

# Bias in Filipino Newspapers? Newspaper Sentiment Analysis of the 2017 Battle of Marawi

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**Keywords:** Media, Large-scale Information Systems and Applications, Data Processing, Artificial Intelligence, Big Data Algorithm, Social Science and Implications for Big Data, Data Analytics, Opinion Mining, Analytics as a Service (AaaS).

**Abstract:** Newspapers provide factual reports on current events. However, news media has been shown to be ideologically biased, often negatively shaping the readers' point of view. News on controversial issues makes the bias of the newspaper or its writers more visible. This study aims to measure the objectivity of newspapers by classifying news articles from three newspaper agencies covering the 2017 Battle of Marawi in Southern Philippines. We used Aylie Sentiment Analysis Tool to detect the bias or polarity in each news article (whether positive, negative or neutral). Negative articles on Marawi dominated the three broadsheets (45.1% to 59.9%) while the neutral articles were the least frequent (16.1% to 21.2%). These results indicate that newspapers apply unequal space on the different sides of an issue, which may lead to unbalanced reporting. We also note that despite the varying number of total articles, the three papers applied the same proportion of positive, negative and neutral articles, which may imply collusion. The emergence of Big Data greatly increases the speed of gathering news articles on any given issue, while the Internet of Things enables readers and journalists to measure the objectivity of the news.

## 1 INTRODUCTION

Bias in news media is an inherent, persistent flaw (Efron, 1971; Anand, et al, 2007). Bias often causes a sharp increase in political polarization, misunderstanding, and conflict on issues (Park et al., 2009). For example, the New York Times has been observed to cover news events distinct from other US newspapers (Zelizer, 2002). Major national news organizations in the US have been seen to present the same liberal-leaning slant (Sutter, 2000). News accounts sometimes misrepresent certain events, such as declining news coverage for protests that are in reality gaining momentum (Oliver and Maney, 2000). On the other hand, another study using an “objective” testing of newspaper articles on one issue yielded little evidence of partisan media bias (Niven, 2003).

Figure 1 shows the various causes and forms of bias (Park et al., 2009) in the media, such as newspapers. A newspaper may contain selection bias (which affects the amount of coverage given to an event), and description bias (which affects the accuracy of the coverage) (Earl et al., 2004). Bias

may be due to the preferences of the stockholders and advertisers of a newspaper (Herman and Chomsky, 1988), as well as competition with rival newspapers (Ellman and Germano, 2008).

Meanwhile, readers are aware of the inherent bias of newspapers (Anand, et al., 2007; Chiang and Knight, 2008) and take this into account when consuming information. It is also possible that the measuring tools or the researchers themselves are the ones to introduce bias in the study. Therefore, we used a sentiment analysis software to automate the measurement of the polarity of a news article and to avoid personal bias from the researchers. Sentiment analysis tools, such as those found in the programming languages Python and R, use natural language processing capabilities to determine the polarity of a selection of text. Such tools indicate whether the expression of words being used in a text are positive, negative, or a neutral way.

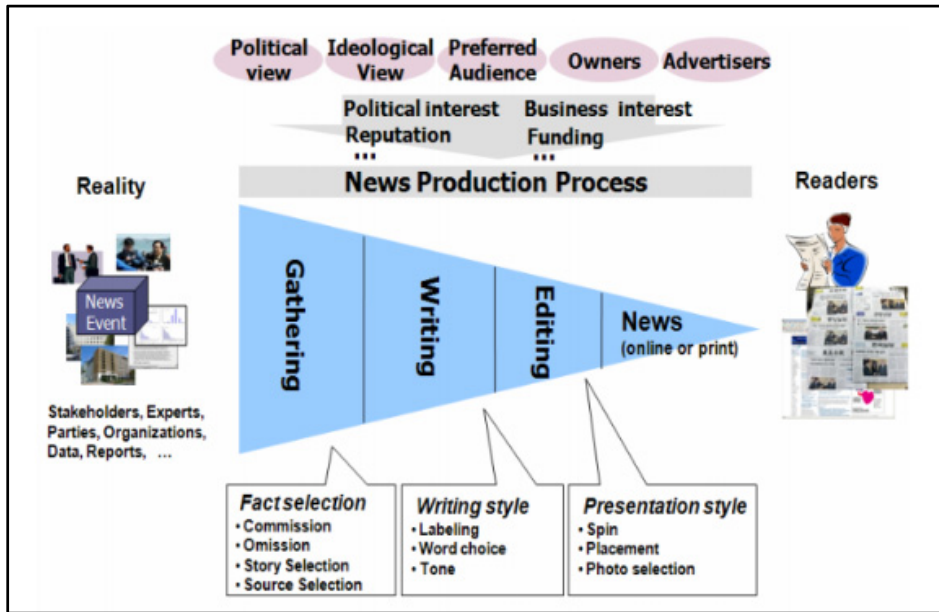


Figure 1: Causes and forms of media bias.

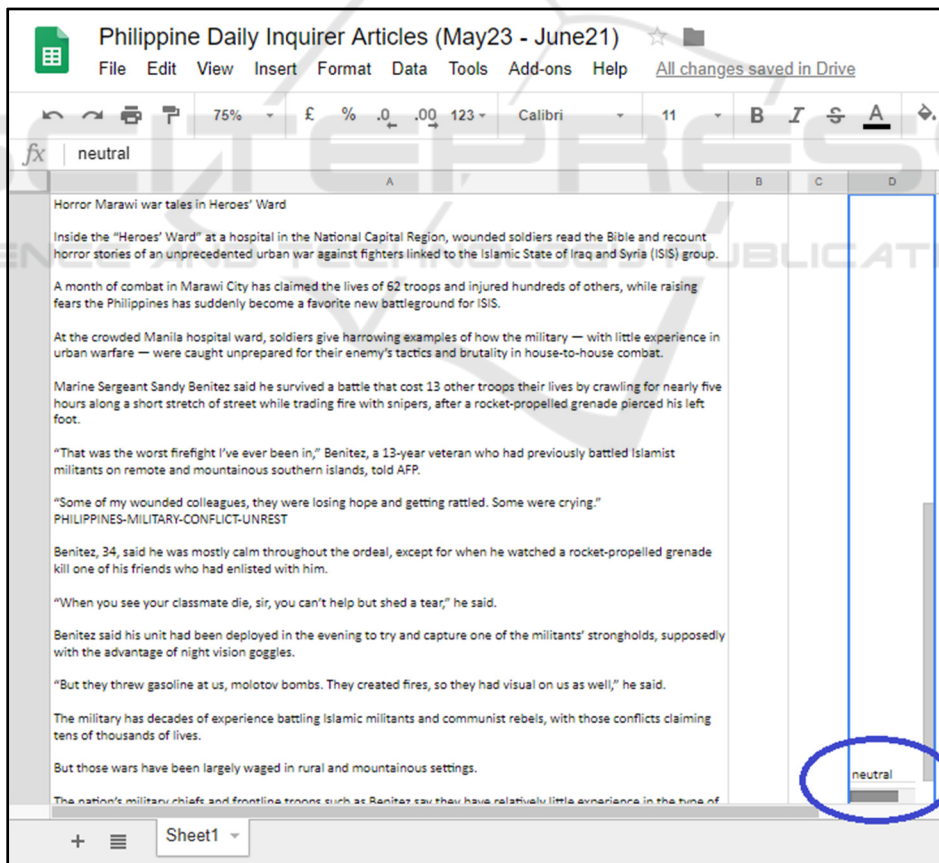


Figure 2: A screenshot of an article in Google Spreadsheet using the Aylien Sentiment Analysis tool.

In this work, we aim to measure the amount of bias contained in Philippine broadsheets or newspapers. To limit our dataset, we only used news articles on a particular event with a specific time range. We chose the 2017 Battle of Marawi due to its national significance and inherent polarity. The researchers have personally observed that Filipinos generally support our armed forces against rebel groups, however there is disagreement on whether to implement Martial Law in Mindanao.

The Battle of Marawi City is considered the most significant terror event in Southeast Asia in the last 15 years (Widiasari, 2018). The conflict lasted for five months, and resulted in the mass displacement of civilians, the widespread destruction of civilian infrastructure, and the loss of civilian lives (Amnesty International, 2017). Media frames or biases for the Battle of Marawi include: humanitarianism, hope, resilience, violence, propaganda, and criticism (Widiasari, 2018). We gathered news articles about the battle from major Philippine broadsheets and used sentiment analysis software to determine the objectivity of the news articles while excluding the researchers' own subjective judgment.

## 2 METHODOLOGY

We gathered news articles relating to the Battle of Marawi from the websites of the three major national

newspapers: Manila Bulletin (<https://www.mb.com.ph>), Philippine Daily Inquirer (<https://inquirer.com.ph>), and Philippine Star (<https://www.philstar.com>). We limited our search to articles within the duration of the battle: May 23, 2017 (when war was declared) to October 22, 2017 (when government troops declared victory over the rebels). We copied the text of each article onto Google Sheets with the add-on Aylie Sentiment Analysis tool (Figure 2).

The polarity of all articles were then collected and analyzed for possible trends. We note that the time range for the event can be divided almost equally into five months. This is advantageous for our research, as we can investigate trends for five different months, and we can compare the trend for bigger and smaller time scales.

## 3 RESULTS AND DISCUSSION

Table 1 lists the number of articles released by each news agency regarding the Battle of Marawi. The three newspapers varied in the number of articles they released, with the PDI consistently having the highest number of articles on Marawi. Also, the number of articles decreased from Month 1 to Month 3, then increased again by Month 4 when the government steadily regained territory from the rebel forces.

Table 1: Number of news articles on the Battle of Marawi for each news agency and per month.

Month (2017)	Manila Bulletin (MB)	Philippine Daily Inquirer (PDI)	Philippine Star (PS)	TOTAL
(M1) May 23 – Jun 21	61	193	137	<b>391</b>
(M2) Jun 22 – Jul 22	54	133	103	<b>290</b>
(M3) Jul 23 – Aug 22	41	54	53	<b>148</b>
(M4) Aug 23 – Sep 22	50	78	59	<b>187</b>
(M5) Sep 23 – Oct 23	65	69	35	<b>169</b>
<b>TOTAL</b>	<b>271</b>	<b>527</b>	<b>387</b>	<b>1,185</b>

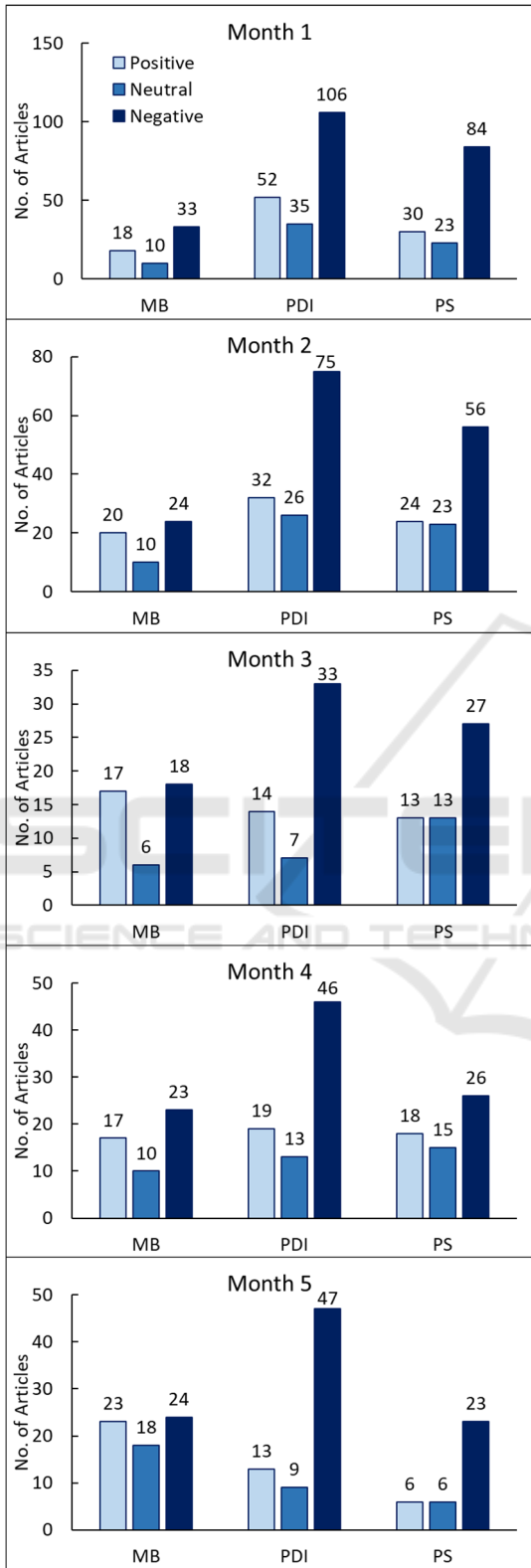


Figure 3: The number of articles classified per month and per newspaper.

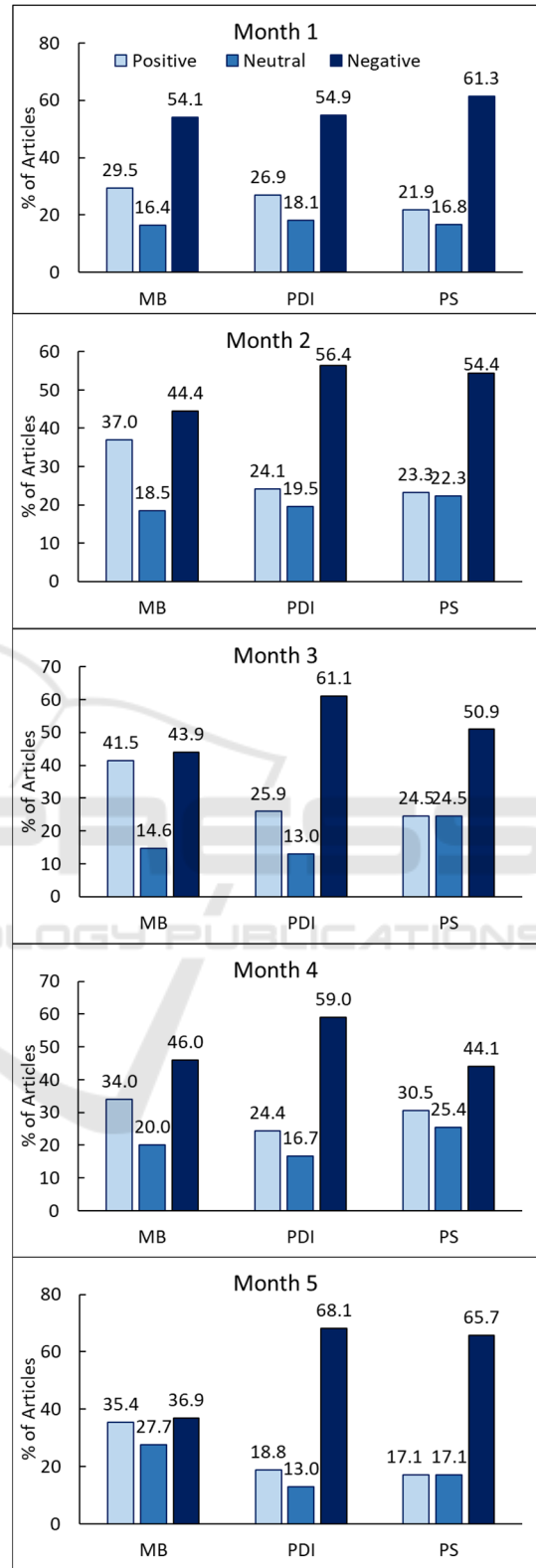


Figure 4: The proportion of articles classified per month and per newspaper.

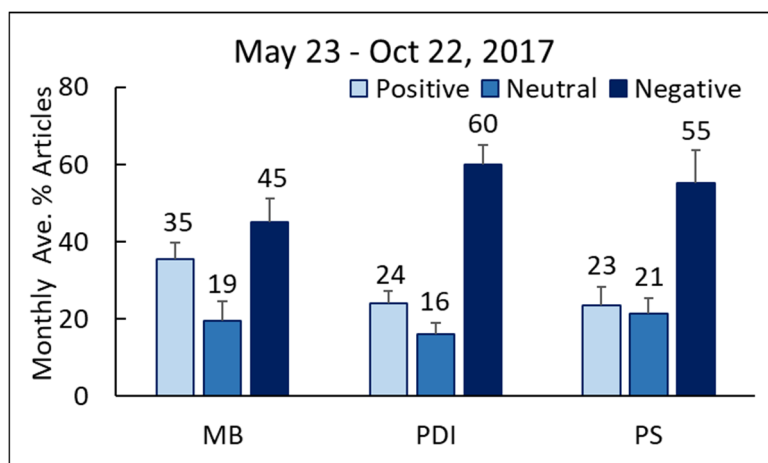


Figure 5: Average monthly distribution of positive, neutral and negative articles per news agency. The Battle of Marawi was covered for 5 months.

For every month of the coverage on Marawi, majority of the news was negative, followed by positive, with minority of the news items evaluated as neutral (Figure 3). When we normalized the values shown in Figure 4 with respect to the total number of articles published by each news agency, we found highly similar proportions of positive, neutral and negative articles (Figure 4).

Figure 5 summarizes the results. For all three papers, a significant proportion (78% to 84%) of the news on Marawi were found to be polarized (either positive or negative). Majority of the articles were negative for all three broadsheets (45.1% to 59.9%), while a distinctly small minority of articles were neutral (16.1% to 21.2%).

The results highly suggest the presence of bias, particularly anti-administration bias, with regards to the Battle of Marawi. In addition, seeing the similar distributions of negative, neutral, and positive news suggest collusion among the three news agencies. For more complete results, we can use other sentiment analysis software as well as construct our own.

The Battle of Marawi is admittedly a controversial issue. We can also measure the polarity of news on other issues, especially those universally regarded as “good”, “bad” or “neutral”, to serve as a baseline for studies such as this one.

## 4 CONCLUSIONS

We have studied the news coverage of the Battle of Marawi, and have seen the prevalence of bias in the large proportion of news with non-neutral polarity. Moreover, the three newspaper agencies show highly

similar proportions of positive, neutral, and negative polarities, suggesting a collusion among newspapers. We also demonstrated the use of the Aylie Sentiment Analysis tool to determine the polarity of a text without inserting the researcher’s own biases or personal interpretation.

For further study, we recommend the use of other sentiment analysis software to compare with the existing results. We can also construct our own sentiment analysis software, which can be easily trained with the massive amounts of news articles that are generated everyday. We can also extend this work by using the same methods and tools on other topics. In particular, we can use universal “good”, “bad” and “neutral” news as baselines for measuring the polarity of an article. We can also use other news sources aside from the three studied in this paper.

The emergence of Big Data greatly increases the speed and convenience of gathering news articles on any given issue. Meanwhile, the Internet of Things enables readers to measure the objectivity of a particular news article or source, and serves as a check to journalists regarding their work.

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