Sentiment Analysis and Insights about the Increasing Use of Artificial Intelligence by Businesses Amid the Coronavirus

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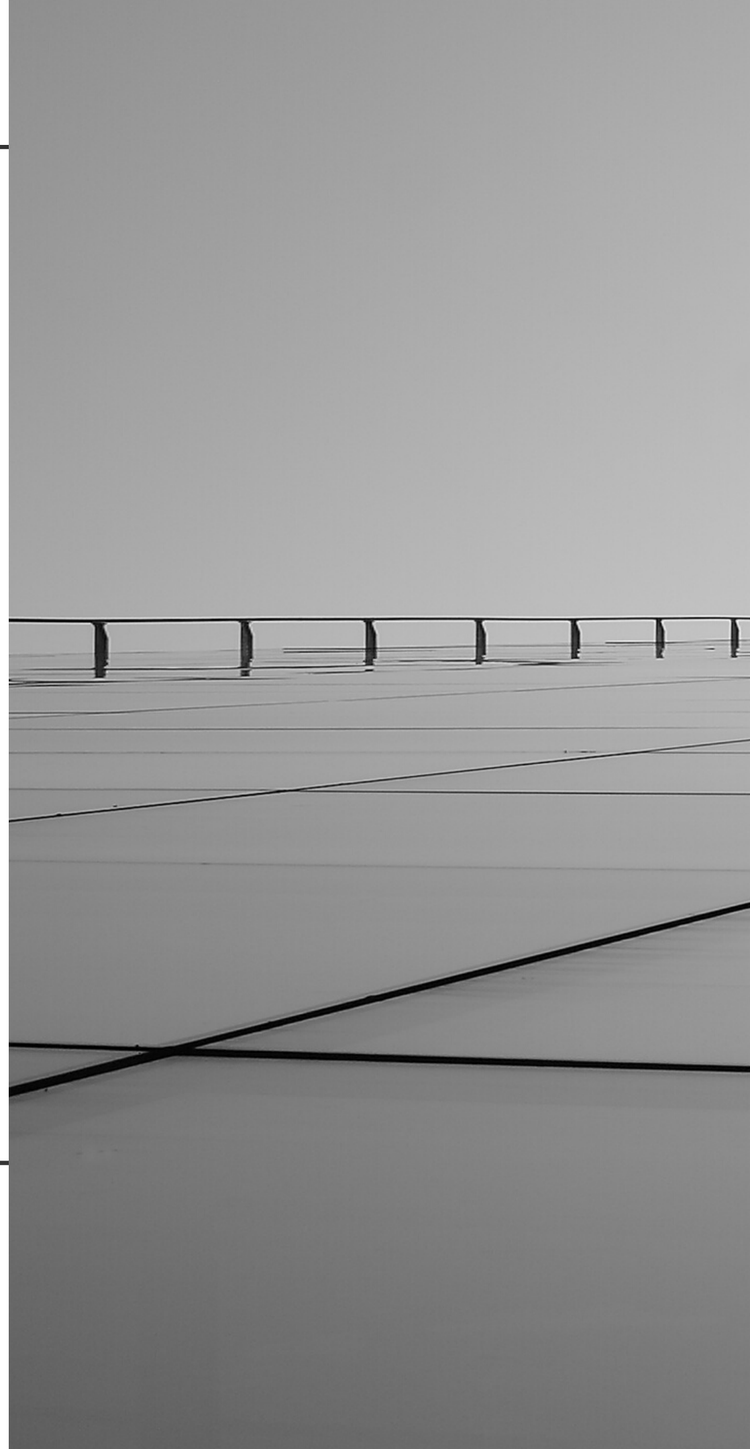
Agenda

1. Introduction
2. Research Methodology
3. Data Analysis
4. Insights & Recommendations
5. Conclusion



1. Introduction

- Research Objective

- Twitter, as the vehicle

- Why is this research important?

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2. Research Methodology

- Data is collected from the **Twitter** platform.
- Data is transformed and cleaned using **Python.**

Research Questions

- What are the most frequent words used about AI usage by businesses during the COVID-19 pandemic?
- What are the main topics and themes discussed about AI usage by businesses during the COVID-19 pandemic?
- What are the public sentiments about AI usage by businesses during COVID-19?
- What is the relationship between the identified topics and themes on AI usage by businesses?
- What are the correlations between the identified topics and themes on AI usage by businesses?
- What are the trends in the topics and themes identified during the studies periods?

3.
Data Analysis

What to expect:

- Word Frequency
- Subjectivity Sentiment Analysis
- Topic Labelling for Sentiment Analysis
- Trend Analysis
- Cluster Analysis with Heatmap
- Clustered Correlation Analysis

A. Word Frequency

- To determine the most common words found within the tweets collected.
- Can be useful to identify patterns or trends in public sentiment.
- the most frequent words: “business”, “artificialIntelligence”
- Other most frequent words include “science”, “economy”, “outlook”, “marketing”, pandemic.
- Technology keywords, such as “ai”, “webinar”, “robot”, “ml” (machine learning), “chatbot”, “automation”,

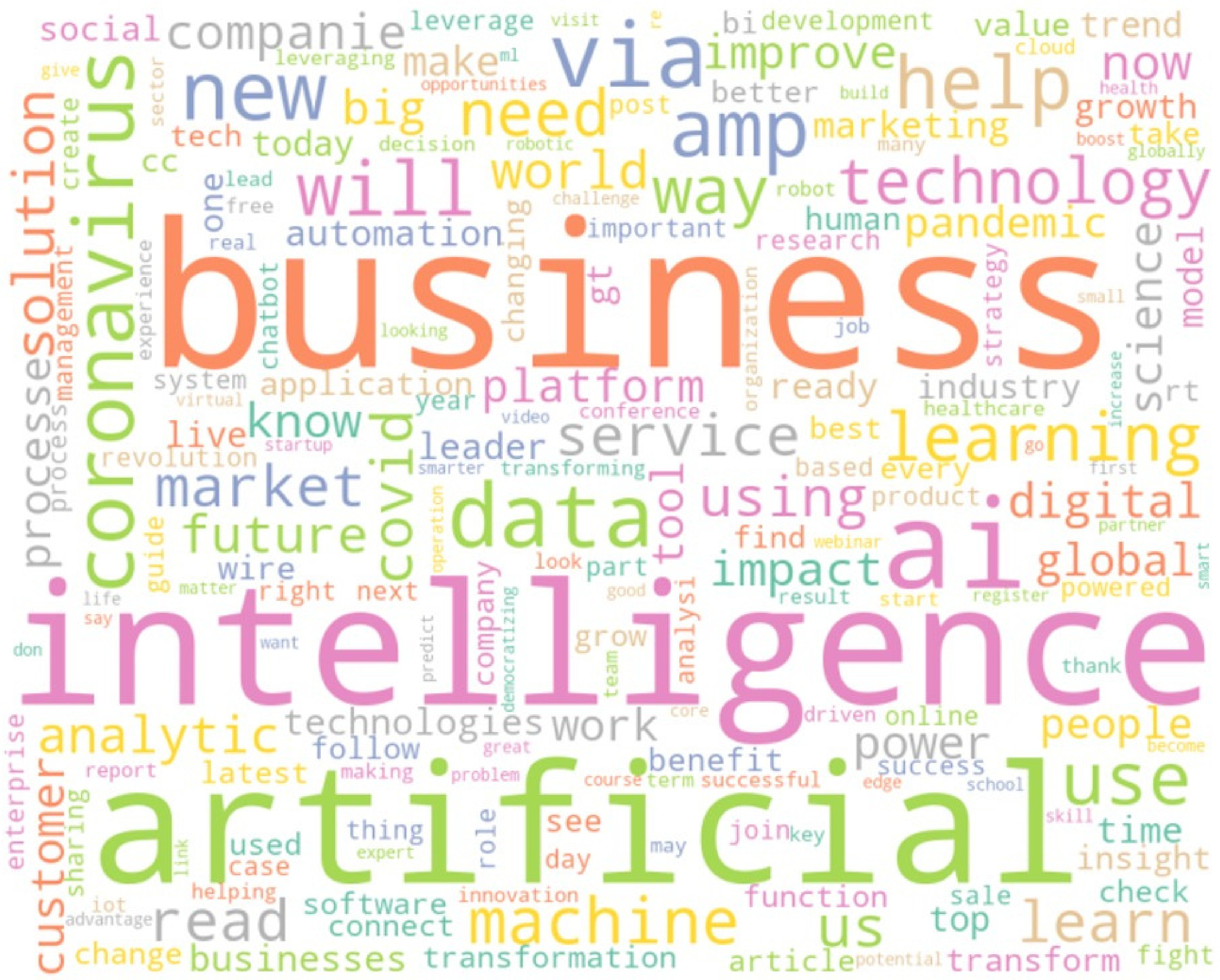


Figure 1: Word Cloud Representing Word Frequency Analysis

B. Sentiment and Polarity Analysis

- The Polarity and Subjectivity Float in Figure shows the polarity and subjectivity of the tweets collected in a spectrum.
- The polarity of each tweet is between -1 and +1, with -1 being strongly negative and +1 being strongly positive. Tweets with polarity close to 0 are neutral in tone.
- Most of the tweets are focused within the middle area of the chart (-0.50 and 0.50).

Figure 2: Polarity and Subjectivity Float

C. Polarity Sentiment Analysis

- To display the results of the polarity of the sentiment analysis, a bar graph was used.
- This allows for further scrutiny of the polarity of the tweets collected.
- Based on the information gathered, it shows that **42 percent of tweets are negative**, around **one-third (31.8%) is positive** and the **remainder (26.1%) is neutral**.

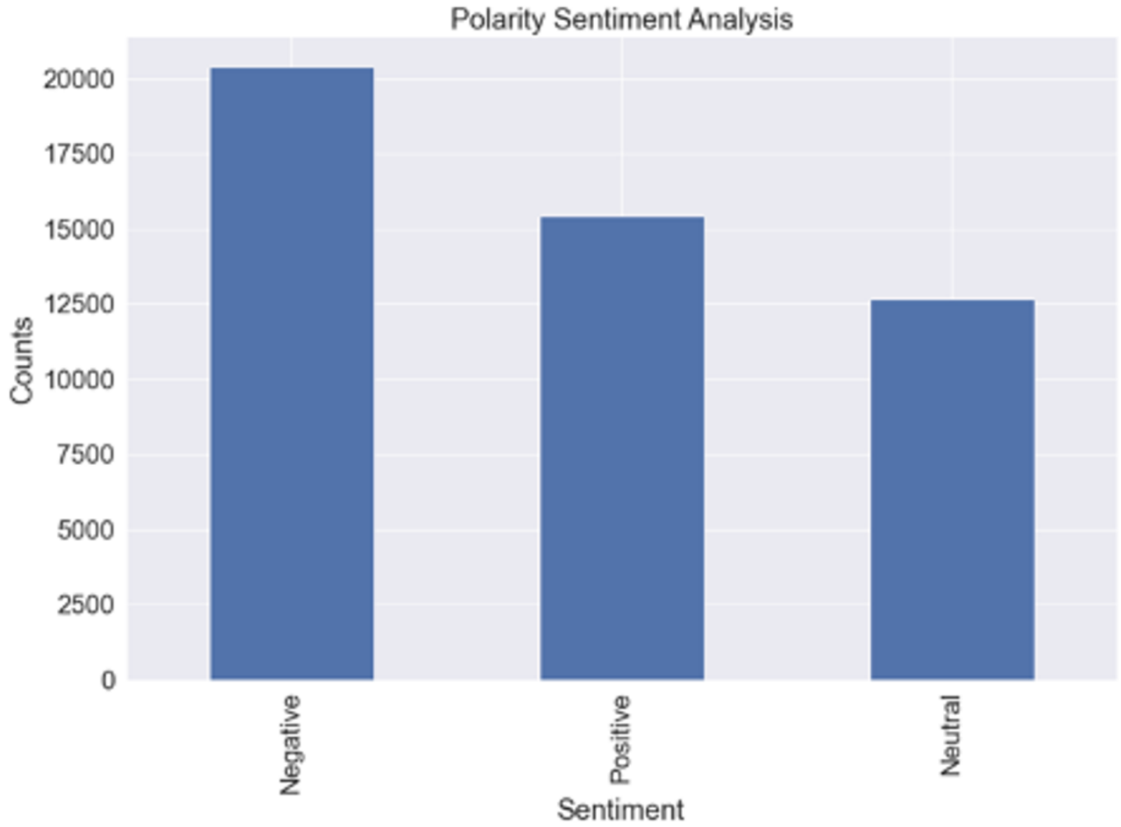


Figure 3: Polarity Sentiment Analysis in a Bar Graph

D. Subjectivity Sentiment Analysis

- To determine the subjectivity of each tweet.
- The majority of tweets collected for the process of this analysis were based on opinion (> 35,000), whereas fact-based tweets were limited to slightly more than 10,000 tweets.

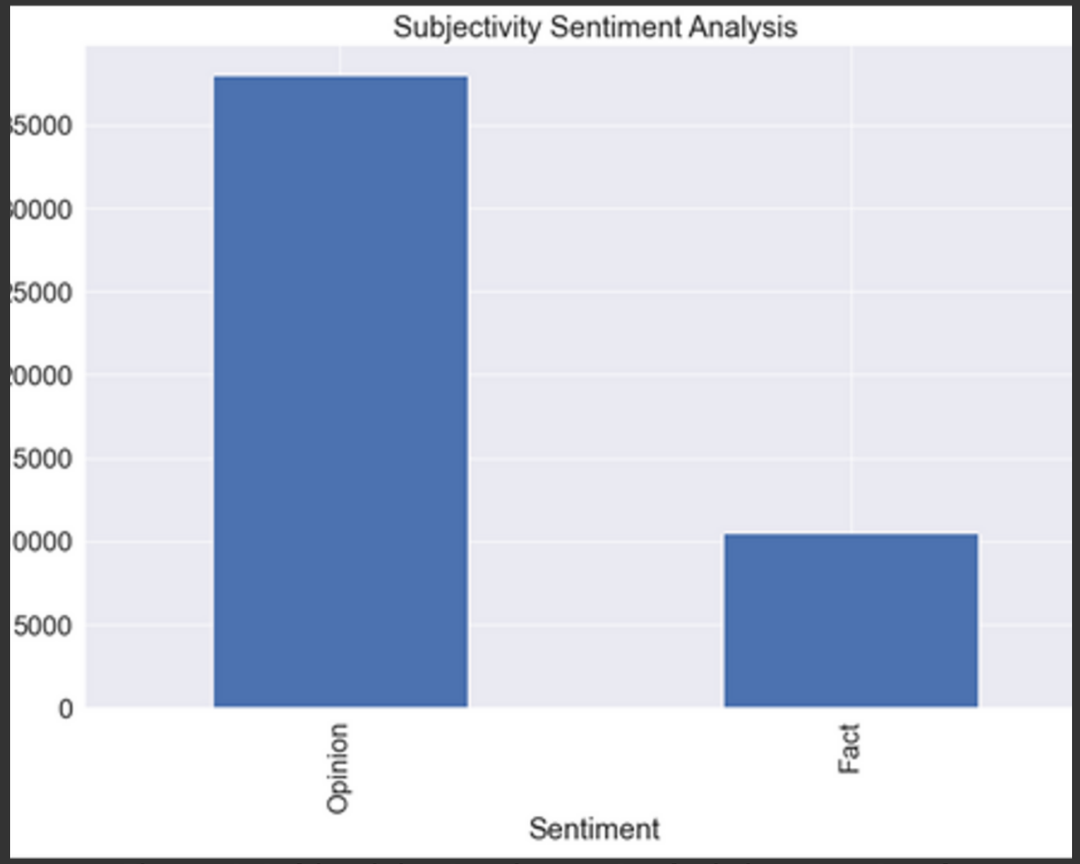


Figure 4: Subjectivity Sentiment Analysis in a Bar Graph

E. Topic Labelling for Sentiment Analysis

- The analysis focuses on specific topics of discussion.
- •The eight keywords are “AI”, “business”, “use of technology”, “technology”, “social aspect”, “COVID-19”, “big data” and “global.”
- Conducted to broaden the understanding of which words or topics were most discussed about the keywords that we chose most suited our research objective.

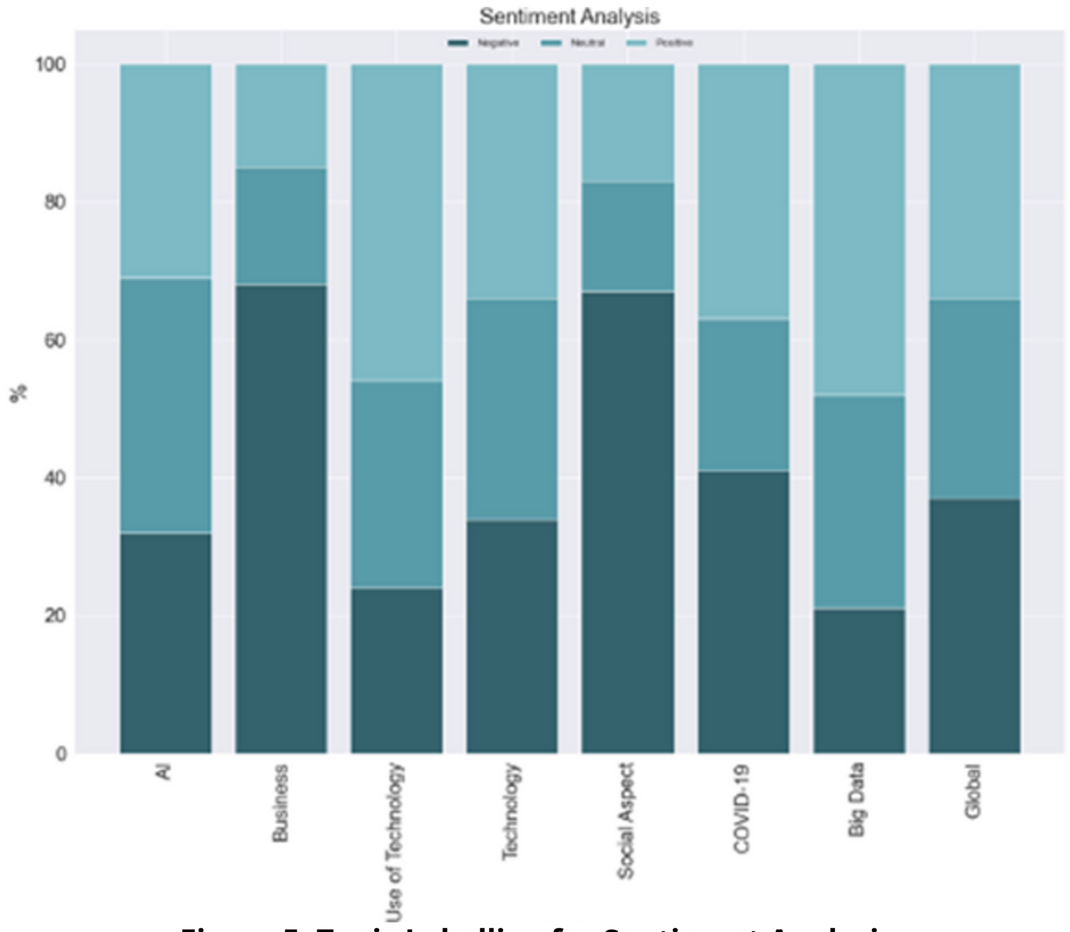


Figure 5: Topic Labelling for Sentiment Analysis

F. Trend Analysis

- This will help to see changes in the frequency of these topics as they change over time
- The keyword “social aspect” has shown larger spikes in April, while "AI & COVID-19" has shown higher spikes in August & September.

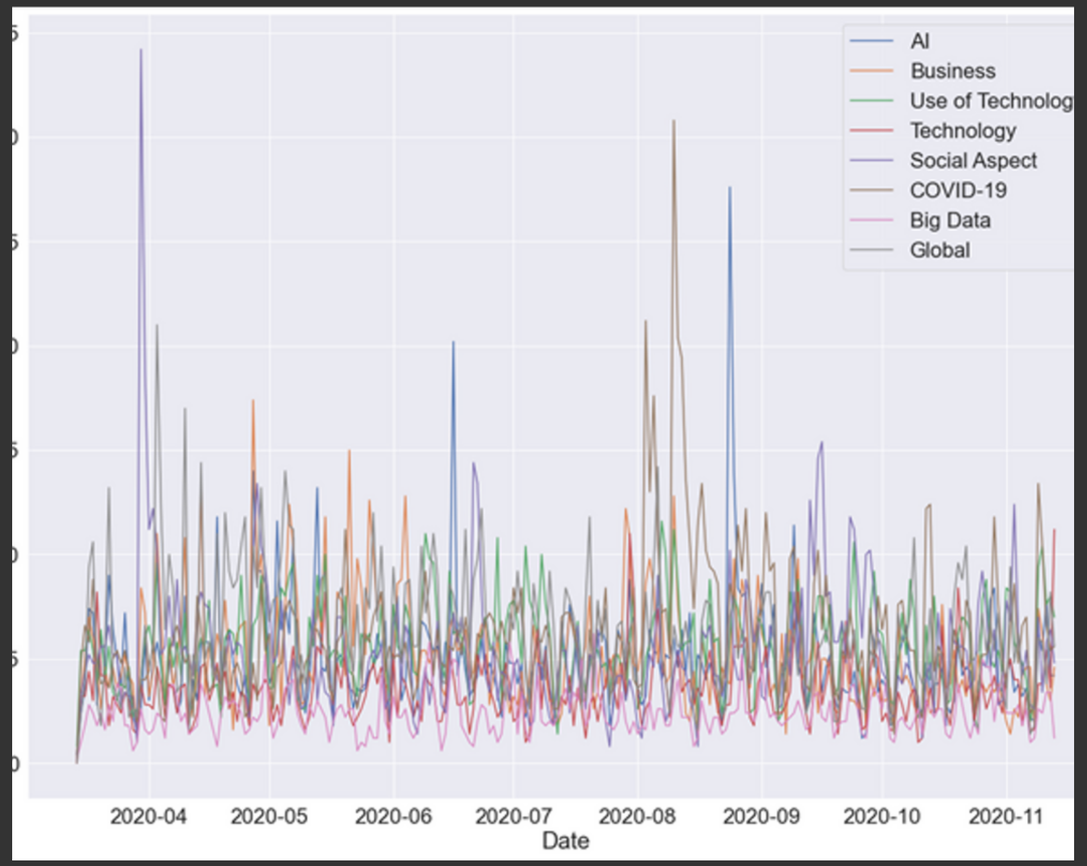


Figure 6: Trend Analysis for Topics

G. Clustered Correlation Analysis

- It sorts topics into a tree diagram based on their relatedness to each other.
- The closer topics are within the tree, the more closely they are related, and they become more dissimilar moving up the branches of the tree diagram.
- Global Business and AI are found more correlated.
- The keywords such as “technology” and “use of technology” together with “big data” and then all these together with “COVID-19” have a strong correlation.

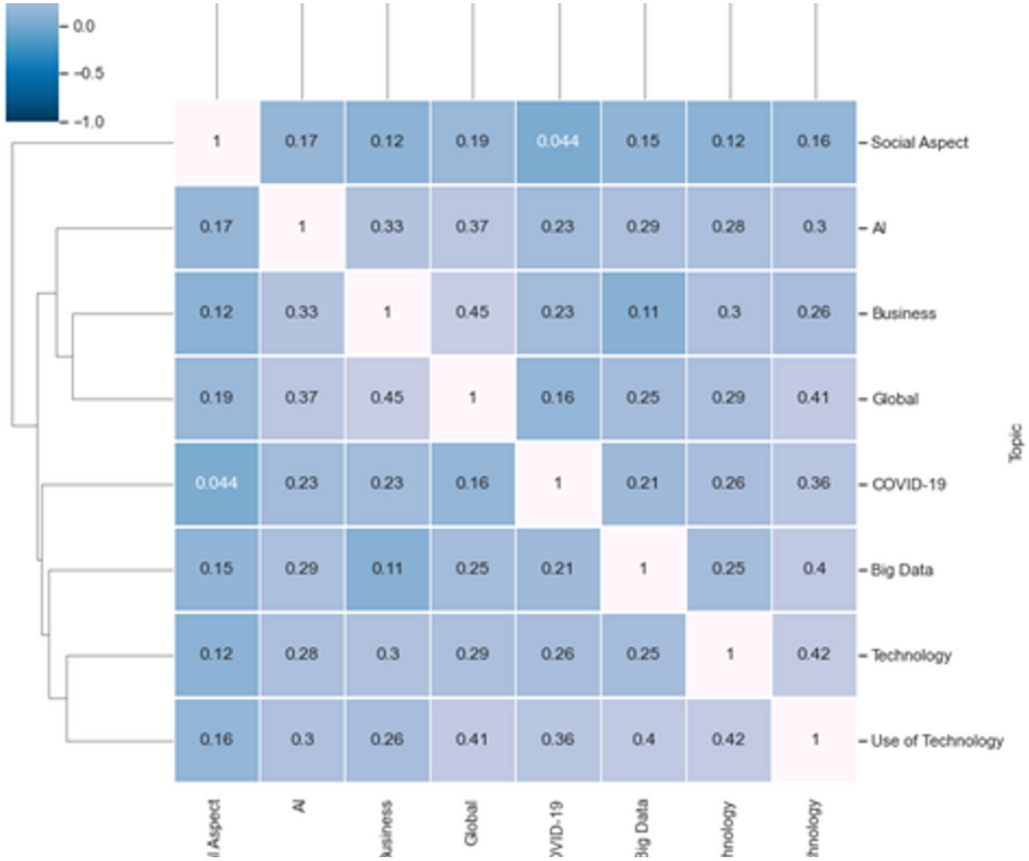


Figure 7: Clustered Correlation Analysis

4.
Insights & Recommendations

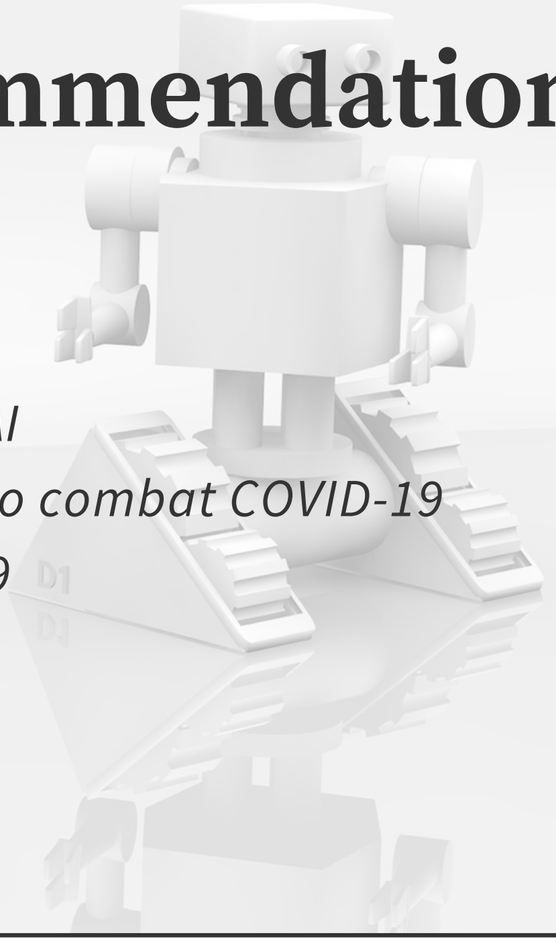
- Practical
- Theoretical
- Research Limitations

Practical Insights / Recommendations

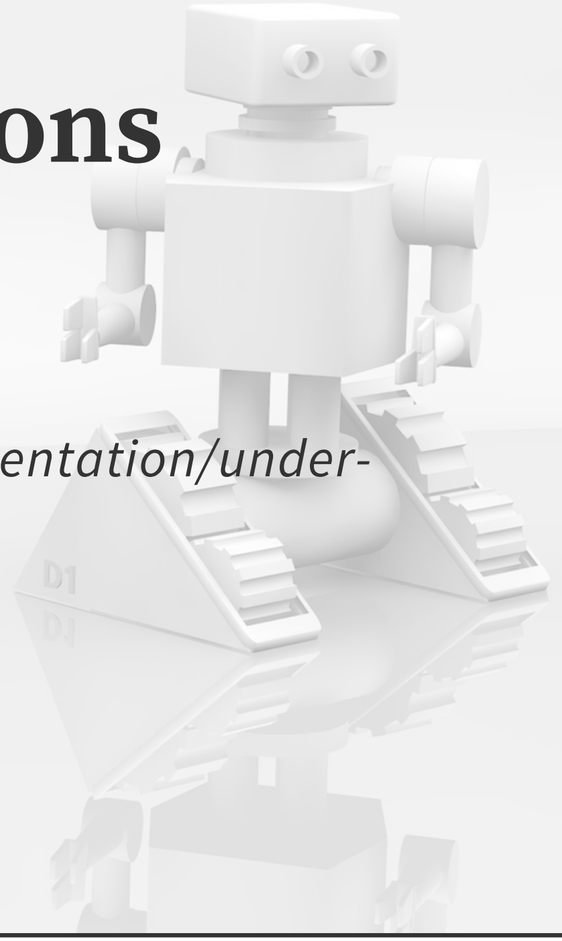
1. *Getting businesses to invest further in big data and AI initiatives*
2. *Getting businesses to invest in practical AI technologies*
3. *Provide more information to the public about big data and AI*
4. *Invest in more big data / AI solutions for social initiatives*
5. *Ensure strict compliance with all regulations related to data security and privacy rights*

Theoretical Insights / Recommendations

1. *Understanding the implications of "big data"*
2. *Exploring specific issues of public concern surrounding AI*
3. *Assessing public opinion towards healthcare measures to combat COVID-19*
4. *Study the impacts of technology adoption post-COVID-19*



Research Limitations



1. *English language tweets*
2. *Twitter, social media platform, potential over-representation/under-representation of user demographics*

5. Conclusion

Thank you!