Sentiment Analysis of content of Indian States' News Headlines

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Abstract

This study attempts to analyze sentiments hidden behind the headlines of Indian states' news in online English dailies. It is discovered that news headlines published by the different news media houses unambiguously reflect or at least indicate their agenda and perception. We have employed the sentiment analysis as a tool to decode the magnitude of sentiments expressed through the medium of news headlines, which are further segregated in the sub-heads of positive, negative and neutral sentiments. To this end, the headlines of three newspapers having the highest circulation and readership among public were subjected to a quantitative content analysis which reveals that a predominant neutral bent of mindset resonates in their coverage, giving a way to the readers to form their respective opinion. This study finds this quality in line with general understanding of press being the responsible body of society and also the fourth pillar of democracy. This study examines the effective agenda setting role of the Indian online newspapers, keeping in background the emotions of their readers. In a bid to develop empirical result, while scrutinizing the news headlines, it focuses on the classification of emotions and valence in terms of positive and negative polarity. This is primarily to explore and establish the connection between emotions and attitude. In order to identify and substantiate the study, a total of 8,640 headlines spanning over a decade from 2006 to 2016 were evaluated. Considering the huge quantum of data, it was realized that automatic system must be resorted to put them in orderly fashion. Lastly, we elaborate on the different approaches for the machine treatment of subjective communication (opinion mining) and present our findings while bringing out their implications.

Key words – sentiment analysis, online newspaper, Indian states news

Introduction

Human perception is shaped by social conventions. Inadvertently, these conventions come into play when we endeavor to figure out the global developments and opinions whether public or private. In a bid to engage with the realities of outside world, we accept as well as air our ideas/opinion to be part of well

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informed society. Our responses depend on what we anticipate. Basically, our anticipations are constructed by the societal norms and assist in reacting towards the circumstances (Ratner, 2000), (Goleman, 1995).

With the development in technology and increased access to information, the interaction and communication is imbedded in the newly emerged society (Wiberg, 2004). In this new setting, the emotions play a vital role. Events generate emotions among people which is reflected in their understanding and expression of the respective events. Similarly, when other people come across those reflections, they develop their own mental picture based on their emotive convulsion and facts involved in the events. In a way, the easy access to information has opened the flood gates of emotional responses to the available information which eventually changes the content of information. Hence, in the new information age, we come across dual aspects of events, one the facts of it and second, the expression of people on the events. Since brought out that new society is emerging, accordingly new norms also take birth. Various examples can be cited to substantiate the changing dynamics wherein remarkable shift has been observed in public and societal opinion, whereas at the same time in certain communities some facts of issues are still considered taboo and are refrained to be discussed. Therefore, it is fascinating but challenging to track the trajectory of opinion, so as to predict the trend and suitable measures can be suggested. The programmed preparing of writings to identify opinion communicated in that, as a unitary group of research, has been designated sentiment analysis. Sentiment analysis can be defined as the process of computationally distinguishing and sorting sentiments communicated in a piece of content, particularly with a specific end goal to decide if the author's state of mind towards a specific subject, product, and so on is positive, negative, or neutral. Majority of the work pertaining to sentiment analysis has been limited to highly subjective fields such as blogs and products or movie reviews (Balahur and Steinberger, 2009). In the said field, it is observed that people give candid opinion. On the other hand sentiment analysis of news articles has not generated equal scholarly interest, except a few who have covered existing news bias within the available news sources and endeavour was also made to touch upon sentiment analysis in the field of news.

The study–

This study involves the theory of agenda setting to include affective sentiments of news headlines of Indian states in the national online newspapers. The current study emphasize on representation of states in the news headlines and the newspapers agenda-setting role of their respective national media. Which analyzes the affective agenda setting role of the media based on their presentation of attribute and issue's sentiments in news headlines .

Limitations –

The study claims to be relevant only to the Headlines of the news . The limitations of the text (linguistics) within news headlines (subjectivity, representational text and reflexivity) too apply here

Theoretical framework -

The agenda setting theory (Shaw & McCombs, 1977) derives the basic idea of the study .it has been learned repetitively that mass news media has huge influence on public by their selection and giving importance and space to the news . It has been discovered by media researchers that there are more rational and more pragmatic effects of media on public. Since the public is not told how to think but they are told what to think about by media (ibid).They set agenda and deliver the news what they think is should be served to the public. Since the headlines are the first thing in newspaper to catch the attention of a reader .It has been made sure to send the right message at right time to the right people. The transfer of issue salience from the media to the public has been the main idea of the theory (McCombs & Shaw, 1977), which conjectured/hypothesized by Lee & Hahn, (2014)   that media influence the public in selecting which topics are salient. It can be said that those topics or issues covered more intensively by media are the important issues perceived by public.

Present research is carried out to find the sentiments allocated to the states news headlines by different online news papers. News media has the immense power to set the agenda for public and to represent the states though the issues and attributes given to public and to influence their opinion (McCombs, Llamas, Lopez- Escobar & Rey, 1997).People do not only see the states with its news selected by media but they make their opinion about the states according the news sentiments given to respective states. In other words, the news media can set the agenda for the public's attention to that small group of issues around which public opinion forms. Each headlines of news related to the state has numerous sentiments, derived from the attributes and traits that describe the sentiments. For each headline there also is an agenda of attributes because when the media and the public make opinion about those states, some attributes are highlighted, others are given less attention, and many receive no attention at all.

Literature review –

Given the emotions involved in news or in other highly subjective text types such as movie or product reviews, the subject of sentiment analysis of the said texts has generated an abundance of literature and have been subject of innumerable books, articles and papers on the topic. Thus, as part of literature review, the books, journals, newspapers and internet articles on the subject with diverse viewpoints have been studied in depth.

While perusing the available literature on the theme, one encounters that there is adequate literature available on broader subject of sentiment analysis but there is paucity of literature on the account of sentiment analysis of news headlines of Indian states. However, there are studies that are pertinent and broadened the knowledge base on the selected research subject. For example, Kabadjov and Balahur (2011) dealt with the ideas of extremely positive and exceptionally negative sentences by utilizing the yield of a

sentiment analyzer and assess how good a sentence is for summarization by making utilization of standard content summarization metrics and a corpus explained for both salience and sentiment. Finally, they concluded that condensing sentiments and abridging text are two different undertakings which ought to be dealt with independently. While Balahur and Steinberger(2009) have offered insights in the sentiment classification for news. They proposed that there are three different possible views on newspaper articles – author, reader and text – and they have to be addressed differently at the time of analyzing sentiment. In their opinion, this is especially the case with author intention and reader interpretation, where specific profiles must be defined if the proper sentiment is to be extracted. François-RégisChaumartin (2007) argue that working with linguistic techniques and a broad-coverage lexicon is a viable approach to sentiment analysis of headlines. They first evaluated the emotion and valence on all words of a news headline. Then, a parser has been employed to find the head word, considering that it has a major importance. Meanwhile, researchers also detected the contrast (between positive and negative words) that shift valence.

In the context of opinion mining, Esuli and Sebastiani (2006) describe opinion mining as a recent discipline at the crossroads of information retrieval and computational linguistics which is concerned not with the topic a document is about, but with the opinion it expresses. Whereas, Kim and Hovy (2005), define opinion as a quadruple which includes topic, holder, claim, sentiment wherein the holder believes a claim about the topic, and in many cases associates a sentiment, such as good or bad, with the belief. The authors distinguish among opinions with sentiment and opinions without sentiment and between directly and indirectly expressed opinions with sentiment. In other approaches, capturing favorability versus unfavourability, support versus opposition, criticism versus appreciation, liking versus disliking, even bad versus good news classification were considered to be sentiment analysis. Thus, literature provides different viewpoints on the subject of sentiment analysis.

However, considering the paucity of time available with the readers in the existing information age, wherein they might not have time or patience to go through the entire news report, the news media houses pay a special attention while giving headlines to their reports or stories so as to make it a worth read. It is for this reason that a fresh perspective is required to analyze the sentiments involved in the news headlines which marks the starting point of this research.

Research questions and Hypothesis

The headlines of the states' news given by three laeding newspapers provides an opportunity to find the sentiments related to the respective states' news. The current study proposes the following hypotheses and research questions:

RQ1: What is the most prevalent sentiment produced in the states news in three leading online newspapers? Do they produce more negative, positive or neutral news?

RQ2: Is there a difference in the tone and approach in headlines sentiments by all three newspapers towards the states?

H1: Negative sentiments in states' news headlines has been given more coverage in the selected online newspapers .

H2: The Hindu has been more neutral than other two newspapers regarding the sentiments allocated to the states' news headlines.

Methodology-

Considering the subject of research **"sentiment analysis",** one has to read between the lines to understand the emotions invested behind the text. Therefore, all the collated data has been subjected to qualitative analysis, as it does not merely count words, rather, segregate the text into a different meaningful sub-sections which might be otherwise apparently conveying similar meaning (Weber 1990). In the context of conveying expression, the said sub-section can be explicit in nature or one might have to draw inferences to derive meaningful analysis.

The qualitative content analysis adopts a comprehensive approach and aims to build knowledge and understanding of the subject under study (Downe-Wamboldt, 1992, p. 314). It analyses the information content from the textual data in a systematic and rule guided manner (Mayring, 2000). Lately, it has been widely employed in media studies, and rapidly becoming more prominent in sentiment analysis of media texts. In order to carry out a holistic analysis, a corpus of text has been constructed primarily of the headlines of the Indian states' in online newspapers for content analysis to decipher the sentiments. Subsequently, the large amount of text has been summarized (by employing the Google app Resoomer.com) to derive the underlying/ broad idea of the text and to draw the intended meaning and sentiments related to the respective states' news.

Sample selection -

The Online newspapers of three highest circulated and read English dailies,TheTimes of India TOI), HindustanTimes(HT) and The Hindu, were selected for the study.TOI has a circulation of 11,02,521 and a readership of 7.4 million,The Hindu has an 11,68,042 circulation and 4.05 million readership and HT has a circulation of 11,03,644 and a readership of 3.85million. These are the three largest nationally circulated and read English newspapers. English newspapers were selected because English is considered to be major language in India after Hindi. It is typically used among a nation's educated class and expatriate community;

and second because newspapers that publish in this shared language often are among a nation's most influential (Massey and Levy, 1999et al.)

Unit of analysis –Headlines of News Item in which the name of the respective State appears in it. This would be found by applying Google power searching commands for example ; (www.site:thehindu.comintitle:haryana)

Data Collection- The data used in this study is retrieved from the online database of mentioned above newspaper's online portal; Indiatimes.com,Hindustantimes.com and thehindu.com with the use of Google power searching tool. News Item (unit of analysis) is taken in which the name of the respective State appears in the Headlines. The study employed the tasks of summerising the headlines and deriving the sentiments related to the respective headlines of the state news.

Sampling –Sample size is collected through random sampling of all the total news with 95% confidence level with 5% error margin of the entire news stories of a particular state published in online newspapers.

Reference period –News Headlines of past 10 years has been taken for the study, which is from 1st jan 2006 to 31st dec 2015 available on internet.

Findings and discussions –

Sentiments associated with a state's news headline highlights the issues' attitude, related to respective states . The types of sentiments associated with different headlines of states' news project the focus and approach of newspapers towards these states .The sentiment that each newspaper publishes in news headlines about the every individual state reflects the newspaper's agenda and perception. In this study Our effort relies on using sentiment analysis as mean to capture the strength of sentiments expressed in news headlines (i.e. if they are negatively or positively, or if they are neutral).

States	Neutral (%)	positive (%)	negative (%)
Andhra Pradesh	53.5	22.6	23.9
Arunachal Pradesh	49.5	20.1	30.4
Assam	41.8	17.1	41.1
Bihar	50	20.7	29.3
Chhattisgarh	46.8	18.3	34.9
Delhi	41.6	20.3	38.2
Goa	50.3	21	28
Gujarat	48.3	19.9	31.8

Haryana	52.7	24.5	22.8
Himachal Pradesh	51.7	21.6	26.7
Jammu and Kashmir	48.5	23.1	28.4
Jharkhand	50	19.9	30.1
Karnataka	48.2	17.2	34.1
Kerala	47.4	23.5	29.1
Madhya Pradesh	51.5	19.2	29.3
Maharashtra	51.7	19.1	29.2
Manipur	42	21.5	36.5
Meghalaya	55.6	20.7	23.7
Mizoram	56.9	19.5	23.6
Nagaland	44.9	18.8	36.2
Orissa	58.3	17.5	24.3
Punjab	49.5	21.7	28.8
Rajasthan	58.2	22.4	19.4
Sikkim	51	26.5	22.4
Telangana	57.6	17.8	24.6
Tamil Nadu	49.3	24.7	26
Tripura	51.2	21.6	27.1
Uttar Pradesh	49.8	21.9	28.3
Uttarakhand	43.6	21.9	28.3
West Bengal	49.3	22	28.7

Table.1 Sentiment analysis of each Indian state's news Headlines by all newspapers

The present study revealed that Sikkim is the state which has got maximum percentage of Positive sentiments in its news Headlines with 26.5% followed by Tamil Nadu with the share of 24.7% and Haryana with 24.5% of positive bent . whilst When it comes to having most negative sentiments in headlines of news stories Delhi ,Nagaland and Manipur is on top of the list . It was also found that the maximum news stories related to each state are mostly Neutral in their sentiments. Thus, neutral sentiments are dominating the other two positive and negative sentiments in most of the state news headlines .we also noted that most of the states' news headlines were dominated by negative sentiments than positive news headlines. A significant difference of positive and negative sentiments were found and we observed that

Sikkim, Rajasthan and Haryana are only three states with 4.1% , 3% and 1.7% NET value of positive sentiments in there news headlines. However, Other than these states there is only negative values of positive and negative sentiments in which Assam was covered with highly negative news headlines with -24% by all three newspapers . Overall it is clear that most of the news stories have been presented in neutral attitude .Also, there were almost half of the total states which has more than 50% share of neutral sentiments in the news between years 2006-2016. Also, there was more negative news published compared to positive news for most of the Indian states by all three online English newspapers.
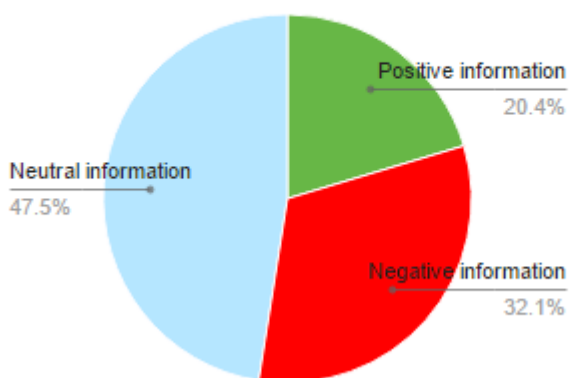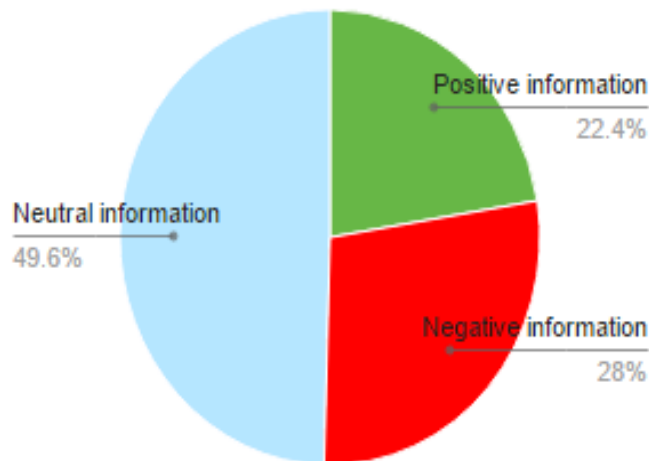

Pie Chart of Sentiment Analysis of all the news headlines of all States in All three newspapers

Above pie chart explains the sentiments of news headlines accorded to all the states by all three leading online English newspapers in the taken period for research .in this chart we can see that a large part of news headlines are dominated by neutral information 47.5% followed by negative information with 32.1%. However positive attitude percentage has been less than other two sentiments with only 20.4%.Which clearly indicates that all newspapers have almost same sentiment towords the headlines of news stories for all the Indian states.
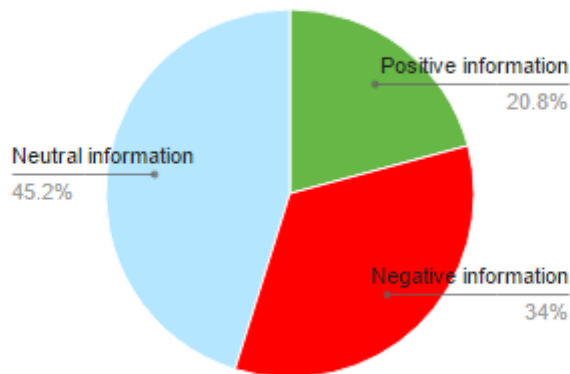
Sentiment Analysis Diagram

Pie Chart of Sentiment Analysis of all the news headlines of all States in TOI newspapers

This pie chart indicates the Times of India online newspaper's news headlines' sentiment behavior towards all Indian states. Most of the chart is covered by blue area which points toward the neutral information of the news headlines with 49.6%. while another big share is dominated by Negative information with 28% and there is third and very important attitude of news headlines are positive which has got minimum share in above pie chart with only 22.4%.So, the pie chart clearly shows that Times of India Online Newspaper has emphasized on neutral and negative attitude in its news headlines than positive information.
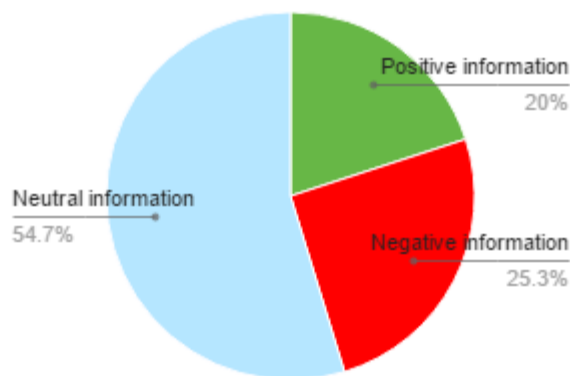
Sentiment Analysis Diagram

Pie Chart of Sentiment Analysis of all the news headlines of all States in HT newspapers

This pie chart reports the Hindustan Times online newspaper's news headlines' sentiment behavior towards all Indian states. In this pie chart we can notice that it is not different than the one of Times of India's sentiment analysis of news headlines of Indian states'.There again we have neutral information dominating on Negative and positive information. Most of the pie chart area is coverd with neutral information just like times of India online newspaper with 45.2% while 34% is negative and 20.8% share has positive information in their news headlines.which clearly shows that Hindustan Times online newspaper has focused more on neutral and negative information than positive information in the Headlines of states' news.

Pie Chart of Sentiment Analysis of all the news headlines of all States in The Hindu online newspapers

This pie chart point up the percentage of The Hindu online newspaper's news headlines' sentiment behavior towards all Indian states. It has been noticed that The Hindu has same attitude in distributing information to the Indian States like other two leading online newspapers. There is again dominating sentiment in news headlines for all Indian states are neutral 54.7% followed by Negative information 25.3%. While Positive information is once again on back foot with only 20% share.

Overall, it is clear that all three online newspapers have granted almost same sentiments to the all Indian states' news headlines in the taken period of ten years for the research.

Conclusions-

The media play an important role in shaping the public opinion & behavior through the portrayal of important issues and events in society. News media aims at creating awareness among public and at times sensationalize the issues, which greatly influences the construction of social imaginary. Before making an opinion, readers make emotional calculus while processing the news report and this accomplishes the agenda of news media houses. Understanding this emotional or sentiment calculation experienced by the readers has been the guiding factor for plethora of studies and research in the field of mass communication. And most of the work related to sentiment analysis has been limited to vastly subjective fields such as blogs and news texts or movie reviews

However, in the overall news reports, stories, briefs etc, the news headlines form the most important part, as it marks the first point of connection with the readers to attract, intrigue or even to gently provoke them to read the entire text. In fact, many journalists argue that every story or news can give away with introduction but not with an apt headline and they go to an extent that if a headline is not properly crafted, it is as good as being non-existent. Considering the significance of news headlines, this study has focused to find out the frame of idea and attitude involved behind the writing of news reflected majorly in their headlines.

During the course of research, numerous online news headlines, belonging to different states were browsed to identify the tone of script utilized in news headlines. Meanwhile, it is observed that the news headlines reveal the bent of mind of particular news media house, as the same event is viewed from different prism by not only news agencies but also by the states. This research has focused on analyzing the headlines to draw inferences and understand the sentiments invested in crafting the news headlines to segregate them in sub-heads of positive, negative or neutral sentiments. Though, it is difficult to draw deductions from each and every text in the news headlines of states, a sincere and unbiased attempt has been made to get the desired outcome. One of the important findings that emerged while analyzing the news headlines of different states during the course of this study is that neutral sentiments dominate the other two sub-sets of sentiments (positive and negative).As far as number of states are concerned, there are only a few states which scored maximum neutral bent of stories such as Orissa 58.3%, Rajasthan 58.2% and Telangana 57.6%, but there are substantial number states which has got more than 50% share of neutral stand in their news i.e. Andhra Pradesh, Goa, Haryana , Himachal Pradesh ,Madhya Pradesh ,Maharashtra ,Meghalaya, Mizoram ,Sikkim and Tripura. In the context of difference of positive and negative sentiments, it is discovered that Sikkim, Rajasthan and Haryana are only three states with 4.1%, 3% and 1.7% NET value of positive sentiments in their news stories. On the other hand, there is only negative values of positive and negative sentiments in other states, wherein Assam is covered with highly negative news headlines with -24% by all three newspapers. Meanwhile, when it comes to having most negative sentiments in headlines of news stories Delhi, Nagaland and Manipur is on top of the list.

The domination of neutral sentiments over positive and negative sentiments indicate towards the general tendency of media to directly or indirectly endeavors to maintain the status quo. Agenda setting perspective has been thoroughly analyzed, which brought the research to an understanding that in spite of the technological blast we have seen in the past few years and different approaches and sources of news telling agencies (or person), still they speak in a more or less synchronized way. Again this reminds of media convergence, though the term was used for the technical aspect, but it is observed that though the level and means of news production may differ but overall they are speaking in same tone with each other.

Notewithstanding, the neutral stand adopted by different online newspaper, highlighting their impelling urge to maintain the status quo, other varying perspectives on events and surrounding circumstances are hard to

be ignored. There is one set of public that believe or may want us to believe that the society is not an ideal place. The other set of people paint a picture which hold an extraordinarily positive perception of the present and future. Whereas, there are also people who profess that the society is not worth living and it ought to be better. They believe or want us to believe that we are in a grim world which needs to be amended soon towards normalization.

The varying perception gives birth to myriads of genuine questions, such as; now who will decide whose frame of mind is correct? Who actually means what they are advocating? Is this honest journalism or is it another market strategy? Is it helping the society or creating confusion? Again these question point towards an aspect which needs to be checked. But for that another research would be helpful. And truly speaking answers to these question may not be permanently found, because of the dynamism involved in human nature, media world and of course in the universe involved.

Coming back to this research, we found that maximum percentage of news headings are neutral in tone, followed by positive and negative tones. But does this frame of mind is cultivated in minds of audiences remains for long with them? I mean is this helpful in shaping their attitudes and actions. Or is it the case where news' are though perceived positively, negatively or neutrally but are left behind as soon as one goes away from the screen or paper. What we want to say is that how motivating or disappointing the receivers may found the news their ideologies and actions remain unaffected, which is meant to maintain the status quo. Even reporting news in neutral way also means sending the people a message that everything is in harmony, which means establishing status quo.

References

1. Asim, M. M. (2015). Examining the Role of Emotion as a Dimension of Affective Agenda Setting. *International Journal of Humanities and Management Sciences (IJHMS)*,*3*(6201523204044).

2. Baccianella, S., Esuli, A., & Sebastiani, F. (2010, May). Sentiwordnet 3.0: an enhanced lexical resource for sentiment analysis and opinion mining. In Lrec (Vol. 10, No. 2010, pp. 2200-2204).

3. Balahur, A., Steinberger, R., Van der Goot, E., Pouliquen, B., Kabadjov, M. (2009). Opinion Mining on Newspaper Quotations. Proceedings of the workshop 'Intelligent Analysis and Processing of Web News Content' (IAPWNC), held at the 2009 IEEE/WIC/ACM International Conferences on Web Intelligence and Intelligent Agent Technology. Milano, Italy, 2009.

4. Balahur, A., Steinberger, R. (2009). Rethinking Opinion Mining in News: from Theory to Practice and Back. In Proceedings of the 1st Workshop on Opinion Mining and Sentiment Analysis, Satellite to CAEPIA 2009.

5. Benton, M., & Frazier, P. J. (1976). The agenda setting function of the mass media at three levels of" Information Holding". *Communication Research*, *3*(3), 261-274.

6. Coleman, R. & Wu, D. (2010). Proposing emotions as a dimension of affective agenda setting: Separating affect into two components and comparing their second-level effects. Journalism & Mass Communication Quarterly, Summer 2010; 87(2). http://dx.doi.org/10.1177/107769901008700206

7. Chaumartin, F. R. (2007, June). UPAR7: A knowledge-based system for headline sentiment tagging. In Proceedings of the 4th International Workshop on Semantic Evaluations (pp. 422-425). Association for Computational Linguistics.

8. Digirolamo, G. J., and Hintzman, D. L. 1997. First impressions are lasting impressions: A primacy effect in memory for repetitions. Psychonomic Bulletin & Review 4(1):121–124.

9. Dooling, D. J., and Lachman, R. 1971. Effects of comprehension on retention of prose. Journal of experimental psychology 88(2):216.

10. Ecker, U. K.; Lewandowsky, S.; Chang, E. P.; and Pillai, R. 2014. The effects of subtle misinformation in news headlines. Journal of experimental psychology: applied 20(4):323.

11. Evans, H. 1974. News headlines, volume 3. Holt, Rinehart and Winston.

12. Forman, J., & Damschroder, L. (2007). Qualitative content analysis. In *Empirical methods for bioethics: A primer* (pp. 39-62). Emerald Group Publishing Limited.

13. Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, *15*(9), 1277-1288.

14. Krippendorf, K. (2004). Content analysis: an introduction to its methodology. Sage. *Thousand Oaks, CA*.

15. Larsen, P. (2002). Media contents textual analysis of fictional media content. In *A handbook of qualitative methodologies for mass communication research* (pp. 135-148). Routledge.

16. M.B. Miles, A.M. Huberman. 1994. "Qualitative data analysis: A sourcebook", .[Google Scholar]

17. Macnamara, J. R. (2005). Media content analysis: Its uses, benefits and best practice methodology. *Asia Pacific Public Relations Journal*, *6*(1), 1.

18. McCombs, M. (1977). Agenda setting function of mass media. *Public Relations Review*, *3*(4), 89-95.

19. McCombs, M. E., Shaw, D. L., & Weaver, D. H. (2013). *Communication and democracy: Exploring the intellectual frontiers in agenda-setting theory*. Routledge.

20. Mccombs, M. (2011). The Agenda-Setting Role of the Mass Media in the Shaping of Public Opinion.

21. P. Mayring. 2000. "Qualitative content analysis", *Forum on Qualitative Social Research*, Vol. 1, .[Google Scholar]

22. Reis, J., Benevenuto, F., de Melo, P. V., Prates, R., Kwak, H., & An, J. (2015, March). Breaking the news: First impressions matter on online news. In *Proceedings of the 9th International AAAI Conference on Web-Blogs and Social Media*.

23. Strapparava, C. and Mihalcea, R. (2007). Semeval 2007 task 14: Affective text. In Proceedings of ACL 2007.

24. S.M. Kim and E. Hovy. 2004. Determining the sentiment of opinions. In Proceedings of COLING.

25. S.M. Kim and E. Hovy. 2006. Extracting opinions,opinion holders, and topics expressed in online news media text. In Proceedings of the ACL Workshop on Sentiment and Subjectivity in Text.

26. Tesch, R. (1990). Qualitative research: Analysis types and software tools. Bristol, PA: Falmer

27. Weber, R. P. (1990). Basic content analysis. Beverly Hills, CA: Sage.

28. Wiberg, M. (2004). The Interaction Society: Theories Practice and Supportive Technologies. Idea Group Inc.