# The Influence of the Social Media Recommendation System Against Polarization in the Views of User Politics:
## Experiments on Social Media Newsfeed on Social Media Users

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**Abstract.** The background of this research is based on 2019 election issues that spread massively in social media. From these issues comes the polarization and divides into two opposing sides. However, users are basically not presented with balanced information as a result of the recommendation system on social media. This research is expected to enrich the study of social media impact, especially on study of recommendation system with context in Indonesia. This thesis examines the recommendation system designed by social media operators tends to be uniform or aligned with the user's political views only. The phenomenon is The Filter Bubbles where the information circulating on our social media is filtered only in accordance with the user's own views. Polarization becomes an effect that can be influenced by the recommendation system because the acceptance of information from the user after going through a personalized curation system raises uniform news. This research uses quantitative approach with experiment method. The results of this study indicate that the recommendation system makes the polarization position of users more extreme. This is marked by increasingly persistent opinions and political views held by previous users.

**Keywords:** Recommended Systems, The Filter Bubbles, Social Media, Polarization, Extremity.

## 1. Introduction

People begin to get information depending on what they like or choose first and so on can be said to be determined by the recommendation system from search engines and social media used. For that reason, the working system of recommendations from search engines and social media can determine their opinions regarding the issues that are developing in the community.

Various kinds of information about politics are found on social media. The viral phenomenon of the 2019 presidential election issue was marked by the many supporters of the president's replacement in the 2019 presidential election as well as supporters of President Jokowi to continue his term. Both camps expressed their opinions and opinions and shared news links on social media to fellow users. The interesting thing is that the issue is spread through social media, making public opinion even stronger on the issue. In fact, there are many opinions that tend to be roughly conveyed by users on social media. The polarization between the two camps is marked by the extreme political views of the people regarding an issue that is influenced by a recommendation system that becomes the curator of information provided to users based on algorithms or calculations of user activities on social media.

Disseminated information often occurs in news that is shared through social media as a result of the recommendation system designed by the operator. Selected and presented information on social media platforms based on the preferences and interests of users[1] .When users surf and

interact in cyberspace, a system records abandoned tracks such as share, likes & comments features. These features form the basis of the system to then select information that is in accordance with user preferences.

Initially the user will feel happy about the information selected and presented by the social media, but there can be an impact that is biased towards the user's point of view in opinion. As a result, the decline in information quality and the reduced diversity of perspectives on an issue[2] .

The recommendation system on the internet media can determine various kinds of information that we will receive. Like determining what news will appear on Yahoo's front page, video recommendations we need to watch on Youtube, and of course, fill in the newsfeed on Facebook's social media, the timeline on Twitter, and recommendations for exploring on Instagram. All available information is determined by a computer system based on who we interact most often on social media, what content we read most often and share with other users, the videos we watch most often, and what information we read most often.

Basically, the function of an algorithm is to provide options, based on the suitability of what we want. But algorithms keep us secret from things we don't like. Furthermore, according to Pariser[1], the negative effect of the bubble filter is to isolate the user's insight into narrowness because it is presented with information that is aligned with their preferences and avoids information with a different perspective. The available information options are limited by the system and unknowingly users are only given information about what they think they want to know but not what users need.

The recommendation system on social media is indeed based on one's interest. The system will display content that the user feels desired. However, these contents were not made to be able to distinguish whether the content displayed facts or not. Therefore, it is almost possible that someone will only see content that matches their interests even though it is false. Content displayed on social media pages according to the recommendation system will skip all information from different points of view. That according to some people certainly affects the opinion of someone because they are given the same information constantly.

The recommendation system with all its ability to select information that will be presented to users further fosters polarization in the community because it reinforces the opinions and political views of each camp. Each camp tends to reject a different perspective, even though it is reasonable or objective. News that is in line with the way of thinking can influence the polarization of political views held by social media users.

From the explanation of the formulation of the problem above, the question is formulated, "How does the social media recommendation system influence the polarization of the user's political views?

## 2. Theoretical Review

The Filter Bubble [1] is an explanation of the performance of the algorithm system on search engines and social media. The algorithm system has the function of evaluating how well the results are filtered according to user needs. For example, algorithms might interpret 'clicks' or certain user activities, for example, the comments column or likes button on an item is then suggested as the accuracy of the recommendation system match for the information that will be provided to the user. However, such an evaluation process carries the risk of strengthening the user's self and reducing the diversity of information. Some experts claim that algorithmic curation that effectively filters users' online experiences has placed users in echo chambers on our own beliefs and these effects are a stronger cause of polarization.

The same theoretical construction aims to increase the likelihood of same-minded contacts ("echo chamber"; Sunstein 2009) and limited public space ("sphericules"; Gitlin 1998). Thus, there is a decrease in diversity of viewpoints rather than a good decline from sources or content. That said, especially the diversity of sources in diverse media systems horizontally in line with the diversity of perspectives because various media channels describe different political perspectives.

The choice of automatically filtered online information has the function of helping internet users to overcome the amount of information available on the internet[3] .This filter algorithm is often referred to as a recommendation algorithm, because they recommend personalized content based on information about each user. Thus, the recommendation algorithm usually uses information about users' interests, preferences, and search behavior as well as contextual information (for example, time, location) to get optimally adjusted results.

Personalization of the recommendation system on social media can be explicitly seen based on the personalization of social media that influences the content and diversity of political views. Basically in a recommendation system that is applied, in addition to operators and social media developers cannot know which parameters drive personalized results, because the algorithms that underlie online news aggregators are black boxes[4].Therefore, researchers can only analyze the effects of personalization on the diversity of news based on input-output analysis (Haim, 2017). For example, by varying the history of user activity during internet activities (input) and comparing the news offer produced (output).

Researches related to previous political communication in Bennett[5],give the hypothesis that messages selected based on one's preferences in political reporting will have an impact on the tendency of one's bias towards politics. In other words, the community can avoid information that is not in accordance with their desires and preferences and will seek information that is consistent with their political attitudes (Mutz, 2006).

In ancient times, conventional news sources based on partisan preferences were relatively difficult to obtain. But during the campaign, voters can still be attracted to their chosen candidates, and some studies document partisan tendencies to report greater exposure to the comparison of candidates or parties they will choose[5].

In general, evidence of partisan bias in news consumption remains consistent with the argument that technology will narrow rather than broaden political horizons in society. Over time, unpleasant information avoidance can have the effect of being a habit so that users automatically switch to the source they choose no matter what the content material is. By relying on providers who are biased but preferred, consumers will be able to "close themselves from the topics and opinions they want to avoid" (Sunstein, in Bennett and Iyengar, 2008). The end result will be voters who are less informed and more polarized, with political communication games aimed at those who have made a lot of adjustments[5].

Bishop in Spohr[6] explains that the most relevant consequence of polarization is the loss of diversity in opinion and argument. Meanwhile, many of the benefits that can be gained from various views are the emergence of equality which is an ideal position for homogeneous groups. Bishop continued that the polarization that occurs is not only caused by alignments about politics but includes beliefs, lifestyles, and also called self-perpetuating and self-reinforcing where individual opinions can give way to group thinking.

The important issue that is the main factor of this polarization, Spohr[6] states that a group will be more convinced by echo chambers which contains views and prejudices that tend to be the same as their views. Meanwhile, they tend to be reluctant and refuse to exchange ideas with groups with different views. So that it can be said that they will survive with confidence and

accept positively if there is a view that is the same as the group, and will refuse if there are opposing views[7]

The general explanation of the polarization of political views in this study is that it is increasingly steadfast in its stance related to the position of political views in which individuals positively accept the same view as themselves. While self-reinforcing is increasingly convinced of the position related to the position of political views where the individual rejects negative sentiment towards the views that are opposite to him[7]

Wojcieszki[8] in his article explained that polarization is characterized by extremities from individuals. The science of communication and the study of politics that focus on the concept of extremism is always associated with partisanship, ideology, and certain socio-political topics. A research on public issues suggests that partisanship and ideological factors have limitations in explaining the cognition and behavior of society. Therefore, the determination of attitudes towards more specific issues must be examined. Because public issues indicate that some people who are very interested and very knowledgeable about specific issues do not have to show concern or understanding of political knowledge in general.

While a person's extremity in view of an issue according to Wojcieszak[8] is marked by several judgments. First, a discussion that contains the agreement of individuals responding to an issue. Second is opinion support which contains statements about whether or not an issue is circulating. Third, the self reported opinion which contains changes in one's opinion due to exposure to information on the issue. Fourth, perceived disagreement which contains an assessment of one's consideration of the issue. High scores indicate the high frequency of disagreement with opinions that are opposite to him. Low values indicate the low frequency of disagreement with opinions that are opposite to him.

In quantitative research on social media recommendation systems, so far researchers have not found a specific theory that explains their influence on polarization of political views. So the researcher determines the hypothesis used in this study are:

*H1: There is an influence between the social media recommendation system and the user's political views.*

## 3. Research Methods

This study uses the positivism paradigm. According to Neuman[9], positivism is an organized method that combines deductive logic with proper empirical observations of individual behavior in order to find and confirm a set of probabilistic causal laws, which can be used to predict general patterns of human activity. Positivist science emphasizes the discovery of the law of cause and effect, careful observation, and value-free research. Then this fact can be used very efficiently to predict and control. Thus generalizations can be made, with predictable trust.

This study uses a quantitative approach that is deductive. Starting from theoretical frame work something that is abstract, then focused on a particular data collection technique, then the hypothesis is formulated to be tested and then analyzed or observed so that it gets empirical generalizations or concrete events. A quantitative approach is an approach that uses a measuring instrument against a social phenomenon. The quantitative approach is more concerned with measurement methods, because this approach uses deductive patterns that emphasize detailed priorities in data collection and analysis[9].

Quantitative research measures the variables used in the study (independent and dependent). The hypothesis predicts that these two variables relate to producing a positive or negative relationship. The hypothesis is a statement in which specific empirical results are predicted. The prediction is deduced logically from the theoretical framework [10].

Neuman [9] mentions the form of experimental research into two forms: laboratory experiments and field experiments. Field experiments are research studies in a real situation while laboratory experiments are research studies where all influential independent variables that are not relevant to the problem being investigated are minimized[11].

In this study the author uses the field experiment method by utilizing digital or online media. Digital systems create more possibilities for experiments such as fields. Specifically, the method of field experimentation using digital allows researchers to combine tight controls and process data related to laboratory experiments with more diverse participants and more natural settings than laboratory experiments[9] .Specifically this study uses online experimental research methods. The internet has revolutionized the way people communicate and retrieve information. Sophisticated communication tools transform many disciplines, including experimental research. The internet allows access to a wider population and populations that were previously difficult to reach in a cheap, fast and convenient way. There are many advantages in conducting experimental research online compared to laboratory experiments [12]

First, online experimental procedures can be carried out remotely, thereby reducing costs and the amount of time spent managing the experiment [12]. Second, online experiments can be carried out in a wider scope, not only in very limited laboratory settings and can include 24-hour access, this can increase the comfort of the participants. Third, online accessibility allows targeting more specific respondents (via mailing lists or newsgroups) and expanding participants in internet use, for example, undergraduate students at certain universities, which allows an increase in generalization of results [12].

Independent variables are variables that are not affected by other variables. In this study there is one independent variable represented by the treatment compiled by the researcher namely a social media recommendation system that has elements that are appropriate and inappropriate or contrary to the preferences of social media users where the preference is a system that exists on social media to guess what information will appeared on each individual's social media front page. Basically in a recommendation system that is applied, in addition to operators and social media developers cannot know which parameters drive personalized results, because the algorithms that underlie online news aggregators are black boxes[4].Therefore, researchers can only analyze the effects of personalization on the diversity of news based on input-output analysis. For example, by varying the history of user activity during internet activities (input) and comparing the news offer produced (output).

The dependent variable is a variable that is influenced by other variables. In this experimental study the dependent variable is the polarization of the political view of society. Factors in ideological polarization that have been described in the previous chapter are the factors of the subject's point of view of the message it receives. There are four elements which become dimensions in this variable, namely opinion discussion, self-reported opinion, perceived disagreement which is related to one particular view.

The first dimension, which is the discussion which contains the approval of participants after being given treatment and answering statements on topics or issues related to the emergence of two opinions stating support for the president's replacement represented by the hashtag # 2019antiPresiden with support for Jokowi to proceed to the second period represented by the hashtag # Jokowi2Periode.

The second dimension is opinion support which contains the statement of how well the message or information circulating is related to the emergence of issues around the upcoming 2019 presidential election.

The third dimension is self reported opinion which contains changes in opinions held after being given treatment. High scores indicate that participants are increasingly firm in their opinions. While the low value indicates that there is a change in opinion.

The fourth dimension is perceived disagreement which contains an assessment of the participants' consideration of the issues after being given experimental treatment. High scores indicate the high frequency of disagreement with opinions that are opposite to him. Low values indicate the low frequency of disagreement with opinions that are opposite to him.

This study will use an experimental design factor P x E. According to Goodwin[13].the factorial design of P X E is an experimental design that considers the interaction between the type of person (P) in the research and the environment (E) that is manipulated. This design can also be called "Person by Environment Design" with the "environment" factor defined as independent variables manipulated. The existence of a causality relationship can be drawn if there is a significant main effect on the manipulated "Environment" factor, but cannot be withdrawn when the main effect occurs in the subject variable or "Person" factor, and also cannot be withdrawn if an interaction occurs. What will be seen in the P x E design is that independent recommendation system variables are manipulated as a tool to treat the subject. While the explanation of the subject or Person factor (P) is that two groups of personal characters that are opposite, among others, are

This study will divide the group of participants based on the issue of issues held by participants. The science of communication and the study of politics that focus on polarization with the concept of extremity is always associated with partisanship, ideology, and certain socio-political topics. A research on public issues becomes something that can be an alternative because partisanship and ideological factors have limitations in explaining the cognition and behavior of society. Therefore, the determination of attitudes towards more specific issues must be examined. Because public issues show that some people are very interested and very knowledgeable about specific issues do not have to show concern or understanding of political knowledge in general [8] Based on the explanation, the researchers took the political issue that was being discussed about the 2019 presidential election issue between the attitude of supporting these issues. So in this study divided into two major groups, each of which has a tendency towards the issue. The first group, namely supporters of the issue of replacing the president in the upcoming 2019 presidential election. This group will represent the issue of changing the president and will be treated in the form of articles represented by # 2019 Represident. The second group, namely Jokowi's supporters to continue to the second period in the 2019 presidential election. The group that will represent the group of supporters of Jokowi who will be treated in the form of articles represented by # Jokowi2Periode.

**Table 1.** Experiment Group Design

|  | President Change Group | Jokowi Support Group 2 Period |
|---|---|---|
| #2019GantiPresiden | I | II |
| #Jokowi2Periode | III | IV |

Group I          #2019GantiPresiden with the Presidential Change Group
Group II         #2019GantiPresiden with the Jokowi Support Group
Group III        #Jokowi2Periode with the Presidential Change Group
Group IV        #Jokowi2Periode with the Jokowi Support Group

Thus in this study has factorial design P x E. This design means that in experiments there are independent variables that are manipulated and subjects that are distinguished based on political views.

Participants or participants in this experiment are conducted by open recruitment (open recruitment) using poster advertisements distributed both online and offline. As an alternative to disseminating recruitment information if there is a problem in the middle of the process, the researchers conduct searches directly to campuses by offering students to become research participants. Recruitment will be carried out for 10 days to gather 60 participants. This study uses the design of PxE design experiments. [13] explains that the PxE design allows control of the research subject or Person (P) according to the personality, characteristics, and preferences needed by the researcher. So that in this study the selection of participants was based on different characteristics, namely the opposite political viewpoint.

Placement of participants into the experimental group. All participants involved will be placed in a controlled manner. This means that participants included in groups I, II, III, and IV will be carried out through the arrangement in accordance with the tendency towards the 2019 presidential issues that have been interviewed in advance by researchers. Thus, it is expected that this selection method for participants placed in their groups will increase the accuracy of hypothesis testing. For the purposes of this experimental study involving 60 participants.

The experimental tool used in this study was the manipulation (fabrication) of two viral hashtags. Researchers provide treatment in accordance with the recommendations system on social media in the form of two different articles of viewpoint. The first article contains news about content that supports the replacement of the President in the 2019 Presidential Election. The second article contains news about support for President Jokowi to continue to the next period. Of the four groups, two message content will be given different views and two content that are in line with the views of the research subject.

## 4. Results

This section will answer the hypothesis proposed by the researcher. Based on the results of the Kruskal Wallis test, it was found that the significance value is above 0.05. it can be concluded that there is no difference between the recommendation system on the polarization of political views of users. This means that the treatment (treatment) in the form of recommendation system manipulation has no influence on the polarization of the user's political views.

From the results of data collection participants gave values that tended to differ in each experimental group. However, when tested between the two groups of participants, there was an insignificant result indicated by a value of 0.214 or more than the 0.05 significance value. So that when further tested using Mann Whitney U between the two experimental groups there is no difference in the average between the system recommendation variables against the polarization of the user's political views. Thus it can be concluded as follows.

H0 is accepted and decided not to be proven or accepted which means that there is no influence of the recommendation system on the polarization of the user's political views.

This hypothesis shows that there is no influence from the recommendation system on social media can expand the distance of polarization of political views of social media users. The main influence of the results of this study is the predisposition to the individual who is a factor that contributes to the polarization of the political views of users. The results of this study reinforce personal predisposition in which social media users will still choose news that is in accordance with their political views and further strengthen their political views regardless of information with other perspectives they receive.

From the previous descriptive exposure, it was also seen, in the context of polarization of political views, that is from the difference in the average dimension of the polarization variable of political views which shows the results of the group given treatment contrary to their political views. Even though the treatment was carried out by presenting information that was different from the political views of the participants, it made even stronger polarization created among the experimental groups. This indicates that the belief in the previous opinion held by the participant can reject information or opinions that are contrary to his views and actually strengthen his self-views and strengthen the opinion (Self Perpetuating) held by each participant (Bishop in Spohr, 2017).

## 5. Discussion

This research focuses on two elements of social media and users. Social media with all its advantages in disseminating information that is very fast and massive but has weaknesses with no news filtering or gatekeeping like a highly structured mass media company. So that the information disseminated is not necessarily guaranteed truth. Social media in spreading the message to its users relies on a recommendation system that works predicting the information to be provided according to user preferences. In the algorithmic system that is the basis of the recommendation system, user activity is recorded by giving the value or score of each click the user chooses. So that the system can guess information that will be given to the next user.

In the era of internet-based media today various types of information can be obtained easily. Social media can provide information about what we want with the strength of its recommendation system. However, if the user is given continuously information that is in accordance with him, it will further strengthen the opinions and views of the user. In fact, there are other types of information that are suitable for consumption but are not recommended by the system on social media, namely information that is diverse not only in one perspective. This is actually what is needed by the community at this time.

Acceptance of information that is selected by someone in the news about politics on an ongoing basis will have an impact on the tendency of one's bias towards political views[5]. So the community can just avoid information that is not suitable for their preferences and tend to seek information that is in line with their political attitudes.

Through social media, people are only always provided with information in accordance with what they want but not information that is needed. Communities need to be presented with different perspectives so they can be more receptive to other views even though they do not always have to follow that view.

What needs to be known is the nature of the recommendation system itself. The recommendation system makes predictions based on someone's history in using internet media. The system records all our activities in cyberspace. As stated by Selnow (2000), the system can personalize internet users in several ways. First, through the questions that arise, consciously and unconsciously we provide all our information to the system, one of them is by registering our data to use certain social media.

Second, through the cookie jar. Cookie jar is likened to a container of a number of cookies as a personal identification of internet media user activities. Cookies are data files written into a storage location on a computer by a web server that is used to identify internet users on a site so that at any time the user can re-visit the site and can directly recognize visitors. This is the source of data for a recommendation system that very well gives information that suits our desires.

Personal predisposition, according to some experts can be explained such as existing attitudes and style of reasoning in the selection of individuals related to ideology and views.

Understanding of personal predisposition is important because researchers found predisposing meanings to influence cognitive dissonance theory[14] and cognitive reflection[15].There have been no studies specifically studying models that include personal predispositions found to explain the occurrence of cognitive dissonance and cognitive reflection. Such a model broadens the understanding of the effects of personal tendencies on selective exposure.

Cognitive dissonance theory provides an explanation for this phenomenon: individuals experience situations that have a negative impact when they are confronted with information that does not resonate with their beliefs[14][16].Therefore, individuals are motivated to avoid information that is contrary to existing attitudes and opinions and they have a desire to choose information from the sources they can to reach a more favorable conclusion [14][16]. Individuals rely on mind motivation strategies to reduce cognitive dissonance and seek information that confirms what they already believe [14][16].

The idea that attitudes affect selective exposure form the core argument of cognitive dissonance theory[14],because people can experience dissonance when they are confronted with information that does not resonate with existing beliefs. Many other studies have found additional evidence for the power of attitudes that influence ideological selectivity through the reduction of cognitive dissonance[17][18][16].[19]expanded the path of this study and found that the preference for consistent information increased due to stronger attitude factors held. [18] add that the selection of political information that consistently reinforces the individual's political self-concept, which in itself increases the preference for information that pleases individuals.

These discussions emphasize that existing political attitudes influence individual selective exposure habits [14] [16] where increasing acceptance of content aligned with their preferences, can lead to increased attitudinal strength[19].In avoiding cognitive dissonance, people engage in motivational thinking and choose information that they approve and further emphasize their attitude [14][16]. The occurrence of cognitive dissonance when confronted with information that is not aligned with its views is more pronounced as a reinforcement of attitudes held by the previous individual[19][14]. Therefore, the power of attitude is considered as the first personal predisposition to influence the selection of similar political information.

Subsequent predisposition said to influence cognitive dissonance was first noted by Albarracín and Mitchell[20].They found that in some conditions, people with strong beliefs in their own opinion showed a decrease in preferences for consistent information. They conclude that individuals who believe that they can successfully defend their attitude from external attacks have greater acceptance of content that is not in line with their views[20].In subsequent studies, Graf and Aday[21] show how a person's defense trust can be improved through strengthening their existing views. individuals free to choose information from the platform using both attitudinal support and opposing information, opening up to counter-attitude information after being exposed to consistent information [21] They use similarly imagined content to create a frame by which they can contextualize content that is of different views[21].Additional studies underscore these results and suggest that the confirmation bias is weakened among individuals whose attitudes are reinforced before exposure to different content views [22][23].

These studies show that cognitive dissonance can be reduced if confidence in one's own attitudes and opinions is strengthened. When people feel that they can successfully defend their ideas from external attacks, the threshold within the individual for cognitive dissonance is increased, therefore this is rarely the case with the selection of different articles with increased views[20][14][22][21][23][16].

Because a high level of defense confidence reduces the likelihood of cognitive dissonance.

# 6. Conclusions

The results of this study have concluded that the social media recommendation system does not affect the polarization of the user's political views. This research adds to the repertoire of research, especially the effects of the social media recommendation system on polarization of political views. This research is also expected to enrich the study of the impact of social media, one of which is the concept of The Filter Bubbles. The concept is the effect of social media that presents uniform information and is aligned with the preferences of each user and likened to a user who is surrounded by bubbles of information filters to get to the user. But the results of this study actually show that the effect does not affect the political views of users. Although users can receive balanced messages or information in real life, they do not change users' opinions and views on an issue.

The practical implication that can be taken from this research is the government's attention to democratic life which is increasingly eroded due to the influence of the recommendation system on social media. Opinion is really needed for the democratic life of a country. However, if there is an error in addressing the increasingly wide-ranging views and tend to blame other views of groups of people with other groups, then this is a serious problem that must be suppressed by the government.

In addition, attention is also directed to social media users themselves in addressing the differences, not with excessive cynicism at the views of others who are different. Then to managers and mass media developers to be able to design a recommendation system that is more observant in addressing the impact of the recommendation system that will be implemented. Social media is likened to a giant mass media that has various kinds of information. For this reason, it is necessary to have a curator so that balanced information dissemination to users can be regulated so as not to have a bad impact on users and society at large.

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## References

[1]     E. Pariser, *The filter bubble: What the internet is hiding from you*. London: Penguin Books, 2011.

[2]     E. Bozdag and J. Hoven, "Breaking the filter bubble: democracy and design," *Ethics Inf. Technol.*, vol. 17, no. 4, p. 249, 2015.

[3]     A. Sekara, R. Pokluda, L. Del Vacchio, S. Somma, and G. Caruso, "Interactions among genotype, environment and agronomic practices on production and quality of storage onion (Allium cepa L.) - A review," *Hortic. Sci.*, vol. 44, no. 1, pp. 21–42, 2017.

[4]     P. Pasquale, *The black box society: The secred algorithms that control money and information*. Cambridge, Massachusetts: Cambridge University Press, 2016.

[5]     W. L. Bennett and S. Iyengar, "A new era of minimal effects? The changing foundations of political communication," *J. Commun.*, vol. 4, no. 707 – 731, 2008.

[6]     D. Spohr, "Fake news and ideological polarization: Filter bubbles and selective exposure," *Bus. Inf. Rev.*, vol. 34, no. 3, p. 150, 2017.

[7]     H. Allcott and M. Gentzkow, "Social media and fake news in the 2016 election," *J. Econ. Perspect.*, vol. 2, no. 211 – 236, 2017.

[8]     M. Wojcieszak, "Deliberation and Attitude Polarization," *J. Commun.*, vol. 4, no. 596 – 617, 2011.

[9] W. L. Neuman, *Social research methods: Qualitative and quantitative approaches*, 7th ed. California: Pearson, 2013.

[10] R. D. Wimmer and J. R. Dominick, *Mass media research: An Introduction*. California: Wadsworth, 2006.

[11] F. N. Kerlinger, *Asas-asas Penelitian Behavioral*. Yogyakarta: Gadjah Mada University Press, 1990.

[12] M. H. Birnbaum, "Methodological and ethical issues in conducting social psychology research via the Internet. In Handbook of methods in social psychology," in *CC Morf, AT Panter, 359 – 82. Thousand*, C. Sansone, Ed. Oaks, CA: Sage, 2004.

[13] J. C. Goodwin, *Research in psychology*, 6th ed. Toronto: John Wiley, 2010.

[14] L. Festinger, *A theory of cognitive dissonance*. Stanford: Stanford University Press, 1957.

[15] D. M. Kahan, "Ideology, motivated reasoning, and cognitive reflection," *Judgm. Decis. Mak.*, vol. 4, no. 407 – 424, 2013.

[16] Z. Kunda, "The case for motivated reasoning," *Psychol. Bull.*, vol. 3, no. 480 – 498, 1990.

[17] S. Iyengar, K. S. Hahn, J. A. Krosnick, and J. Walker, "Selective exposure to campaign communication: The role of anticipated agreement and issue public membership," *J. Polit.*, vol. 70, no. 1, p. 186, 2008.

[18] S. Knobloch-Westerwick and J. Meng, "Reinforcement of the political self through selective exposure to political messages," *J. Commun.*, vol. 2, no. 349 – 368, 2011.

[19] L. A. Brannon, M. J. Tagler, and A. H. Eagly, "The moderating role of attitude strength in selective exposure to information," *J. Exp. Soc. Psychol.*, vol. 4, no. 611 – 617, 2007.

[20] D. Albarracín and A. L. Mitchell, "The role of defensive confidence in preference for proattitudinal information: How believing that one is strong can sometimes be a defensive weakness," *Personal. Soc. Psychol. Bull.*, vol. 30, no. 12, p. 1565, 2004.

[21] J. Graf and S. and Aday, "Selective attention to online political information," *J. Broadcast. Electron. Media*, vol. 52, no. 1, pp. 86–100, 2008.

[22] P. Fischer and T. Greitemeyer, "A new look at selective-exposure effects: An integrative model," *Curr. Dir. Psychol. Sci.*, vol. 6, no. 384 – 389, 2010.

[23] W. Hart, D. Albarracín, A. H. Eagly, I. Brechan, M. J. Lindberg, and L. Merrill, "Feeling validated versus being correct: a meta-analysis of selective exposure to information," *Psychol. Bull.*, vol. 4, no. 555 – 588, 2009.