Analysis of Layoff During the Period from 2020 - 2024

Devesh Kumar, Don Paul, Jaiyash Anmol
Bachelor's Program in Computer Science Engineering
Supervised by: Dr.Sunil.C.K

Abstract: This analysis delves into the concerning trend of recent tech industry layoffs, investigating their potential link to a looming recession. We employ a data-driven approach, visually encoding key economic indicators, unemployment trends, and historical recessionary patterns. By examining the factors driving these layoffs and their broader economic consequences, we aim to illuminate whether they signal a more significant economic slowdown. This study provides valuable insights for individuals, businesses, and policymakers navigating the current economic climate. It empowers individuals to make informed career decisions, aids businesses in developing contingency plans, and informs policymakers in crafting effective economic strategies. Ultimately, by understanding the relationship between recessions and layoffs, we can better prepare for potential economic challenges.

1 Introduction

The recent tech industry layoffs raise concerns about a recession. We analyze data on economic indicators, unemployment, and historical recessions to understand this relationship. The findings are presented visually for clarity. This analysis will explore reasons for the layoffs, their impact, and whether they signal a broader economic slowdown, providing insights into the job market and potential economic challenges.

While economic cycles are natural, periods of recession, marked by declining economic activity and rising unemployment, bring significant hardship. This analysis delves into the relationship between recessions and layoffs, specifically focusing on the current tech industry situation. By exploring the factors contributing to these layoffs, their potential ripple effects, and whether they signal a broader economic slowdown, we aim to shed light on the current situation. Ultimately, this analysis will provide valuable insights into the health of the job market and prepare us for potential economic challenges.

a) Applications :-

Individual career planning: By understanding the industries and skills most susceptible to layoffs during recessions, individuals can make informed decisions about their careers. This might involve focusing on developing recession-proof skills like data analysis or cybersecurity, or diversifying their skillset to be more adaptable.

Government policy: Data on layoffs can help policymakers identify sectors most affected by economic downturns. This information can be used to develop targeted stimulus packages or unemployment benefit programs to mitigate the negative impacts of recessions.

Business decision-making: Companies can leverage data on historical recessions and layoffs to develop contingency plans. This might involve building financial buffers, streamlining operations to reduce costs, or identifying alternative revenue streams.

Investment strategies: Investors can analyze data on recessions and layoffs to make informed investment decisions. For instance, they might choose to invest in sectors historically more resilient during economic downturns, such as consumer staples or healthcare.

Economic forecasting: By analyzing data on layoffs alongside other economic indicators, economists can develop more accurate forecasts about the likelihood and severity of a recession. This information can be crucial for policymakers and businesses alike in preparing for potential economic challenges.

b) Advantages :-

- Analysis of trends in layoffs.
- Potential layoff identification.
- New insights can lead to ideas and innovations.
- Predicting layoffs that might happen in future.

c) Disadvantages :-

- The analysis might be somewhat constrained by the dataset.

2 Literature Review

The Concept of Layoffs]

Layoff is a difficult but necessary action taken by businesses to ensure their long - term success. It is the process of reducing the number of employees in a company due to financial or organizational reasons. Layoff can be a difficult decision for businesses, as it involves the termination of employees who have devoted their time and energy to the company. Layoff can be a difficult decision for employees as well. It can cause financial hardship and emotional distress. Despite this, it is important to remember that a layoff is a necessary tool for businesses to remain competitive and profitable. It is a sign that a business is taking proactive steps to ensure its long - term success. Therefore, a layoff is an important tool for businesses to remain competitive and profitable. It is a difficult decision for both employers and employees, but it is a necessary step for businesses to take to ensure their long - term success. It is important to recognize the importance of layoff and to understand that it is a necessary part of the business.

What were the forecast for 2023?

Going forward, with the IMF predicting that more than a third of the global economy will shrink by 2022 or 2023, layoffs are likely to continue at some tech startups. The long - term outlook for jobs in the tech industry looks promising: For example, by 2032, tech jobs in the United States are

expected to grow from 5.4 million people to more than 6 million people.

The Impact of Layoffs on Technology Industries' Employees

Layoffs can have a devastating effect on employees. They can cause financial hardship, emotional distress, and a lack of job security. Employees may also feel betrayed by their employer, as they may have invested time and energy into the company only to be let go. Layoffs can also hurt the company. It can lead to a decrease in morale, a decrease in productivity, and a decrease in customer satisfaction. It can also lead to a decrease in innovation, as employees may be hesitant to take risks or suggest new ideas. Despite the negative effects of layoffs, they can be necessary for a company to remain competitive. Companies must make difficult decisions to remain competitive, and layoffs can be a part of that process. Companies should strive to make layoffs as humane as possible, providing severance packages and job placement services to help employees transition to new jobs. Therefore, technology layoffs are a reality of the modern economy. They can have a devastating effect on employees and the company, but they can also be necessary for a company to remain competitive. Companies should strive to make layoffs as humane as possible, providing severance packages and job placement services to help employees transition to new jobs.

Causes of Huge technology Industries' Layoffs

What led to increase of layoffs ?

Severe job losses in the tech industry began to occur during the coronavirus pandemic when nearly 70, 000 employees of tech startups lost their jobs in the first and second quarters of 2020. This is partly because lockdown measures and movement restrictions force businesses to cut costs. At the time, tech startups in industries like transportation, finance and travel were hit the hardest. From the second half of 2020 to the end of 2021, the job loss rate in tech startups has dropped significantly due to increased venture capital spending on the internet, technology, mobile companies, telecommunications, software and other companies. However, in the second quarter of 2022, a wave of layoffs from tech startups resurfaced amid changing consumer preferences, global economic disruptions and stock markets. full of volatility. Indeed, these disruptions have resulted in falling business valuations, slow revenue growth, and cost -cutting measures to reduce operating costs, with tech startups finding it difficult. in raising new capital.

Economic depression

The recession debate in the United States began when data from the US Bureau of Economic Analysis showed the economy contracted in July 2022 for the second straight quarter. Economists are uncertain and fears of a recession still hang over the media. Other conditions threaten the health of the economy, such as the public debt ceiling, the war in Ukraine, the ongoing pandemic and rising interest rates. Thus, companies turn to layoffs as a survival method to cut costs as sales and profits decline (Giunipero, L. C., Denslow, D., Rynarzewska, A. I.2022)

Inflation

According to the Federal Reserve, when inflation hit the economy hard in June 2022, consumer prices rose 9.1from the usual 2to the US Bureau of Labor Statistics (BLS), 2022 saw the highest inflation rate in 40 years. The economy slowed as people started buying less to accommodate these higher prices. The cost of living skyrocketed and individuals and businesses had to cut back. Tech companies have seen service prices go up, so companies have had to evaluate and cut as needed. Businesses are looking for ways to cut costs to cover rising costs due to inflation. Laying off employees is often one of the first cost - cutting measures, as it is one of the biggest costs of a business. Tech companies lose revenue as companies cut back on advertising. Tech companies, such as Meta, Google, Instagram, Snap, and ByteDance, have business models that rely on selling ads. (Hetler, 2023).

Impact of COVID-19

The COVID-19 pandemic has had a devastating impact on the technology industry in the United States. Many companies have had to lay off employees to cut costs and remain profitable. This has caused a great deal of uncertainty for those employed in the technology industry, as well as those looking to enter the field. As COVID-19 swept through the country, consumers quickly tightened their wallets, resulting in massive job losses. And while there was a need for tech workers before the pandemic, like most industries, tech wasn't immune to layoffs during the crisis. In August 2020, the unemployment rate in the tech sector peaked at 4.6country was 8.4Also, the COVID-19 pandemic has accelerated the adoption of remote work in the United States, with implications for employment, productivity, and job security in the technology industry (Aral and Brynjolfsson.2021).

The Impact of Automation

Automation has been a major factor in the technology industry for many years. Automation has allowed companies to reduce costs and increase efficiency. However, automation has also led to job losses in the technology industry, as many tasks that were once done by humans are now done by machines. This has caused a great deal of uncertainty for those employed in the technology industry, as well as those looking to enter the field.

Higher interest rates

The Federal Reserve raised interest rates seven times in 2022 and could increase them further in 2023. The Fed raises these rates to slow economic growth and discourage consumers and businesses from spending. consumption, which reduces demand and ultimately lowers prices. Higher interest rates affect the amount a business wants to borrow due to higher costs. These higher rates have a direct impact on venture capitalists (VCs) and other startup funds. Companies are reluctant to invest

in riskier sectors when the future of the economy is uncertain. Economic uncertainties are causing companies to re - evaluate their hiring and growth strategies (Hetler, 2023).

Remote Work

Remote work, also known as telecommuting or telework, has become increasingly popular in recent years, particularly due to the COVID-19 pandemic. Many companies have had to transition to remote work to comply with social distancing guidelines, and as a result, remote work has become more widely accepted and normalized. This literature review will explore some of the research on remote work, including its benefits, challenges, and potential implications for job security.

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Going forward, with the IMF predicting that more than a third of the global economy will shrink by 2022 or 2023, layoffs are likely to continue at some tech startups. The long - term outlook for jobs in the tech industry looks promising: For example, by 2032, tech jobs in the United States are expected to grow from 5.4 million people to more than 6 million people.

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Causes of Huge technology Industries' Layoffs

3 Problem Formulation

3.1 Modelling of Data

The aim of this project is to analyse the data of various companies, countries, industries and to find out the relationship between the various layoff trends. We used the data visualisation tool in Python.

3.2 Modelling Various Research Sectors

The project is divided into various parts. Keeping countries and companies spread worldwide, the various industries include Education, Health, Economy, Environment, Media, Agriculture, Employment etc.

3.3 Various Problem Statements

1. Which country has the maximum and the minimum layoff?

2. Which industry was impacted the most by layoffs?

3. What is the Impact of layoff on laid off employees?

4 Methodology

Implementation: The first step in the methodology followed included data collection. I used the Layoffs dataset from Kaggle. The dataset contains 9 columns mentioning the company, location, industry, number of total laid off, percent of total laid off, date, stage of company, the funds raised by each company and the countries they belong to from 2020 to 2024. The dataset was cleaned and pre-processed to remove null values and irrelevant columns. So we have used pandas framework to clean the data, the various steps involved in cleaning the data are:

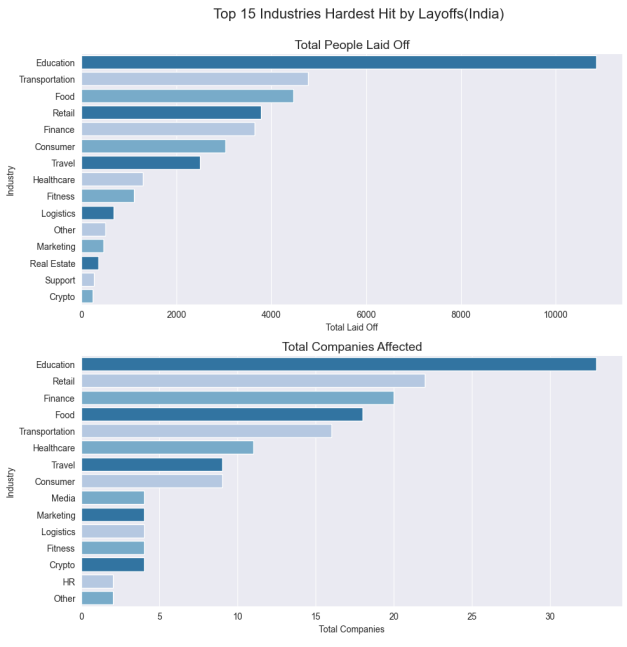
1. Removing the null values
2. Removing the irrelevant columns
3. Removing the irrelevant rows
4. Removing the duplicate values
5. Keeping records of the most recent data available

The second step was to perform exploratory data analysis on the dataset. We used various visualizations to understand the data and its distribution.

5 Result

The various analysis performed on the dataset are as follows

- **Indian Industries & Companies affected**

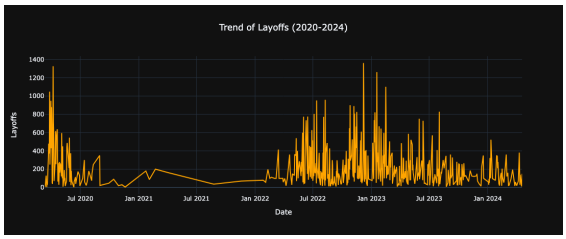


Layoffs became a major concern in India during 2023, impacting various sectors beyond just the tech industry. Retail and consumer goods bore the brunt due to e-commerce competition and inflation, likely leading to thousands of job losses. The financial sector, with estimates exceeding 2,000 layoffs, is grappling with consolidation, automation, and a potential economic slowdown. Healthcare, while experiencing overall growth, saw some job cuts in administrative roles for cost-cutting reasons. The education sector might see fewer layoffs, but budget constraints and a potential online learning shift could affect non-teaching staff. Notably, the edtech sub-sector witnessed a staggering 4,700 job losses due to a funding decline and market correction. These layoffs highlight the challenges of a changing economy. Skill development programs and social safety nets are crucial to address unemployment and skill gaps, while fostering new economic opportunities is essential for navigating this evolving landscape.

In the fourth quarter of 2022, technology companies worldwide saw a significant reduction in their workforce, with over 70,000 employees being laid off. However, the situation escalated dramatically in the first quarter of 2023. The technology sector experienced a record high in layoffs, with a staggering 167.4 thousand employees losing their jobs. Major tech giants such as Google, Microsoft, Meta, and IBM all contributed to this figure during this quarter. Amazon, in particular, conducted two separate rounds of layoffs within the same period. Industries most affected include the consumer, hardware, food, and healthcare sectors. Notable companies that have laid off a significant amount of staff include Flink, Getir, Booking.com, Uber, PayPal, LinkedIn, and Peloton, among others.

Finance: The finance sector emerges as the leader with over 14,438 job losses. Consolidation, automation, and a potential economic slowdown impacting loan demand could be contributing factors.
Retail: E-commerce and changing consumer preferences continue to disrupt traditional retailers, leading to over 9,477 layoffs.
Healthcare: Surprisingly, healthcare, with over 9,202 job cuts, finds itself on the list. These might be concentrated in administrative or non-critical support roles due to cost-saving measures.

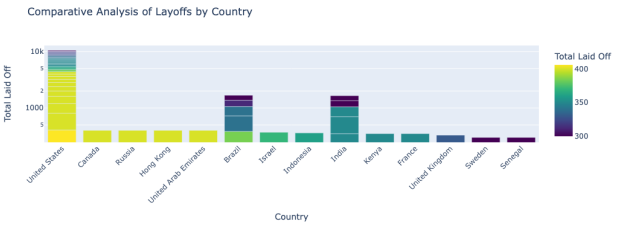
- **Year-Wise Trend**
  India's once-booming tech industry has faced a harsh reality in recent years: a surge in layoffs. This entry explores this trend year-by-year, highlighting the impact of the COVID-19 pandemic, economic factors, and potential consequences.
  2020:
  While specific data on layoff numbers in 2020 is limited, the year undoubtedly witnessed the initial shockwaves of the global pandemic. Lockdowns, economic disruptions, and reduced consumer demand likely triggered some job cuts within the tech sector. However, the exact extent remains unclear.
  2021:
  As businesses and economies began adapting to the "new normal" brought on by the pandemic, 2021 might have seen a stabilization or even a slight decrease in tech industry layoffs compared to the peak of 2020. More research is needed to confirm this possibility.
  2022:
  Layoffs saw a concerning resurgence in 2022. This suggests that companies continued to grapple with challenges and economic instability as they navigated the lingering effects of the pandemic. Reorganizing to adapt to a changed business landscape might have led to workforce reductions in certain areas.
  2023:
  The year 2023 witnessed a significant surge in layoffs within the Indian tech sector, with reports exceeding 250,000 job losses. This drastic rise highlights the lasting impact of the pandemic on the industry, potentially coupled with a correction in the tech bubble that had inflated hiring in previous years.
  2024 (YTD):
  The trend continues into 2024, with data from Layoffs.fyi indicating over 56,858 tech jobs lost by March 30th. Major companies like IBM, Dell, and Vodafone have implemented job cuts, impacting thousands of employees across various tech sectors.
  By the numbers Layoffs during two weeks ended April 26, 2024: It's unclear how many U.S. tech sector employees were laid off, per a Crunchbase News tally.
  In 2024: At least 47,036 workers at U.S.-based tech companies have lost their jobs so far in the year, according to a Crunchbase News tally.
  In 2023: More than 191,000 workers in U.S.-based tech companies (or tech companies with a large U.S. workforce) were laid off in mass job cuts.
  In 2022: More than 93,000 jobs were slashed from public and private tech companies in the U.S.

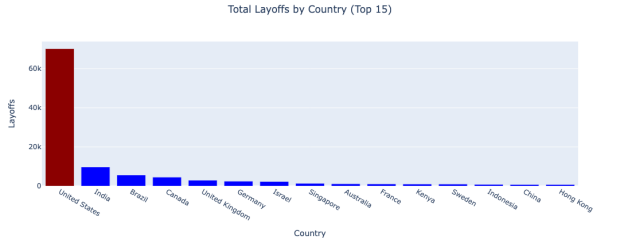


- **Country-Wise Total Lay-offs**

  The bar chart shows that US has the maximum number of Layoffs. Around 1062 companies have laid off 70,154 employees and it still hasn't stopped. Corporate America is drastically reducing its workforce as part

of its restructuring efforts to prepare for a probable economic downturn brought on by the U.S. Federal Reserve's fight against inflation and the war in Ukraine.





- **Cumulative Layoff**

  Layoff Trends from 2020 to 2023
  The data reveals a concerning upward trend in cumulative layoffs over the past four years (2020-2023). The year 2020 saw a total of 21.6k layoffs, which served as the baseline for the following years. In 2021, the cumulative number of layoffs increased to 22.4k, representing a year-over-year rise. This trend continued in 2022, with a significant surge in layoffs, reaching a cumulative total of 64.5k. By 2023, the cumulative layoffs climbed even further to 102.4k.

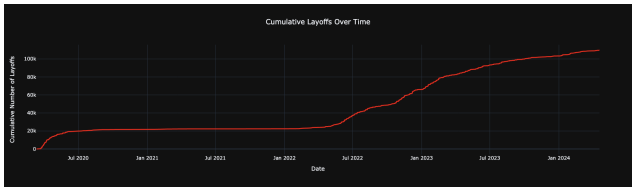
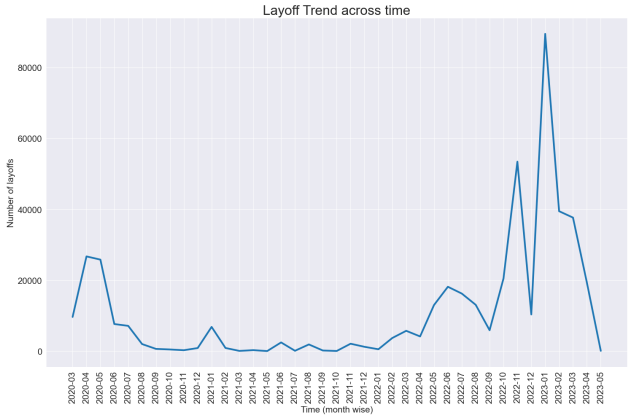


Figure 1

- **Other observed visualizations**



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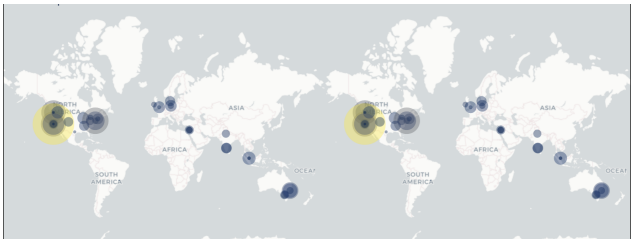

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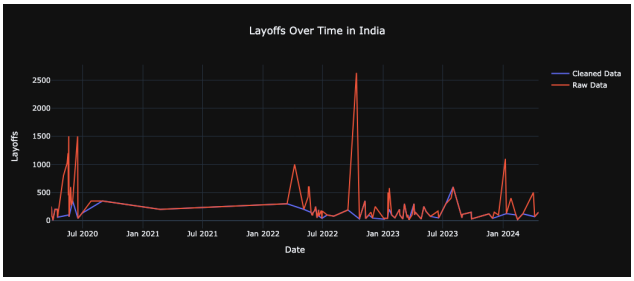

Figure 4

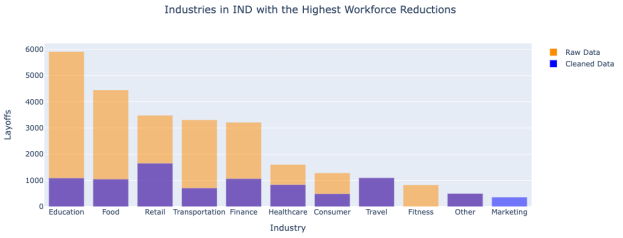

Figure 5

6 Appendix

This appendix provides a more detailed breakdown of the data used in the analysis of layoffs from 2020 to 2024. It includes Various Research Papers Published, Analysis and Visualisation references and Working code which has many of the other Analysis and visualisation explanation :-

- Running Codes with visualisation
- Study on Layoff of Employees in Big Tech Organisation

- Huge Technology Layoffs 2022 - 2023: Examining Job Security in the Technology Industry

- Exploring the Trends and Industry Shifts
- Dataset Used

- Live Laysoff Tracker

7 Conclusion

The recent surge in layoffs within the tech industry has sparked considerable attention and analysis, signaling a potentially significant shift in the labor landscape. This phenomenon, characterized by a 649% increase in tech industry layoffs in 2022, reflects a confluence of economic, technological, and industry-specific factors reshaping the employment landscape.

Economic uncertainties, including concerns about a looming recession, inflationary pressures, and fluctuating interest rates, have compelled companies to implement cost-saving measures, with layoffs being a primary strategy. The rapid evolution of artificial intelligence has further complicated matters, leading to restructuring efforts and job displacements as companies strive to embrace emerging technologies.

Moreover, the maturation of the tech sector, coupled with overhiring during the pandemic-driven surge in demand, has necessitated recalibration within companies to streamline operations and address redundancies. While larger tech firms like Meta and Amazon have garnered attention for their significant layoffs, smaller players such as Virgin Orbit and Accenture have also been affected, underscoring the widespread impact of these workforce reductions.

Amidst these challenges, other industries have demonstrated resilience, with some continuing to hire tech talent despite the layoffs within the tech sector. However, the overall labor market has experienced fluctuations, with the national unemployment rate showing signs of an uptick.

To navigate this dynamic landscape, stakeholders must prioritize resilience, innovation, and strategic planning. Supporting affected workers through reskilling initiatives, fostering entrepreneurship, and fostering collaboration between industry and government will be pivotal in facilitating a smooth transition and fostering sustainable recovery.

As the tech industry and broader economy continue to evolve, embracing adaptability and lifelong learning will be essential for workers to thrive in the face of ongoing change and seize emerging opportunities in an increasingly dynamic job market.

This analysis highlights the importance of recession-proof professions across various sectors, including education, healthcare, law enforcement, finance, cybersecurity, and utilities. These fields provide essential services for societal well-being and demonstrate resilience during economic downturns.