism, nationalism, intolerance, and discrimination.

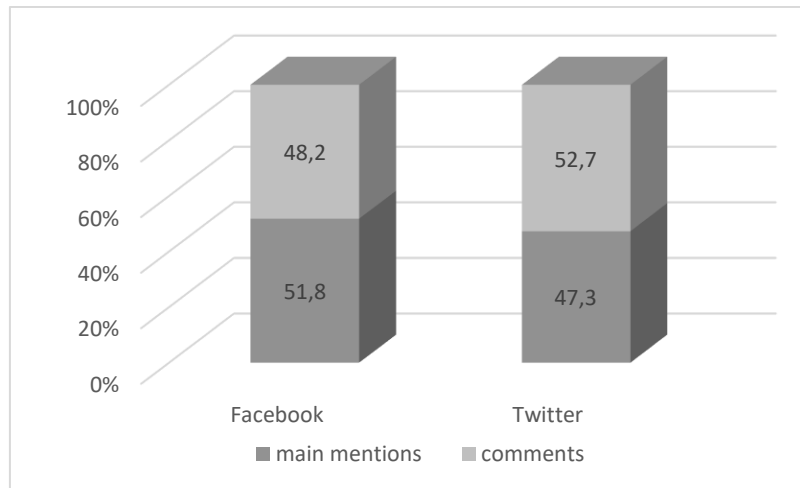
#### **4. Methodology**

The posts were collected when monitoring discussions on the public domains of Facebook and Twitter from March 31 to July 31, 2020. The sample consisted of 96 623 tweets with 1 910 154 comments and 103 668 Facebook posts with 937 137 comments (the total corpus was made up of over three million posts, tweets and comments). Both text data (the content of posts and tweets) and metadata (data on the authors of the posts and tweets, their popularity and publication dates) were collected. Then the data was initially processed and cleaned. For example, redundant data and marketing content were removed. The analysis was then carried out using an analytical tool – an algorithm developed in C#. The analysis was carried out in several stages. First, the possibility of using social bots to spread content on social media was analyzed. The analysis was carried out with the use of a decision algorithm that operated on the basis of criteria that identified social bots: the number, time and speed of sending original posts and shares. Twitter or Facebook accounts were selected for further verification if it met the following criteria: the account published multiple posts over a limited span of time and it reposted or retweeted a high volume of non-commercial content. Next, the identified accounts were passed on for further verification to determine whether they were run by algorithms. The verification included the following test: account creation date, degree of the account personalization and its name and the narrow scope of the account activity.

The level of polarization was investigated through sentiment analysis, which allows social media users' opinions, attitude, emotions and appraisal of a particular subject to be analyzed. This popular text-mining method is effective in determining the opinion and emotion of the post or tweet. This method is also effective in measuring the extent of polarization of the debate, as sentiment tends to become more extreme as groups become more polarized (Kligler-Vilenchik, Baden and Yarchi, 2020). Sentiment analysis was used to evaluate moods associated with words and phrases from a data set based on their semantic orientation in vocabularies constructed specifically for this study. Therefore, positive (including words such as effective), neutral (for example, president) and negative (for example, hate) vocabularies were built. Each word in the vocabulary was assigned a score of 1 (positive words), 0 (neutral words) or -1 (negative words). This made it possible to calculate the degree of polarization (highly or moderately positive or negative). Finally, the popularity of tweets or Facebook posts was measured by analyzing the number of users who saw the post or tweet, followed it or liked it, and retweeted or shared it.

## 5. Results and discussion

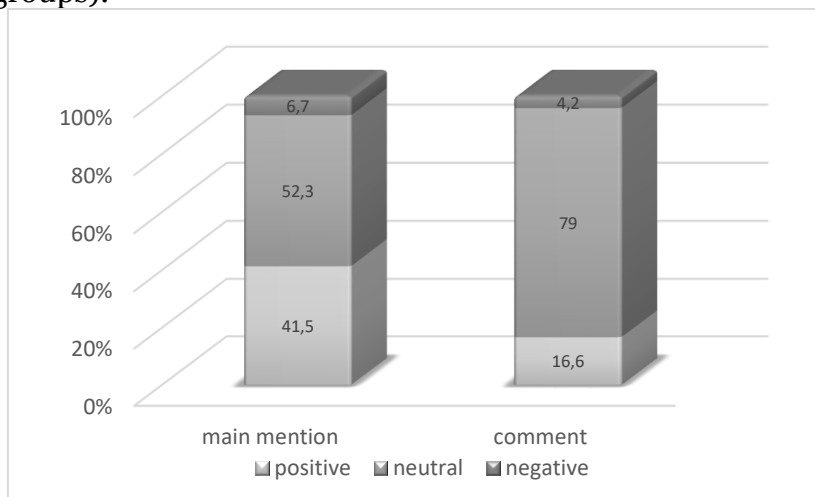
As mentioned earlier, the corpus consisted of 3 060 301 posts and tweets – both main mentions and comments (see Fig. 1): 96 623 tweets with 1 910 154 comments and 103 668 Facebook posts with 937 137 comments.



**Figure 1.** The corpus of the study. Own work.

As can be seen in Figure 1, Facebook contains slightly more main mentions, whereas Twitter is a platform that is used mainly for sharing opinions, which is why it contains more comments than main mentions. The first step of the analysis was processing the data by using two criteria (the account published multiple posts over a limited span of time and it reposted or retweeted a high volume of content) in order to select the accounts that will be passed on for further analysis. Even though a significant amount of duplicate content was found (46.9 %) (retweets and reposts), it was spread by multiple accounts and not individual users. Therefore, none of the accounts were selected for further verification.

The second part of the study concerned the polarization of the debate on social media. A sentiment analysis was performed to determine the viewpoint of social media users (see Fig. 2). Positive and negative sentiment was investigated as the more polarized the group is, the more extreme sentiment it exhibits (people tend to use increasingly positive sentiments to discuss their own viewpoints and increasingly negative sentiments to comment on the stance of other groups).



**Figure 2.** Sentiment analysis of the dataset. Own work.

As is shown in Figure 2, neutral statements dominate the corpus. Negative opinions expressed in both the main mentions and comments are quite rare. One fourth of every main mention was categorized as positive. As far as the comments are concerned, neutral sentiment prevails. As many as 16.6% of all comments are positive. This is in line with Kligler-Vilenchik, Baden and Yarchi (2020) whose study of political discussion on Facebook, Twitter and WhatsApp over time shows the depolarization dynamic, and in particular, a decrease in negative sentiment. The researchers also found an increasing role of shared purposes and mutual respect exhibited by social media users.

The 2020 presidential election in Poland coincided with the first wave of the COVID-19 pandemic, which affected social media discussion. Not only did the quantity of private messages sent via social networking sites increase (by 50% in the case of WhatsApp and Messenger and 30% - Twitter) (biznestrendy.eu, 2020). Other studies (Politechnika Wrocławska, 2020) prove that at the beginning of the pandemic, negative sentiment prevailed, but with time, when schools were closed and a wide-reaching informative campaign was launched by the government, the number of negative posts and tweets decreased and neutral, motivating, or optimistic information grew.

A further analysis was performed to examine the popularity of positive, neutral and negative opinions published as main mentions on social networking sites (see Table 1.).

**Table 1.**

*Popularity of positive, neutral and negative sentiment of main mentions*

<b>Sentiment</b>	<b>Popularity measure - mean</b>
Positive	158.68
Neutral	138.50
Negative	121.61

The popularity measure of the posts and tweets was calculated by the number of users who saw the post or tweet, followed it or liked it, and retweeted or shared it. The findings show that positive posts and tweets were read by a greater number of social media users and were liked, shared and retweeted more frequently than neutral or negative posts and tweets. These findings prove that social media discourse does not exhibit traits of increasing polarization, as the sample is not dominated by negativity.

## 6. Conclusions

The aim of the study was to provide empirical evidence for polarization and the degree of bot-generated content on social media during the 2020 presidential election campaign in Poland. However, the first hypothesis that the public debate during the presidential election would generate traffic from a significant number of social bots has not been supported by evidence. As a result of integrated action addressing disinformation and the proliferation of bots that mobilized governments, cybersecurity and strategic communication communities, and media companies, the level of disinformation distributed via social media dropped. This entails, in particular, the activity of social bots. The representatives of social networking sites and advertising industries endorsed a self-regulatory Code of Practice to tackle the problem

of disinformation and fake news (European Commission, 2019). As a result of this coordinated action, social networking companies such as Facebook and Twitter, intensively scrutinize accounts suspected of being run by algorithms. A great number of fake accounts on social networking sites have been removed. For example, from March 18 to April 1, 2020 (15 days), over 1 100 tweets were removed from Twitter and nearly 1.5 million accounts were deleted as automated accounts spreading spam (biznestrendy.eu, 2020). Many automatic accounts have reduced the traffic they engage in to evade detection.

Furthermore, by analyzing political debate on social media during the 2020 presidential election, the study shows that public discourse is not characterized by polarization and antagonistic political preferences. Therefore, the hypothesis that the 2020 presidential election led to polarization in Polish society has been refuted. Our study demonstrates that neutral posts, tweets and comments dominate over extreme positive or negative opinions. Moreover, positive posts and tweets are more popular across social networking sites than neutral or negative ones. While interpreting the research findings, we need to bear in mind that the 2020 presidential election in Poland took place during the first wave of the pandemic, which affected the quantity and quality of social media consumption. Facebook recorded a 50% increase and Twitter a 30% increase in the number of private messages sent to other users (biznestrendy.eu, 2020). In posts and tweets published in Polish in March – June 2020, topics related to the short-term economic effects of the pandemic and information related to the relief package prevailed (the Anti-Crisis Shield was launched on March 31, April 16 and May 14, 2020). The revised legislation was preceded by a wide-reaching informative campaign, which not only provided a detailed explanation of administrative issues related to the relief package but also calmed down intense negative emotions.

The scope of the study was limited as social media users are not a representative sample of Polish society; studies on the demographic makeup of social networking sites show that both Twitter and Facebook users are mostly professionals with higher education, retirees or students (*Polska szerokopasmowa*). Furthermore, the study has not differentiated between active and passive social media users. Active users, who frequently post, tweet or comment on social media, are overrepresented whereas the passive ones have not been represented in the study. More research, e.g., content analysis, is therefore needed to confirm the findings of the quantitative analysis. A further study could perform a longitudinal analysis of changes in public opinion over a period of time.

The empirical findings in this study contribute to our understanding of information security. Cyberspace plays a pivotal role in ensuring state security. First, our society and economy are increasingly dependent on information technology and computer networks. On the one hand, emerging technologies associated with the Internet of Things, artificial intelligence and sensor networks are used not only to assist in the application and management of security solutions but also to facilitate the decision-making process to meet business goals. On the other hand, information technology may pose a threat to societies. Second, cyberspace is vulnerable to manipulation. Intensive disinformation campaigns lead to economic manipulation and bring major political gains to those who stage the campaigns. In fact, fake content on social media quickly becomes viral: it is disseminated faster and reaches a greater number of users than true content. Given that artificial intelligence systems adapt the content to match the user interaction profile, disinformation campaigns are extremely effective. They are aimed at blocking the exchange of information, marginalization of independent groups and civic movements, limiting public debate, maximizing confusion, and disrupting the other side's decision-making processes. As Liedel (2008) notes, the dissemination of disinformation in the public information system can evoke the mood and political climate intended by the propagandist, which will result in making the decisions that are in line with the expectations of those staging the disinformation campaign.



Apart from disinformation, rising polarization poses a serious threat to state security. A widening divide manipulates the individual's opinion by marginalizing opposing views, focusing their attention on different issues, which results in increased societal distrust and social tensions. Furthermore, pervasive polarization damages democracies, gives rise to populism and nationalism, and weakens the international position of the country making it more vulnerable to global threats.

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