From Classrooms to Stock Charts: Navigating the Evolution of Distance Learning and Zoom's Financial Triumph Amidst COVID-19 Quarantine

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Abstract - **This paper embarks on a compelling exploration of the profound repercussions of the COVID-19 pandemic on education, encapsulating the indelible mark it has left on our collective experience. Utilizing a dataset spanning a specific timeframe, the study mainly examines the impact of COVID-19 on the number of people graduating and the increasing popularity of online meeting applications with the transition to distance education. The findings provide valuable insights into the effectiveness of people's productivity on distance education, highlighting their crucial role in increasing the value of online meeting applications in this process.**

Index Terms - covid-19, education, distance learning, online meeting

I. INTRODUCTION

The advent of COVID-19 has profoundly altered our lives, causing widespread disruptions and unprecedented challenges. The pandemic's impact on education has been particularly significant, ushering in a 'new normal' characterized by social distancing, lockdowns, and a shift to online learning. As we grapple with the far-reaching consequences of this global crisis, it becomes crucial to find effective solutions.

The COVID-19 pandemic compelled us to rethink how we socialize, work, and engage in education, leading to global closures and quarantines. In response, education systems shifted to online formats. This assignment concentrates on the impact of COVID-19 on distance education, exploring its effects on graduation rates, student letter grades, stock prices of online meeting platforms, and the usage rates of these apps.

II. HYPOTHESES

H1: Distance learning positively affects the number of graduates from faculty.

H2: Distance learning positively affects the letter grade success of university students.

H3: Distance learning positively affects the usage of online meeting apps.

H4: Distance learning positively affects the stocks of online meeting apps.

III. METHODOLOGY

In this study, we investigate the impact of the COVID-19 pandemic on distance education, analyzing graduation rates, student letter grades, stock prices of online meeting platforms, and app usage rates. Our comprehensive approach combines qualitative and quantitative data from diverse sources.

We utilized TUIK's data for graduation rates, providing reliable insights into changes during the pandemic. Zoom's stock prices from Yahoo Finance were employed to gauge the financial impact on online meeting platforms. To understand the academic impact, GPA statistics from Bilkent University were incorporated, focusing on student letter grades during the shift to online learning.

Thorough data cleaning procedures were implemented to address missing data and outliers. RStudio and R codes facilitated data visualization for a clear presentation of trends.

By integrating data from TUIK, Yahoo Finance, and Bilkent University, our methodology ensures a robust exploration of the COVID-19 pandemic's multifaceted impact on education and related sectors.

IV. DESCRIPTIVE ANALYSIS

This section presents a comprehensive descriptive analysis of various datasets utilized in this study. Table 1 provides insights into the number of graduates from a faculty, illustrating trends and variations between the years 2016-2022. The data exclusively originates from the Turkish Statistical Institute (TUIKS).

Shifting the focus to postgraduate education, Table 2 delves into master's degree graduates, offering a detailed breakdown of the number of graduates across the same timeframe, 2016-2022. Like Table 1, the master's degree graduate data is exclusively sourced from TUIKS.

Table 3 introduces a financial perspective, showcasing average Zoom stock prices from 2019 to 2023. This financial dataset is obtained from Yahoo Finance, providing a broader context for understanding trends in stock performance.

Expanding our analysis, Table 4 brings an academic lens by presenting course GPAs from 2016 to 2023, sourced from Bilkent University offerings. This dataset sheds light on the academic performance trends within the context of course grades over the specified period.

These four tables collectively provide a multifaceted understanding of the dynamics of faculty and master's degree graduates, financial trends in Zoom stock, and academic performance based on course GPAs.

n	mean	sd	median	min	max	1st Qua	3rd Qua	skewness	kurtosis
7	3631901	355612.8	3522998	3230876	4130514	3362766	3906694	0.259068	-1.84778

Table1. Graduates from faculty between years of 2016-2022 descriptive statistic table using R Studio 2022.[1]

n	mean	sd	median	min	max	1st Qua	3rd Qua	skewness	kurtosis
7	179392.7	61654.42	173715	77153	256496	158184.5	216008	-0.1520599	-1.281225

Table2. Graduates from master degree between year of 2016-2022 descriptive statistic table using R Studio 2022.[1]

	n	mean	sd	median	min	max	1st Qua	3rd Qua	skewness	kurtosis
2019	8	80.54	10.29	77.97	68.04	95.51	73.35	89.51	0.21	-1.78
2020	12	268.44	145.99	253.72	76.3	478.36	143.4	368.2	0.23	-1.59
2021	12	308.68	66.59	320.43	183.91	387.03	271.4	372.5	-0.47	-1.16
2022	12	100.3	26.01	101.72	67.74	154.28	79.16	110.28	0.55	-0.83
2023	12	69.68	5.05	70.49	59.98	75	67.66	73.93	-0.66	-0.97

Table3. Stock prices of Zoom App from 2019 to 2023 descriptive statistic table using R Studio 2022.[2]

	n	mean	sd	median	min	max	1st Qua	3rd Qua	skewness	kurtosis
ECON103	18	2.46	0.5	2.36	1.74	3.64	2.15	2.65	0.84	-0.21
ENG101	18	2.74	0.23	2.73	2.38	3.26	2.59	2.84	0.66	-0.23
MATH101	18	2.02	0.39	1.9	1.43	2.81	1.76	2.31	0.38	-1.06

Table4. Course GPA's from 2016 to 2023 descriptive statistic table using R Studio 2022.[3]

V. IMPACT OF COVID-19 ON TURKEY'S EDUCATION SYSTEM

Since the first confirmed COVID-19 case in Turkey on March 11, 2020, approximately 14 million cases have been recorded, with 94,000 lives lost. Over two years, Turkey implemented various measures, including flight suspensions, lockdowns, remote learning, and closures of establishments. The most significant spike in cases occurred in April 2021, leading to a "full lockdown" from April 29 to May 17, 2021.

The pandemic prompted a swift transition to online learning, posing challenges and opportunities. While it allowed education to continue amid social distancing, it highlighted issues of digital inequality. The number of faculty graduates increased during this period, contrasting with a decrease in master's degree completions.

During the COVID-19 pandemic, a noteworthy trend emerged in the realm of education. The data reveals a distinctive pattern in graduate numbers, specifically within the context of master and faculty degrees.

While master's degree completions experienced a decline over the years 2020 and 2021, reaching 173,715 in 2020 and 256,496 in 2021, faculty graduates, in contrast, exhibited a notable increase. The numbers for faculty graduates surged from 3,770,545 in 2020 to 4,035,843 in 2021, and further to 4,130,514 in 2022.

This inverse relationship suggests a potential shift in educational priorities during the challenging period of the pandemic, with a notable rise in the pursuit of faculty degrees alongside a decline in master's degree completions. The data sheds light on the dynamic changes in academic preferences and outcomes during the unprecedented times of COVID-19.
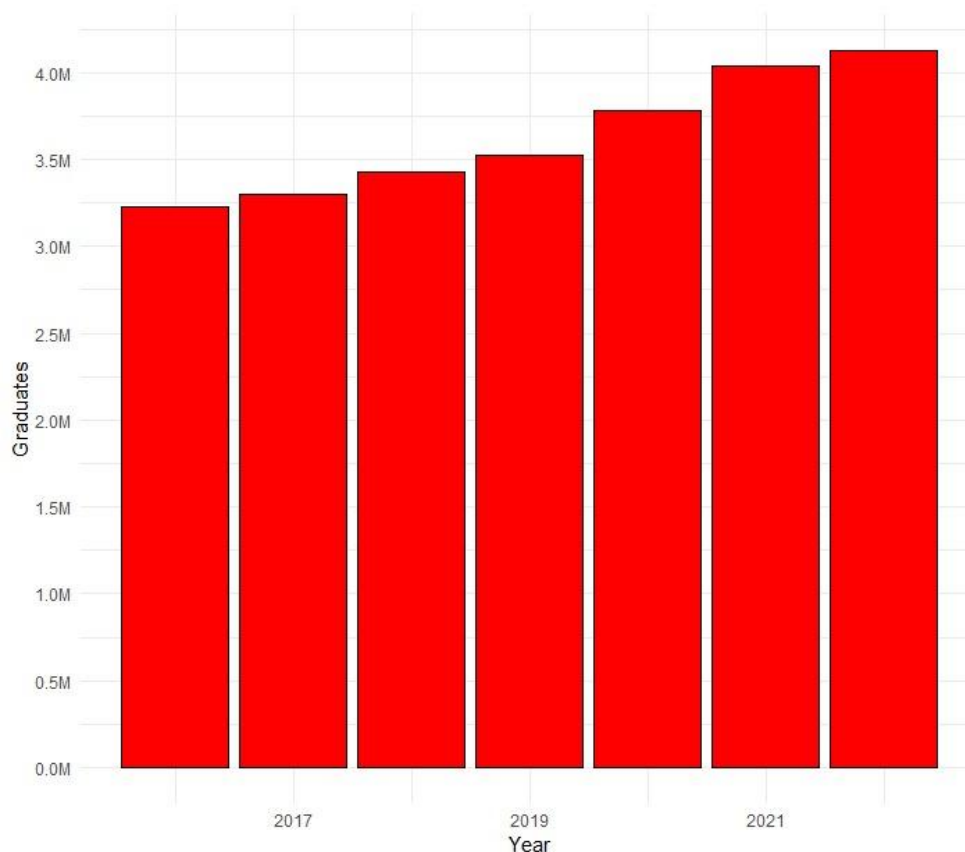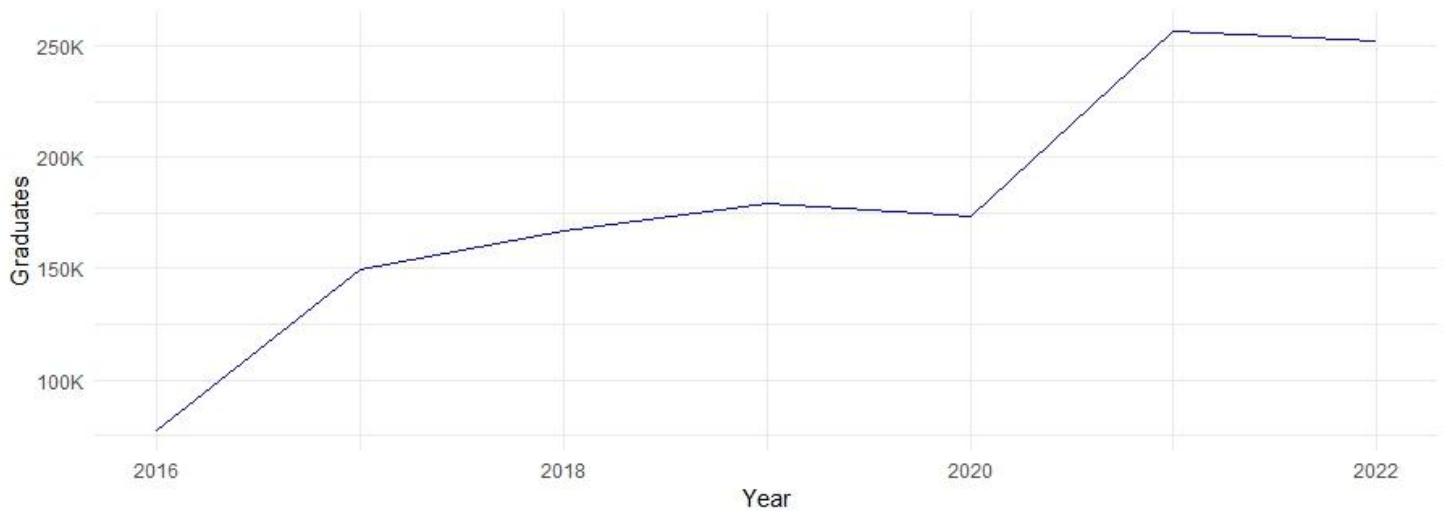

Figure 1. Number of Graduates from Faculty.[1]

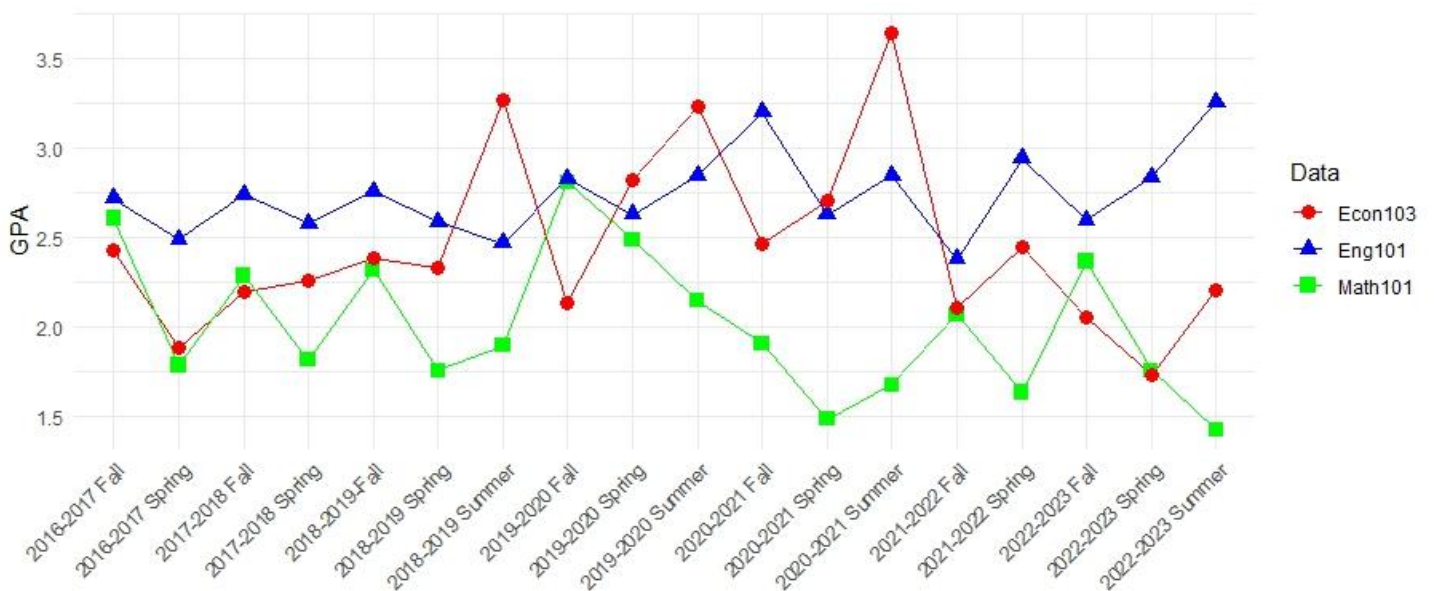*Figure 2. Number of Graduates from Master Degree.*[1]

Figure 3. Course GPA datas from Bilkent University.[3]

The examination of course GPA data spanning several semesters, focusing on courses such as ENG101, ECON103, and MATH101, reveals nuanced patterns that align with the implementation of online education following the 2019-2020 COVID-19 pandemic.

ENG101 showcased fluctuations in GPA, with a noteworthy upswing in the Fall of 2020-2021, coinciding with the initiation of online education.

ECON103 exhibited a similar trend, experiencing an increase in GPAs during the same semester, suggesting a potential positive impact on academic performance.

In contrast, MATH101 demonstrated a diverse GPA pattern, with the Fall of 2019-2020 showing lower GPAs, possibly indicating challenges or adjustments to the new online learning format.

Overall, the data suggests a transitional period in the Fall of 2019-2020, with subsequent semesters demonstrating signs of stabilization and, in some cases, improvement. The analysis underscores the dynamic interplay between online education and course performance, emphasizing the adaptability of students and educators in response to changing learning environments.

VI. QUARANTINE EFFECT ON ONLINE MEETING APP ZOOM'S VALUE ON STOCK MARKET

The trajectory of Zoom's stock value serves as a compelling narrative, reflecting the dynamic shifts prompted by the COVID-19 pandemic. In the wake of quarantine measures, the platform experienced an unprecedented surge in fortunes. From a modest $79 in May 2019, Zoom's stock reached a remarkable peak of $478.36 by November 2020, embodying an extraordinary ascent that paralleled the global pivot towards remote work, online education, and virtual connections.

This surge wasn't merely a financial phenomenon; it was a testament to Zoom's role as a cornerstone technology during a time of societal upheaval. Investors keenly recognized its pivotal position in shaping the emergent "new normal," symbolizing adaptability and resilience. The financial trajectory of Zoom became a symbol of hope and connectivity for businesses, educators, and individuals navigating the uncharted waters of social distancing.

However, the narrative took a turn with the gradual easing of lockdowns and the gradual return to pre-pandemic routines. The stock graph exhibited a downturn reflective of the evolving landscape—schools cautiously reopening,

offices gradually welcoming back employees, and a collective yearning for in-person connections. Zoom, once hailed as the hero of quarantine, found itself navigating a transformed marketplace.

Delving into the specific financial data underscores the intricate dance between Zoom's stock performance and key events during the pandemic. The fluctuations in stock prices became entwined with the broader narrative of a world grappling with a global health crisis. Notably, as universities made decisions regarding post-COVID online education strategies, Zoom's stock witnessed recalibrations, reflecting the nuanced shift in priorities towards traditional modes of interaction.

In essence, the rise and fall of Zoom's stock, as depicted by the data, encapsulates a poignant chapter in history. It not only showcases the interconnectedness of global events but also underscores the influential role of technology, reflecting the adaptability of societies in navigating unprecedented challenges and shaping the economic landscape in the process.
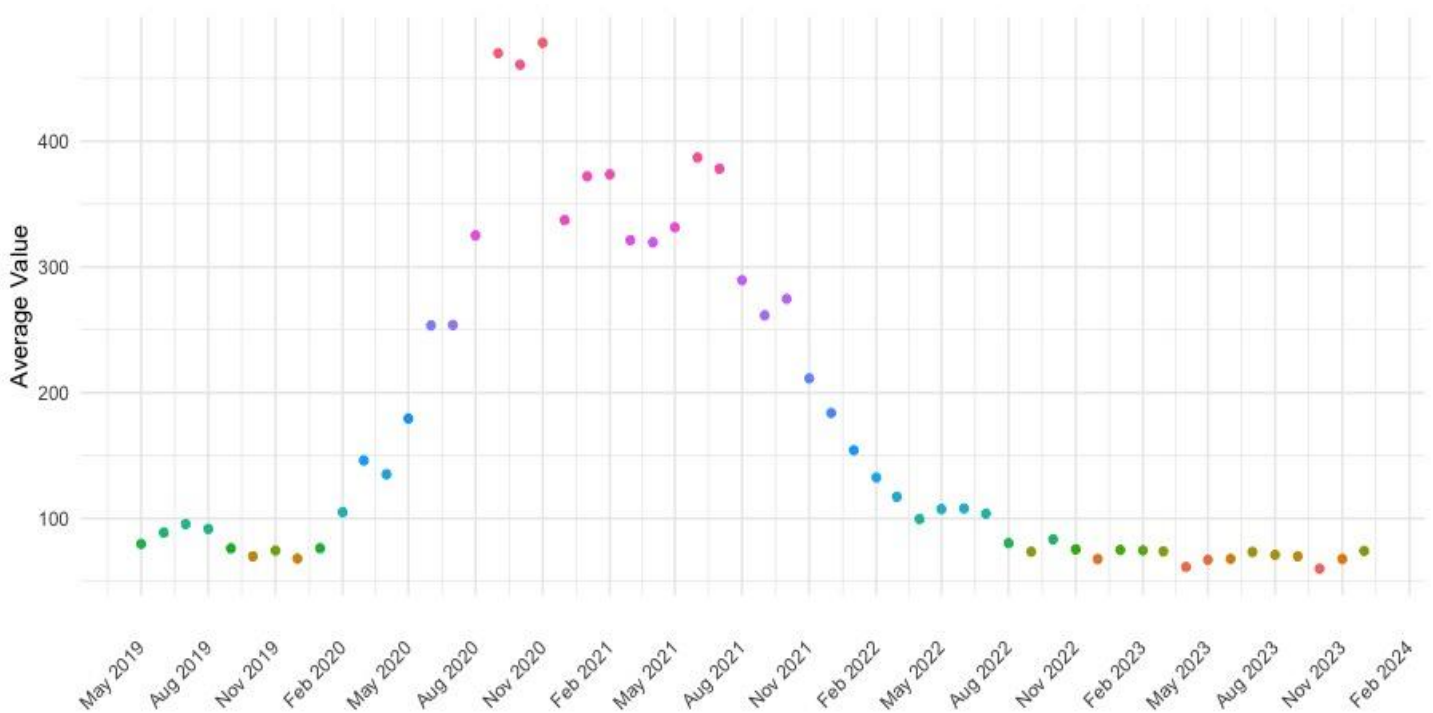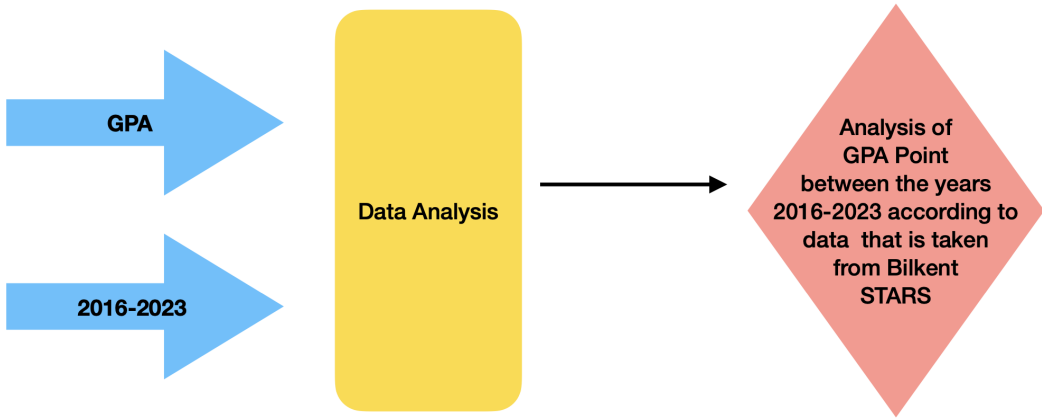

Figure 3. Stock Prices of Zoom App.[2]
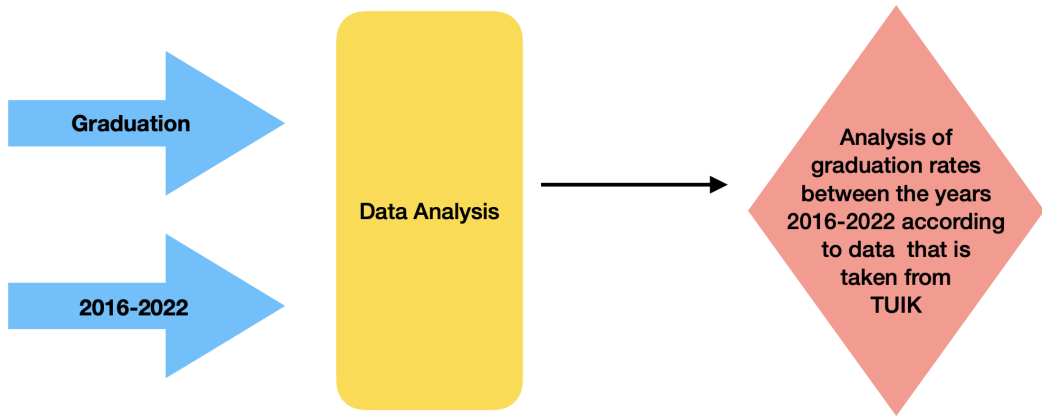
VII. GRAPHICAL ABSTRACTS

Data Set: GPA Points Over the years

Inputs

GPA

2016-2023

Data Analysis

Analysis of GPA Point between the years 2016-2023 according to data that is taken from Bilkent STARS

Data Set: Graduation Rates Over the years

Inputs

Graduation

2016-2022

Data Analysis

Analysis of graduation rates between the years 2016-2022 according to data that is taken from TUIK

Data Set: Zoom Stock Rates Over the years

Inputs

Zoom Stocks

2019-2023

Data Analysis

Analysis of Zoom Stock Rates between the years 2019-2023 according to data that is taken from Yahoo Finance
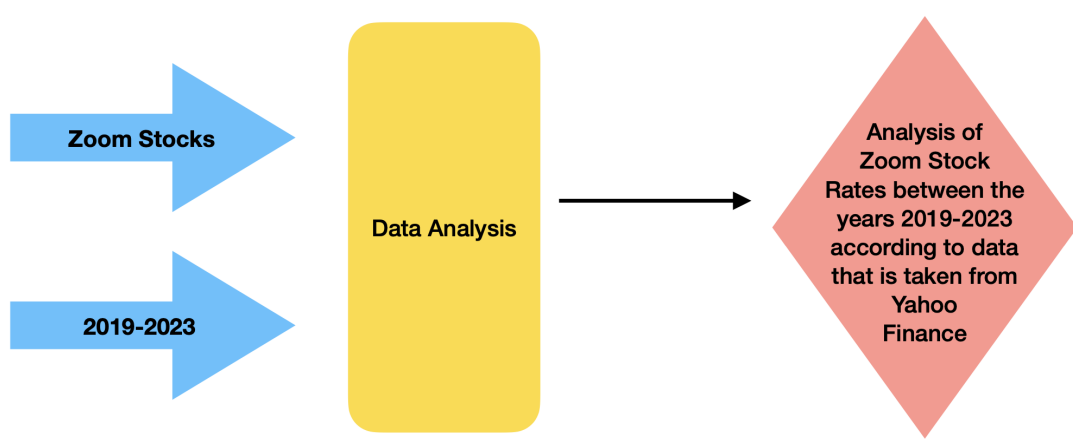
VIII. REFERENCES

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