

# Impact of COVID-19 on Online learning

Prepared by:

ADEBODUN OMOLOLA FALILAT

## **INTRODUCTION:**

This report provides an analysis of data trends for Germany, India, and South Africa. By aggregating data into yearly summaries, this analysis highlights overall patterns, annual changes, and comparative insights across these three countries. Understanding these trends can offer valuable perspectives on variations in activity levels, growth patterns, and other country-specific behaviors

## **OBJECTIVE:**

The primary objective of this report is to identify and compare yearly trends for Germany, India, and South Africa, focusing on changes over time and drawing insights from relative differences between these countries. This analysis aims to: Examine the overall trend of each country's yearly values, Identify peak years, periods of decline, and stability within each country's data.

## **DATA PREPROCESSING WITH PYTHON:**

Python was used for data preprocessing to ensure the dataset was clean and ready for analysis. The preprocessing steps included:

- Data type was checked
- Checked for Missing/Nan Values: No missing or Nan values was found.
- Duplicate values: No duplicate was found.
- Data Transformation: The Month column was converted into datetime formats, and a new column was created as Year for better analysis.

```
[ ]: from plotly.offline import init_notebook_mode
import cufflinks as cf
cf.go_offline()
import pandas as pd
online = pd.read_csv("online_learning_data.csv")
online

[ ]: online.dtypes

[ ]: online["Month"].astype("datetime64[ns]")

[ ]: online["Month"] = online["Month"].astype("datetime64[ns]")

[ ]: online.isna().sum()

[ ]: online.drop_duplicates()

[ ]: online.columns

[ ]: online.insert(0,"Year","")

[ ]: online

[ ]: online["Month"].dt.to_period("Y")
```

```
[ ]: online["Year"] = online["Month"].dt.to_period("Y")
online

[ ]: countries = ["Germany","India","South Africa"]
countries

[ ]: total = online.groupby("Year")[countries].sum()
total
```

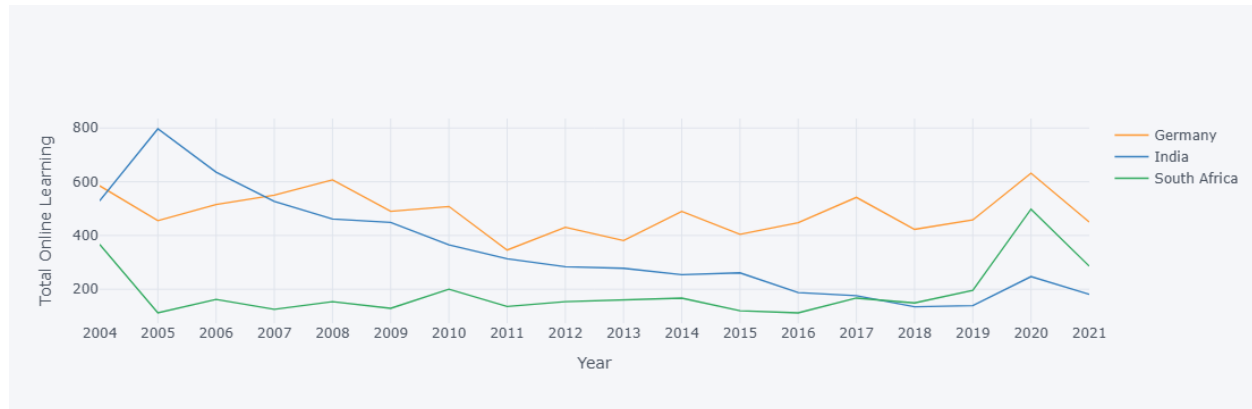
Checking for the lowest and highest online learning (Germany,India,South Africa)

```
[ ]: for country in countries:
    lowest_year=total[country].idxmin()
    highest_year=total[country].idxmax()
    lowest_value=total[country].min()
    highest_value=total[country].max()
    print(f"For {country}")
    print(f" Lowest year:{lowest_year} with a sum of {lowest_value}")
    print(f" highest year:{highest_year} with a sum of {highest_value}")

[ ]: online.to_excel("online data.xlsx")
```

## VISUALIZATION:

To visualize the online learning trends for Germany, India, and South Africa, I created a line plot showing participation rates over time for each country. This will allow us to observe changes, peaks, and the impact of significant events, like the COVID-19 pandemic.



## INSIGHT:

### Germany

- **Lowest Year:** 2011, with a sum of 346. This year marks the lowest recorded activity, suggesting a period of reduced engagement.
- **Highest Year:** 2020, with a sum of 632. The peak in 2020 might indicate increased activity, potentially driven by global events affecting digital or online engagement.
- **Trend Observation:** Germany's overall trend fluctuates moderately, with a steady rise towards 2020, marking a high point. This indicates growth in engagement over time, with only occasional dips.

### India

- **Lowest Year:** 2018, with a sum of 135. This year reflects a significant drop in activity, contrasting with earlier highs.
- **Highest Year:** 2005, with a sum of 797. India's peak in 2005 suggests a period of heightened engagement, which may correlate with economic or technological advancements.
- **Trend Observation:** India shows pronounced variability, with a substantial peak in 2005 followed by fluctuating activity levels in subsequent years. This pattern suggests that India's engagement is sensitive to external factors, with years of high and low engagement spread across the timeline.

### South Africa

- **Lowest Year:** 2005, with a sum of 112, marking the lowest recorded engagement level in this dataset.
- **Highest Year:** 2020, with a sum of 498, indicating a strong increase in activity, potentially driven by factors similar to those affecting Germany in 2020.
- **Trend Observation:** South Africa's trend is generally stable, with a notable rise leading up to 2020. This suggests a steady engagement pattern with a recent peak, possibly due to increased reliance on digital platforms in recent years.

## CONCLUSION:

In summary, while Germany and South Africa share a peak in 2020, suggesting shared influencing factors, India's peak in 2005 and its lowest point in 2018 highlight unique trends. These variations underline the diverse dynamics influencing each country's engagement levels over time.