Analysis of the Filter Bubble Algorithm on TikTok Concerning 'Toxic' Polarization During the 2024 Presidential Campaign

Ruhyat[1], Danis Tri Saputra Wahidin[1]

[1]*Universitas Pembangunan Nasional 'Veteran' Jakarta*

*Corresponding Author: Ruhyat
E-mail: 2010413148@mahasiswa.upnvj.ac.id

Article Info	Abstract
	Social media is a platform for everyone to express and convey information. The emergence of social media certainly affects the behavior of each individual who uses it. This is due to a social media algorithm called the filter bubble, which can lead to polarization as in the Tiktok application and several other social media applications. Simply put, we are made to feel as if we know everything that is happening around us, when in fact we do not. This is what causes 'toxic' polarization to form an ignorant personality. In other words, 'toxic polarization' will isolate every social media user intellectually. Of course, this will be very dangerous if it happens during the 2024 presidential election campaign because it will cause many divisions. The long-term effect will certainly affect democracy so that it can cause stagnation.

Introduction

In the current era, social media has become a trend for everyone to express themselves and share information. Kayumovich (2020) stated that social media is a medium on the internet that allows users to represent themselves, interact, share, collaborate, and communicate with other users to form virtual social bonds. With social media, every user can easily access information shared by others. However, each social media platform has its own algorithm to attract users, such as Facebook, which focuses on community development. Some social media platforms, like TikTok, use an algorithm that creates a system known as a filter bubble.
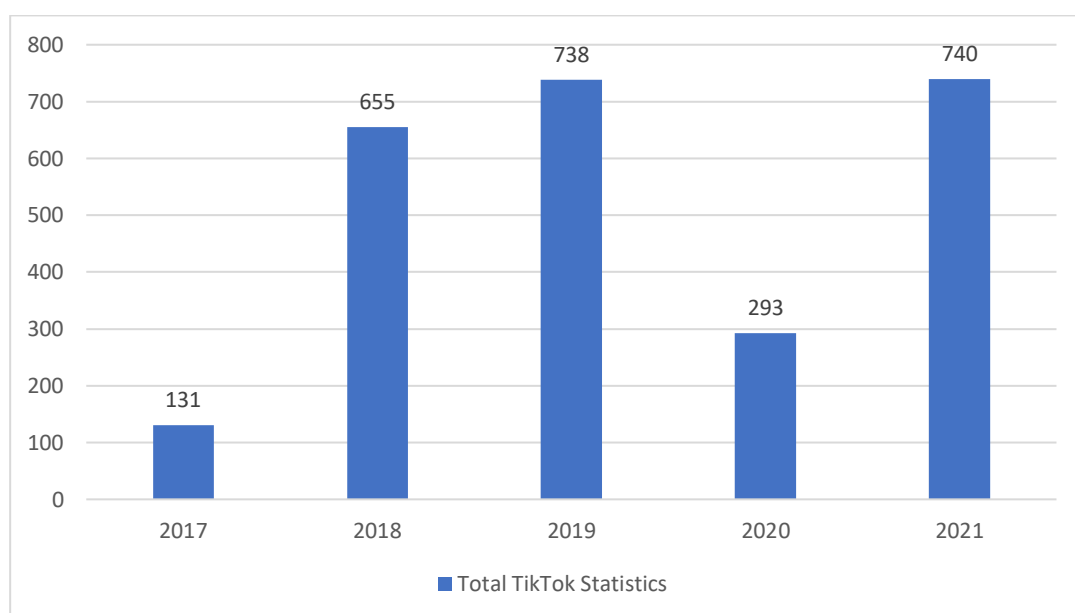

Figure 1. The Global TikTok Installations 2017-2021

TikTok, as one of the fastest-growing social media platforms, has attracted millions of users worldwide, including in Indonesia. TikTok is not only used for entertainment but also as a tool for information dissemination and political campaigns. According to data from Statista, the number of TikTok installs globally increased from 131.5 million in 2017 to 980.7 million in 2020, although it decreased to 740 million in 2021.

In Indonesia, TikTok is highly popular, ranking second in the number of users after the United States, Indonesia, Brazil, and Mexico. This indicates that Indonesian society is highly vulnerable to toxic polarization due to the massive number of users. According to Statista, as of July 2023, there were 112 million TikTok accounts in Indonesia, nearly half of the country's population of 278.70 million.
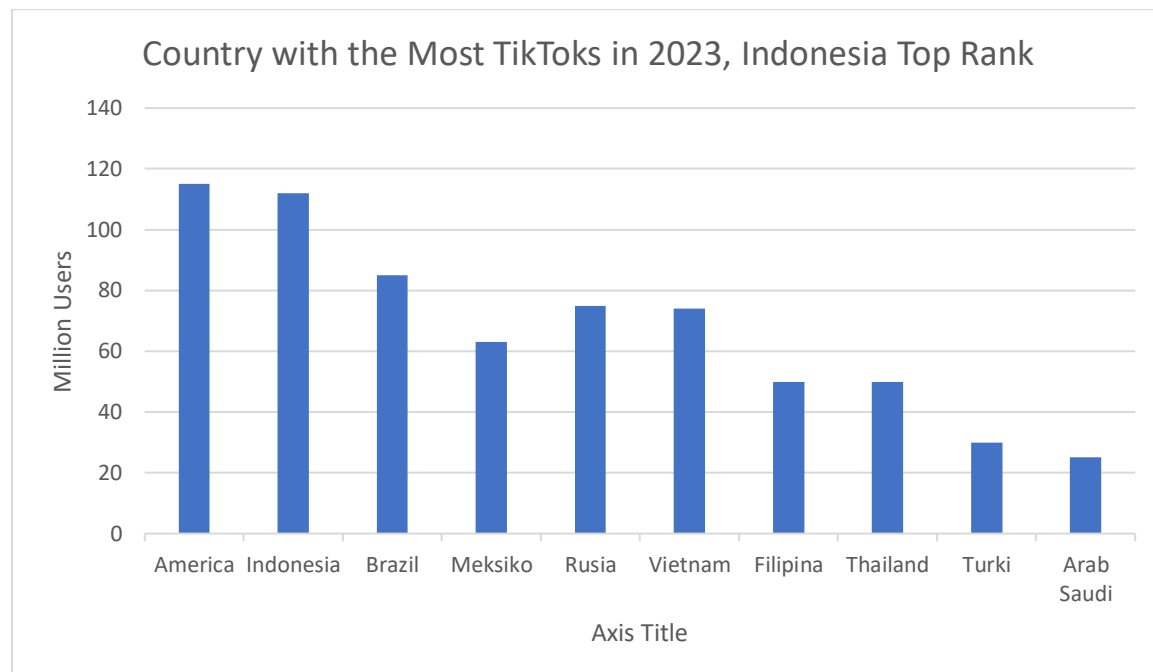

Figure 2. The Ranking of TikTok Users in Each Country

Source: Stastistika.com

However, behind its popularity and influence, concerns arise about the impact of TikTok's algorithm in selecting and displaying content to its users. This algorithm creates a "filter bubble," where users tend to see only content that aligns with their previous preferences and views. This can lead to information isolation and reduce exposure to differing viewpoints, which in turn can strengthen societal polarization. The polarization intensified by the filter bubble is particularly relevant in the context of the 2024 presidential election campaign in Indonesia. Political campaigns often highlight differences and divisions among supporters of different candidates. When TikTok users are trapped in a filter bubble, they are more likely to be exposed to partisan and extreme content, exacerbating polarization and potentially creating a toxic atmosphere in the digital public space.

The presence of this algorithm has detrimental effects on democracy. According to the V-Dem Institute in their book "Democracy Report 2022: Autocratization Changing Nature?" the level of democracy enjoyed by the average global citizen in 2021 declined to the level of 1989. This indicates that over the past 30 years, democratic progress has worsened. Several factors contribute to the decline of democracy, including the increase in autocracies, rising dictatorships, regression of freedom of speech, and toxic polarization. Toxic polarization plays

a significant role in the stagnation of democracy in Indonesia as it can intellectually isolate users, leading to an anti-critical mindset.
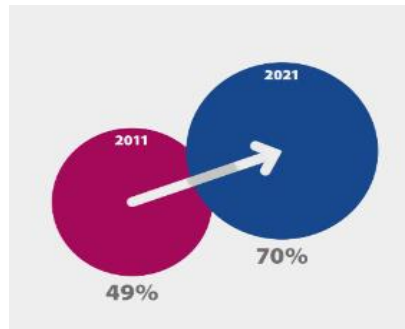

Figure 3. World Dictatorship Period 2011-2021

According to V-Dem Institute data, from 2011 to 2021, dictatorship has increased, affecting 70% of the world's population, approximately 5.4 billion people.
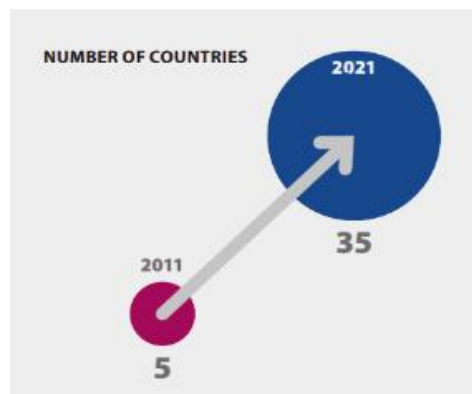

Figure 4. World Freedom of Speech

In the same period, freedom of speech has regressed, with only 5 countries rated in 2011 compared to 35 countries in 2021.
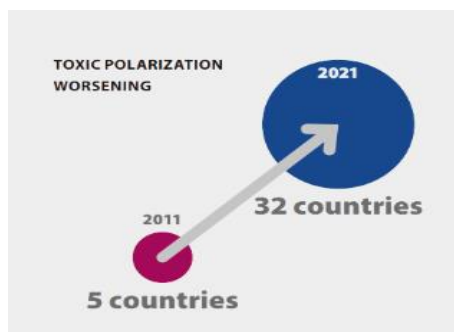
Figure 5. Toxic Polarization

Toxic polarization has also worsened, with the number of affected countries increasing from 5 in 2011 to 32 in 2021.

The phenomenon of "toxic polarization" has been prevalent in recent times, as exemplified by the 2017 Jakarta gubernatorial election and the 2019 Indonesian presidential election, where society was divided into two camps: the "Cebong" and the "Kampret." This division was exacerbated by the role of social media, which digitalized politics and allowed people to be

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segregated based on their political views. Notably, this occurred before the rise of TikTok as a mainstream platform.

In the context of the 2024 Indonesian presidential election, TikTok has emerged as a powerful tool for political campaigning, with candidates and their teams utilizing the platform to reach out to voters, particularly millennials and Gen Z, who constitute the majority of the electorate. However, there is a growing concern regarding the impact of TikTok's "For Your Page" (FYP) feature, which employs an algorithm known as the "filter bubble." This algorithm can inadvertently isolate users within their own echo chambers, fostering an environment of "ignorance" and resistance to criticism. The implications of this algorithm are particularly detrimental to democracy, as it can lead to stagnation and hinder constructive dialogue.

Several prior studies provide relevant insights into the issues discussed above. The author has conducted a comparative analysis of books, journals, and articles to contextualize the research findings. These include:

(Wulandari & Rullyana, 2021), in their journal article titled "The Influence of Filter Bubble and Echo Chamber Algorithms on Internet Usage Behavior," examine the impact of filter bubbles and echo chambers on internet users' information-seeking behavior, the consequences for the internet ecosystem and its users, and potential strategies to mitigate these effects. Their findings indicate that filter bubbles and echo chambers can have both positive and negative repercussions. The algorithm can influence users' online information-seeking habits. On the negative side, users may become less proactive in seeking information beyond their immediate interests, relying solely on the algorithm and limiting their exposure to new ideas. The authors emphasize the importance of diverse perspectives and encourage users to adopt a more discerning approach to internet usage to counteract these negative consequences.

V-Dem Institute (2022), in its book "Democracy Report 2022: Autocratization Changing Nature ¿," delves into the changing nature of autocratization around the world and the decline of democracy attributed to various factors, including toxic polarization. The book highlights the rise of autocratic regimes, the resurgence of dictatorships, and the manipulation of misinformation by autocratic governments. Key findings include the observation that global democracy levels have reached their lowest point since 1989, with autocracies on the rise and 70% of the world's population living under autocratic rule. This autocratization is fueled by anti-pluralist parties, toxic political polarization, and the exploitation of misinformation by autocratic governments.

International Catalan Institute for Peace (2023), in its journal article titled "Thinking Differently Doesn't Make Us Enemies: A New Audiovisual About the Risk of Toxic Polarization," explores how toxic polarization undermines constructive dialogue and breeds discontent that could potentially escalate into violence. The article underscores the significance of dialogue, self-criticism, and the ability to listen and engage with those who hold opposing views as strategies to combat toxic polarization.

Powell (2022): Embracing Complexity to Counter Toxic Polarization. In her journal article titled "Toxic Polarization Feeds on Simplicity. Peter Coleman Offers Complexity as a Way Out," social psychologist Peter Coleman examines the state of political polarization in the United States and proposes embracing contradictory complexity as a means to counteract toxic polarization. His research suggests that key strategies to combat toxic polarization, in addition to embracing contradictory complexity, include engaging in conversations focused on personal stories and human connections, and deliberately socializing with individuals who hold differing political views. Coleman argues that this dialogical approach can foster a different dynamic in

addressing political polarization and can aid in negotiating and navigating differences in a constructive manner.

(Hidayah, 2018): Filter Bubble Effect and Persecution: Digital Society and the Shifting Public Sphere. This study explores the persecution of individuals with opposing viewpoints through the personalization of web content on social media platforms. This personalization creates a situation where users are increasingly exposed to information that affirms their beliefs, while opposing viewpoints are filtered out. In the context of the public sphere, the filter bubble effect contributes to the loss of critical and rational discourse, as individuals trapped within filter bubbles may not be confronted with diverse perspectives and may reject ideologies or truths held by others, leading to a shift away from differing perspectives. This shift can further contribute to the persecution of individuals with opposing views, as the public sphere, initially known for its purely critical nature and supported by the power of reason, can be compromised by the filter bubble effect. The study's findings highlight the correlation between the concept of filter bubbles, the impact of social media on the public sphere, and Jurgen Habermas' theory of rational action. It emphasizes how the filter bubble effect, leading to intellectual isolation and persecution of individuals with differing views, can exacerbate the persecution of individuals with opposing views, as the lack of exposure to diverse perspectives can reinforce one's beliefs and rejection of ideologies or truths held by others.

Sukmayadi (2019): The Digital Industry in Indonesia's Democratic Dynamics: Threat or Opportunity?. This research examines the role of the digital media industry in Indonesian democracy, where digital media impacts political participation and digital democracy, as well as the phenomena of filter bubbles, echo chambers, and information tsunamis. The study's findings highlight how the effects of filter bubbles and echo chambers on social media contribute to political polarization by creating isolated spaces where users are only exposed to information that aligns with their beliefs and opinions. The filter bubble effect refers to the phenomenon where individuals are confined to a limited set of information that reinforces their pre-existing biases, leading to a narrowing of perspectives and a lack of exposure to diverse opinions. In the context of digital democracy, these impacts pose significant challenges as they contribute to the polarization of groups with differing political perspectives, potentially leading to the manipulation of public opinion and the spread of political disinformation.

(Milačić, 2021): The Negative Impact of Polarization on Democracy. This study discusses the negative consequences of 'toxic' polarization on democracy, including the weakening of respect for democratic norms, undermining the legislative process, weakening non-partisan judicial institutions, fueling public dissatisfaction with political parties, exacerbating intolerance and discrimination, eroding public trust, and increasing violence across society. The study also mentions that 'toxic' polarization can lead to the erosion of democracy due to fanaticism towards a particular public figure or political party. The study's findings emphasize that addressing 'toxic' polarization requires face-to-face meetings or discussions among community members to exchange ideas.

Zakaria et al. (2018) Filter Bubble Effect and Religiosity: Implications for the Formation of Subjects and Views of Religiosity. This study explores the impact of the internet on religious attitudes in Indonesia. Filter bubble algorithms are seen as potentially narrowing perceptions and increasing the tendency towards homogeneity, individualism, and intolerance. The study also highlights how technology shapes everyday life and explores the spiritual aspects of internet use. Furthermore, it examines the impact of filter bubble algorithms on the formation of religious attitudes and views, and how this can potentially radicalize users. The study's findings indicate that the filter bubble effect significantly influences the formation of religious attitudes and views, leading to epistemological isolation and radicalism.

(Borgesius et al., 2016), in "Should We Worry About Filter Bubbles?", discuss personalized communication and the potential filter bubble effects that can impact democratic societies in Europe in several ways. There is concern that personalized communication may lead to a reduction in individuals with differing opinions, thus negatively impacting the public sphere and the democratic opinion formation process. This research also emphasizes that personalized communication and the effects of filter bubbles can trap society in rigid positions, hindering consensus-building and potentially causing a lack of exposure to different viewpoints, which is an essential part of a healthy democracy. However, the study mentions that despite concerns about filter bubbles and personalized communication, no strong empirical evidence has been found to justify serious concerns about their impact on democratic societies.

(Ross Arguedas et al., 2022), in "Echo Chambers, Filter Bubbles, and Polarisation: a Literature Review", discuss the relationship between internet actors, media use, and polarization, which is highly complex and varies across different countries. According to their research, self-selection of media based on partisanship or level of interest plays a significant role in shaping internet actors and media use. Exposure to politically aligned content has the potential to polarize society or reinforce the attitudes of those already partisan. In short, the relationship between internet actors, media use, and polarization is influenced by self-selection, exposure to like-minded content, algorithmic selection, and elite cues, and its impact varies across different countries and contexts.

This problem statement highlights the analysis of filter bubble algorithms on toxic polarization during the 2024 presidential campaign period on the TikTok platform. The practical aim of this research is to understand how TikTok's filter bubble algorithm influences toxic polarization and may lead to democratic stagnation. Meanwhile, the theoretical aim is to enhance readers' understanding of dangerous digital political phenomena such as toxic polarization.

This research holds significant benefits, particularly in providing understanding to the Indonesian public about the dangers of filter bubble algorithms on TikTok that can lead to toxic polarization. Additionally, this study can serve as a reference for further research in the same or related fields.

Methods

Research Object

According to (Sugiyono, 2019), the research object is an evaluation by the researcher, where the analysis of the object has certain variations determined by the researcher to be studied and concluded. The research object can be in the form of individual or group characteristics. According to (Satibi, 2023), the research object represents something that can comprehensively describe the target or scope of the research. In this study, my research object is related to the filter bubble algorithm that can trap its users in 'toxic' polarization.

Type of Research

In this study, the author employs a qualitative research method focusing on understanding phenomena in a natural context and using data collection methods that allow for in-depth exploration. According to John W. Creswell, qualitative research is a process that attempts to understand social or human phenomena through complex depictions, holistic images, and detailed explanations. This approach involves collecting data in narrative form and using inductive analysis strategies to draw conclusions, ultimately arriving at the final result where the filter bubble can cause 'toxic' polarization.

Data Collection Techniques

In this study, data collection was conducted through various methods, including literature review and independent analysis of existing internet sources. Additionally, experiments were conducted to support supplementary data. For the experimental aspect of this research, I used a pre-experimental design with a one-group pretest-posttest design combined with a one-shot case study. According to Arikunto (2013), this design involves two observations before and after the experiment, known as pre-test and post-test. This design is combined with a one-shot case study where, according to Arikunto (2013), a single treatment is assumed to have an effect, followed by a post-test.

Therefore, I created three TikTok accounts with three sub-topics of interest related to the three 2024 presidential candidates. Account 1 is related to the Anies-Muhaimin campaign, account 2 is related to the Prabowo-Gibran campaign, and account 3 is related to the Ganjar-Mahfud campaign. This was carried out for approximately 75 days consistently during the campaign period from November 28 to February 10, with 20 scrolls per day per account. Each account was treated the same, with a pre-test conducted before the viewing influence related to one of the presidential candidate campaigns and a post-test after the viewing influence. The results would then show whether they are the same or different. Additionally, this research used two devices with different OS systems, Android and iOS, to support more comprehensive data. The result would then prove that the filter bubble algorithm can cause toxic polarization in Indonesia, with long-term effects potentially leading to democratic stagnation.

Data Sources

In this research, I used primary and secondary data sources. Primary data sources in this research are data directly obtained from observations, interviews, and experiments that I conducted during the 2024 presidential election campaign. Interviews will be conducted with students who are active on Tiktok and follow the political dynamics of the 2024 presidential election. Meanwhile, secondary data sources in this study were taken from previously analyzed research articles and journals.

Data analysis is the process of organizing data into a sequence, categorizing it into patterns, categories, and basic description units so that the data can be easily read and concluded, according to Moloeng (2002). According to Bogdan, data analysis techniques involve searching and organizing data obtained through documentation, interviews, and other methods in a systematic process. The analysis technique used is the phenomenological analysis technique, which focuses on a deep understanding of individuals' subjective experiences related to a specific phenomenon.

Results and Discussion

Filter Bubble and Political Polarization on TikTok

Political polarization in Indonesia has become an increasingly prominent issue in recent years, especially in the context of elections and social media. Social media platforms like TikTok play a significant role in disseminating information and opinions that can exacerbate polarization. For instance, a study by Cho et al. (2020) shows that social media algorithms can reinforce polarization by displaying content that aligns with users' preferences. Through its filter bubble mechanism, TikTok can intensify political polarization by isolating users from differing viewpoints. When users only see content that matches their views, they are less exposed to opposing arguments, which can reinforce their own beliefs and reduce tolerance for other perspectives. Additionally, users may experience confirmation bias, tending to believe and spread information that confirms their beliefs, leading to the spread of disinformation and

hoaxes. According to a survey by CIGI and Ipsos, about 58% of Indonesians agree that social media can increase political polarization, only 6% feel political polarization has decreased, and 37% do not perceive any impact.

In Indonesia, political polarization on social media is evident in the context of elections and other political issues. For example, during the 2014 and 2019 elections, two camps of presidential candidates filled social media with content supporting their respective candidates, often accompanied by disinformation and hoaxes. As a result, supporters of each candidate became fanatically supportive and blind to other perspectives. When the results did not meet their expectations, many felt cheated, leading to unrest and social division. Polarization also occurred during the 2017 Jakarta gubernatorial election, where society was split into two camps: those who were pro a non-Muslim leader and those who were against. The debate over a non-Muslim leader was amplified on social media, peaking in 2016-2017 in Jakarta. The massive rejection of Ahok by Islamist groups intensified after the "Al-Maidah verse 51" case. Muslim religious leaders and activists formed a movement to reject Ahok, which spread across Indonesia through social media. This led to the large-scale mobilization of Islamist groups demanding Ahok's prosecution for blasphemy, while simultaneously supporting other Muslim candidates to win the election.

Filter Bubble During the 2024 Presidential Campaign on TikTok in Forming 'Toxic' Polarization

After understanding that the filter bubble drives 'toxic' polarization on TikTok, an experiment was conducted during the 2024 presidential campaign. This experiment used two devices, iOS and Android, creating three TikTok accounts directed at the three presidential candidates. Account 1 was related to the campaign of Candidate 1 (using an Android device), Account 2 to Candidate 2 (using an iOS device), and Account 3 to Candidate 3 (using an Android device). Over 75 days, each account performed 20 scrolls per day to show how often campaign content related to a particular candidate was recommended by the filter bubble.
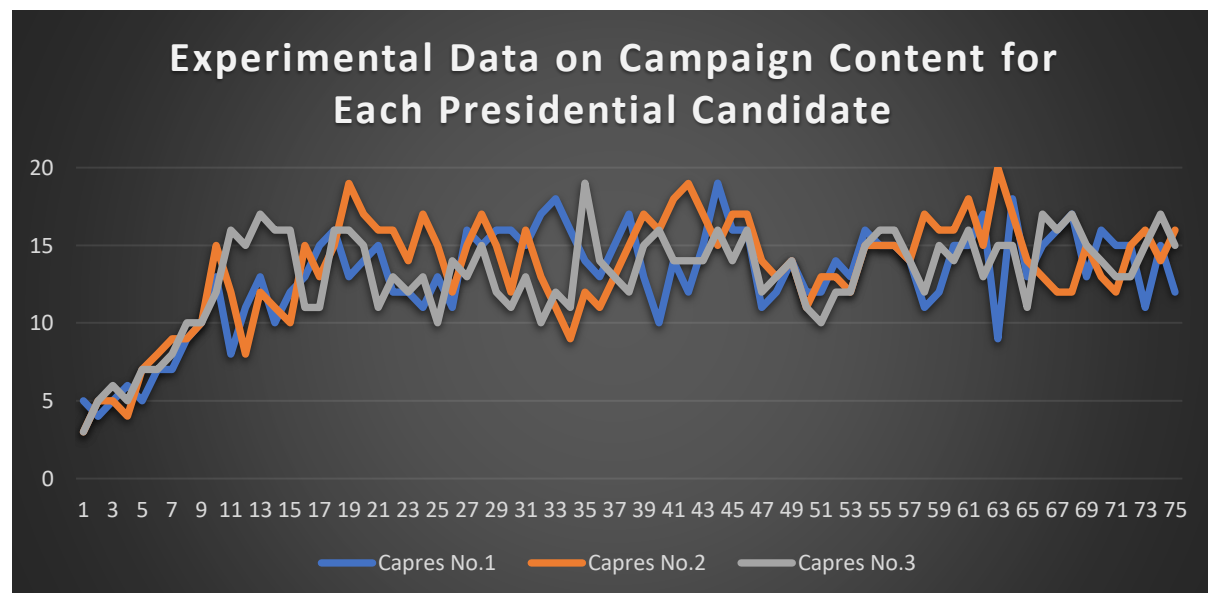

Figure 6. Experimental Data on Campaign Content for Each Presidential Candidate

From the line chart of the three accounts during the first 10 days, out of 20 scrolls per day, campaign content related to each candidate appeared below 10 times. This was because there had not been enough watch time influence, so campaign content was still rare. However, from day 11 onwards, after significant watch time influence, campaign content from each account

began to rise and remained above 10 pieces of content per day out of 20 scrolls, though occasionally dropping below 10. The total results of this experiment showed that in the first account related to Candidate 1's campaign, 976 campaign-related pieces of content appeared out of 1500 scrolled. In the second account related to Candidate 2's campaign, 1011 campaign-related pieces of content appeared out of 1500 scrolled. In the third account related to Candidate 3's campaign, 977 campaign-related pieces of content appeared out of 1500 scrolled. Additionally, across the entire experiment, 177 pieces of content were recorded as hoaxes or disparaging toward political opponents.

On the other hand, several online interviews were conducted with several UPNVJ students who are active on Tiktok and follow the dynamics of the 2024 presidential election campaign, namely Daffa Farras Ghani, Gabe Maulana, and Iqbal Fachrezi. From several questions asked such as "how often does presidential election campaign content appear on your FYP Tiktok?" the three of them answered that campaign content often appears, "even after the campaign is over, campaign recap content often appears on his FYP Tiktok", according to Gabe. When asked whether one candidate's campaign content appears more often on your FYP, each answered that the campaign content of the three candidates likes to appear on the FYP, but there is indeed one candidate's campaign content that appears more often than the other candidates. Moving on to the next question "Do you often watch the content of one of the candidates until it is finished?". "To keep up with the campaign of the candidate I support, I often watch it until it's finished," Daffa answered. Looking at the results of the interview, it can be seen that the content that we watch more often in our FYP will appear more often than other content.

The experimental data and interviews show indicates that the filter bubble algorithm influences political polarization during the 2024 presidential campaign. The campaign content recommended by this algorithm increases, isolating users intellectually and fostering an anti-critical personality. Ultimately, the campaign period will become a tradition of polarized society due to the filter bubble, leading to social fragmentation. In the long run, the quality of our democracy could stagnate or even deteriorate to a worse level. Moreover, Indonesian TikTok users are the second-largest globally, with the majority being millennials or Gen Z.

Strategies to Mitigate the Filter Bubble Effect on TikTok to Avoid 'Toxic' Polarization

There are several ways users can mitigate the filter bubble effect on TikTok. Users should be aware of the content they search for and need, as seeking a variety of content will prompt the filter bubble algorithm to recommend diverse content. This prevents users from being fixated on a single perspective. For instance, in the context of the 2024 presidential campaign, instead of following just one candidate, it is better to follow all candidates to broaden and diversify perspectives.

The second point to note is cross-checking information. Users should not blindly believe and share content related to their preferred political figure without verifying its validity. This should be supported by government efforts to enhance social campaigns about the importance of digital literacy and the dangers of 'toxic' polarization.

Additionally, users should be mindful of their behavior on TikTok, as every interaction, such as likes, dislikes, follows, or comments, is tracked by the algorithm, which personalizes content further. If necessary, users can clear their cache and browsing history, as searches on browsers are also recommended on social media, including TikTok.

These methods are considered effective in reducing the circulation of similar content on TikTok's FYP. Users must recognize their responsibility in social media usage so that the system's algorithm does not distort their thinking and lead to 'toxic' polarization. By doing so,

TikTok's FYP can become healthier, especially during the 2024 presidential campaign and future campaigns. Users should appreciate and engage with informative and genuinely useful campaign content for many. By doing this, each user will contribute to creating a healthier content circulation.

Conclusion

Based on the results and discussion of the research, it can be concluded that during the 2024 presidential campaign on TikTok, content recommended by the filter bubble algorithm can cause 'toxic' polarization. This can be seen from the experiments conducted, where political campaign content that appears often aligns with what we have been repeatedly watching. More than half of the total content is related to similar content. Additionally, the presence of hoax content leads to information bias, which is easily shared with other users. Therefore, this filter bubble triggers users to think less critically and blinds them to other viewpoints, in this case, those of the other presidential candidates.

This algorithm may never disappear, as it is part of TikTok's system itself. Hence, as users, we need to be more cautious when using social media like TikTok, to avoid being swept into the 'toxic' polarization and to foster a healthy democracy.

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