

## Title

### *Analyzing Public Sentiment on the 2024 Finance Bill Through Social Media: A Comprehensive Study*

**Case study:** social media (YouTube, TikTok, Twitter(X), Facebook, etc.)

## Problem statement

“Kenya is on the verge of an economic turmoil due to the frequent tax increases, which are causing significant inflation. According to the government, the proposed 2024 Finance Bill is supposedly supposed to assist them familiarize policies to govern collection of revenue with an intention of helping ease the self-inflicted inflation.” This statement by the authors, is a clear indication of the distrust in the whole finance bill menace.

Through text mining on social media a detailed investigation can be done on the available public posts through hashtags, topics or lexicons for a comprehensive study, **to help us understand the mood, attitude and Kenyans opinion on the topic of finance bill 2024.** Social media gives its audience an environment where they can express themselves freely, therefore it is possible to mine the actual thoughts of the Kenyan people about any trending topic.

## The Finance Bill 202 Narrative

Basically, the whole finance bill issue was not well received by the Gen zs and Millennials of the Kenyan population, therefore they turned into social media to **express their frustration and anger**, especially on YouTube, TikTok and Twitter(X) spaces through live video and audio recordings, which attracted massive audience who would again express their **views** through commenting, responding and reposting while resharing these audios or videos which accumulated a very wide audience.

## Methodology

Public **posts**, statuses, **comments**, **responses**, and or **feedbacks** are safely secured on social media platforms, cloud databases or infrastructure, basically, **special APIs** supplied to trusted social media developers as tokens will be used to access and retrieve information relevant to this study. Special algorithms are modelled with **SQL queries** where relevant, which will be able to **extract** and **search our specific items** of interest with financial bill hashtags or lexicons and in other cases keywords.

## Processing the Data

Data will be retrieved in Json format; however, a conversion algorithm will be used to convert this said data into readable data **in a csv file**, able to be loaded onto any visualization software for analysis and representation.

## Task at a glance

Tasked to set up a cloud computing infrastructure, our idea is to utilize text mining algorithms as the architecture behind accessing the social media cloud databases, hence to depict the cloud computing infrastructure, then analyze and visualize these data.

## Challenges

**Twitter:** `"title":"Client Forbidden","required_enrollment":"Appropriate Level of API Access","reason":"client-not-enrolled",`

**Tiktok:** Can only mine video streams

**Youtube:** Possible to mine views on a certain and specific topic

## Conceptual framework

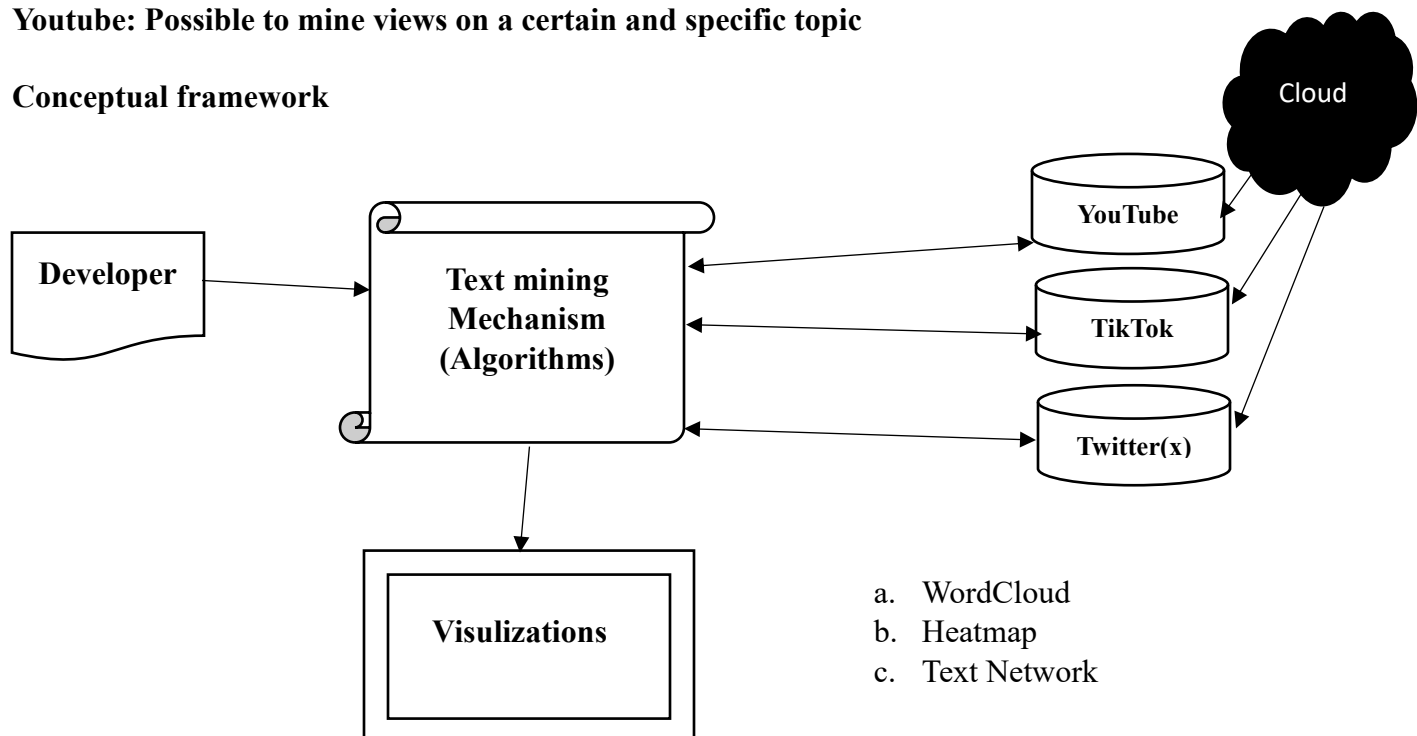


Figure 1. Sample Mechanism behind Text mining (Cloud Computing Infrastructure)

a. Code snippet

```
import googleapiclient.discovery
import googleapiclient.errors

api_service_name = "youtube"
api_version = "v3"
DEVELOPER_KEY = "AIzaSyD... "

youtube = googleapiclient.discovery.build(
    api_service_name, api_version, developerKey=DEVELOPER_KEY)

request = youtube.commentThreads().list(
    part="snippet",
    videoId="...",
    maxResults=100
)

response = request.execute()

for item in response['items']:
    print(item['snippet']['topLevelComment']['snippet']['textDisplay'])
```

Figure 2: Algorithm to mine data from social media cloud DBs

b. Raw data

```
We are 54M citizen, for 5years each mwananchi 50bob hatuezi maliza hii?! N how much do gov take from us?! Nkt!!
Imf conditions are sweet
Kenya's mta amkah,,,
All I&#39;m hearing is we&#39;re broke, broke, broke, broke, did I say broke again.
😂😂.....and now I wish I took that business class i don&#39;t understand 😂
Waaaaaa.....sina maoni
ni parasetoo ni gapi sababu kubwa parasteto hazina watu wako saw namimi najuu walikuwa wako navsheya za parasteto is big bozy or big mum haiwezekaninkuwa sheyaz
my dia hizo zote natumika hakuna hata baki katika hizo peaa ndio maana dollar unashuka thamani hatuna baki katika bank kuu kisa tunasema dillar iko juu kisha exj
Tayari mps wameanza kununuliwa ndiyo bill ipite.
Mungu tunakuomba upunguze tamaa ya pesa kwa viongozi wetu.
If you all watched today&#39;s debate ,you can just clearly see how Moses Kuria is clearly evading questions asked by our own Yvonne Okwara .
State House will get an extra1000kg of sh notes1000,Gachagua will receive about 500kg extra of sh 1000 notes .Mungu asaidie Wanjiku.😂
When Uhuru was going we didn&#39;t owe pple many money like this ooooo better this black man to stop his Nonesense ooo
Where can I get such a blazer
I wonder whether the slogan &#39;kulipa ushuru ni kujitegemea&#39; makes sense or still exists koz naona tunalipa ushuru ilhali the national debt is ballooning 😂
Euro bond na China ni shylocks at a higher level
Watching sudi abd zakayo going around ... the first thing that comes to my mind is kenya debt.....every government that comes in come to steal!!!!!!!!!!👤
Who cares about the swelling debt? Yvonne will you marry me?❤️
With me i am comfortable paying my taxes as long as they &#39;re being stolen and given to President Biden Ruto.
All that is in their 🍑🍑🍑 stomachs
I can assure you that 70% of these loans were misappropriated. They aim to establish their empires at our expense, but the Kenyan voter is not discerning; they w.
They be fighting china cheap loans and turn a blind eye on IMF and EU expensive loans that have been in Kenya for decades depriving Kenya to poverty .
Kenya-IMF republic
Expect to VAT to hit 23% by 2027 and prepare for a plethora of stealth taxes.
Damn
The question here is, WHERE DID THE MONEY GO TO? WHAT HAPPENED TO THE MONEY?
Zakayo found 8.6Trillion in office, he has borrow more 1.5trillion in less than 2yrs
Ruto told us he has been paying debts, amelipa ngapi?
hii umavi ya women reps cjuj senators governors umavi tupu
```

Figure 2: Sample raw data from YouTube

## c. Structured data

index	author	published_at	updated_at	like_count	text
0	@janetnjue3970	2024-06-27T17:31:31Z	2024-06-27T17:31:31Z	1	Thank you Yvonne okwara well explained
1	@abdallasarai6327	2024-06-27T05:50:50Z	2024-06-27T05:50:50Z	0	We are 54M citizen, for 5years each mwananchi 50bob hatuezi maliza hii?!! N how much do gov take from us?! Nkt!!
2	@davidtimayio964	2024-06-18T09:32:18Z	2024-06-18T09:32:18Z	0	Imf conditions are sweet
3	@AnnMwale	2024-06-18T08:02:20Z	2024-06-18T08:02:20Z	0	Kenyans mta amkah...
4	@Showyouaroundme	2024-06-15T04:55:50Z	2024-06-15T04:55:50Z	3	All I&#39;m hearing is we&#39;re broke, broke, broke, broke, did I say broke again.
5	@Davidmuchigiri-wv3uy	2024-06-14T00:52:31Z	2024-06-14T00:52:31Z	3	😓😓.....and now I wish I took that business class i don&#39;t understand 😓
6	@nkathagitonga5229	2024-06-13T21:52:19Z	2024-06-13T21:52:19Z	0	Waaaaaa.....sina maoni
7	@feiswalsalim2117	2024-06-12T21:41:58Z	2024-06-12T21:41:58Z	0	ni parasestoo ni gapi sababu kubwa parasteto hazina watu wako saw namimi najuu walikuwa wako navsheya za parasteto is big bozy or big mum haiwezekaninkuwa sheyaz hazisaodi kuogeza jwa pesa conrol bei ya dollarz
8	@feiswalsalim2117	2024-06-12T21:39:14Z	2024-06-12T21:39:14Z	0	my dia hizo zote natumika hakuna hata baki katika hizo peaa ndio maana dollar unashuka thamani hatuna baki katika bank kuu kisaa tunasema dillar iko juu kisha export hatuna jwa wingi tunategemea inporty only
9	@josephmuiga-gx8vu	2024-06-11T19:01:31Z	2024-06-11T19:01:31Z	0	Tayari mps wameanza kununuliwa ndiyo bill ipite.

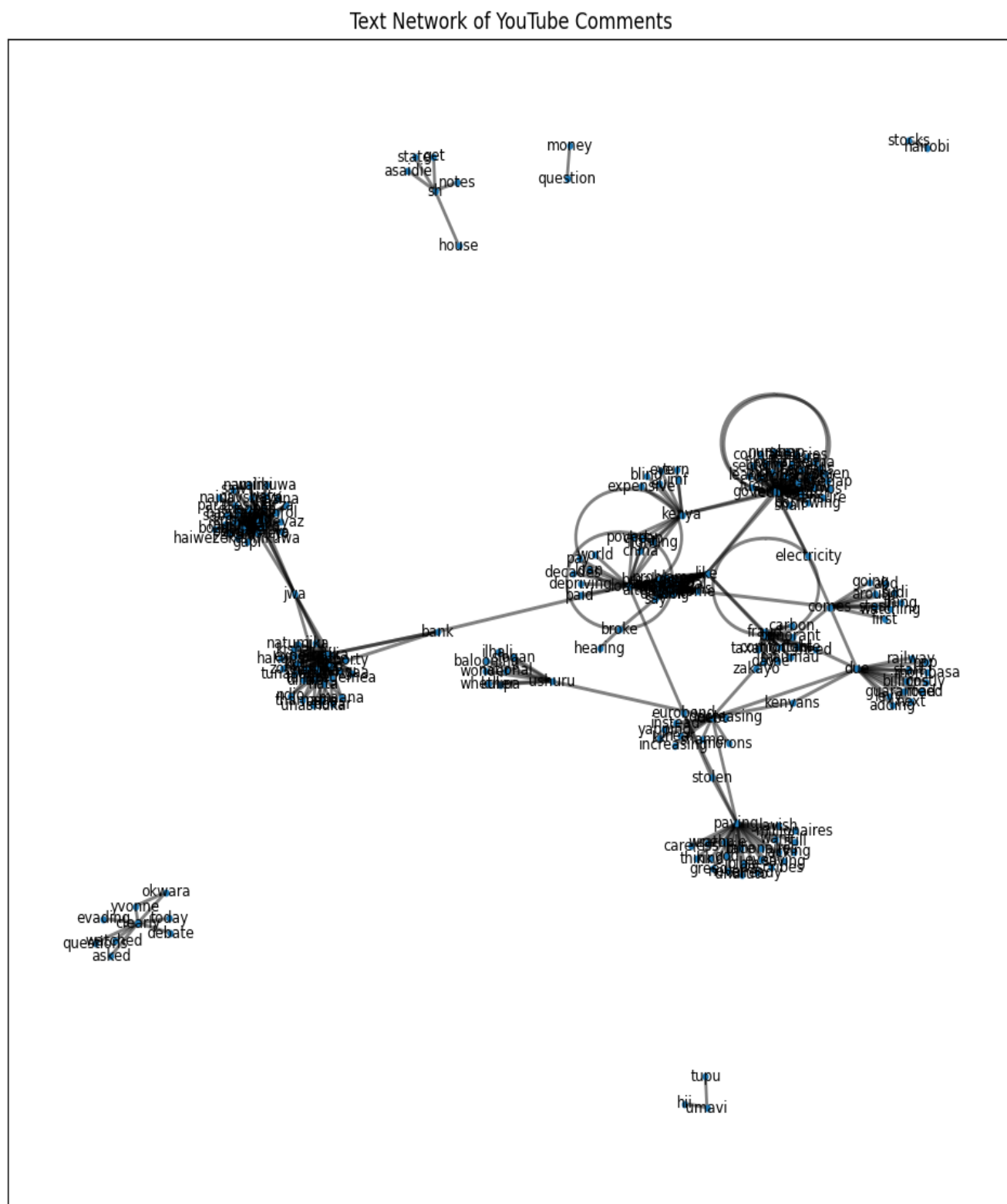
Figure 2: Sample structured data

## Tools

- i. Google Collaboratory
- ii. YouTube Data API v3
- iii. Python libraries



### c. Text Network



**Figure 2: Text Network Showing Text association**

**Task complete (Answered)**

- i. Identify a case study and develop a cloud computing infrastructure to address mentioned problem in your choice case study. **Finance bill 2024.**
- ii. Identify data sources. **YouTube, TikTok, Twitter(X), Facebook)**
- iii. Set up a cloud computing infrastructure. **Social Media data mining algorithms.**
- iv. Process and analyze identified data. **Python libraries**
- v. Visualize. **Python libraries (Word cloud, Heatmap and Text network)**
- vi. Present