From Office to Home: Remote Work’s Impact on Productivity and Resignation

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**Introduction**

This project aims to assist companies and employers in identifying the most suitable workplace location that enhances productivity, employee comfort, and satisfaction. It seeks to achieve the lowest resignation rates and the highest employee retention. The project was conducted with a randomly selected group of employees to ensure unbiased results in the analysis.

This report was designed to present the analyses in a simplified manner, making it easy for stakeholders and company owners to understand the results. The summary of the analyses is structured to facilitate their decision-making regarding the optimal workplace location and the best methods that align with their internal protocols and systems.

**Problem Statement:**

Remote work has become a cornerstone of modern workplace dynamics, particularly in the wake of the COVID-19 pandemic. Businesses across industries are increasingly adopting hybrid and fully remote work models, leading to significant changes in employee productivity, satisfaction, and turnover rates. However, the long-term effects of remote work on these key employee outcomes remain unclear, leaving companies uncertain about how to optimize their remote work policies.

Using this dataset, you will investigate how remote work frequency correlates with employee performance, job satisfaction, and resignation rates. The objective is to uncover actionable insights into how different levels of remote work impact employees’ productivity and likelihood of resigning. With this data, the project aims to help organizations design evidence-based policies that balance productivity and employee retention while supporting a flexible work culture.

**Business Impact:**

Exploring this dataset may help companies gain valuable insights into how workplace dynamics affect employees across various areas. By analyzing how workplace changes over time influence outcomes such as employee retention, productivity, job satisfaction, organizations can make data-driven decisions. This includes identifying trends in employment locations over time (time series analysis) to better understand the impact of remote work and optimize workplace strategies for long-term success.

**Data**

File name: Extended\_Employee\_Performance\_and\_Productivity\_Data.csv

Description: This dataset contains information for 100,000 employees hired between 2014 and 2024 in a corporate environment. It provides comprehensive details related to their workplace, performance, productivity, and demographics.

Dataset Details: 100,000 rows & 20 Columns.

Size: 10,969.6 KB (10.7 MB)

Source: Kaggle - [DataSet\_Link](https://www.kaggle.com/datasets/mexwell/employee-performance-and-productivity-data/data)

**Data Analysis & Computation**

**Data Cleaning**

* Hire\_Date: It contained the appointment date, year, day, and hour, and we only needed the year number make it better.
* The dataset was thoroughly checked, and no null values or inconsistencies were identified, ensuring data completeness and integrity.
* Some columns initially contained numeric values, which were converted to text for improved clarity and better interpretability.
* The Gender column initially contained three values: Male, Female, and Other. Rows with the "Other" category were removed entirely to improve analysis and visualization clarity.
* Years\_At\_Company column contained some values of 0, representing employees with no tenure. These values were categorized into Junior (0-3 years) to provide more meaningful insights for analysis.
* The cleaned data was isolated in a new worksheet, while the deleted rows were moved to a separate worksheet for reference. The original dataset contained 100,000 rows, and after removing 3,968 rows (due to the exclusion of "Other" from the Gender column), the cleaned dataset now contains 96,032 rows.

**Analysis Methods**

**Analysis 1**: Distribution of Gender, Age Group, and Remote Work Frequency

Using pivot tables, the distribution of Gender, Age\_Group, and Remote\_Work\_Frequency was analyzed to gain a deeper understanding of the dataset. The gender distribution revealed that male and female counts are nearly equal, with each accounting for 50% of the workforce, as visualized in a Pie Chart. For the age group distribution, a Clustered Column Chart showed that the majority of employees fall within the 50-60 age group, while the 22-29 age group is the least represented. Additionally, the 30-39 and 40-49 age groups have similar counts, indicating a balanced distribution across these mid-career age ranges. Lastly, the remote work frequency distribution, represented by a Bar Chart, highlighted that hybrid work is the most prevalent trend, significantly surpassing other remote work frequencies. This suggests that hybrid work, which combines onsite and remote working, has become a dominant corporate approach among organizations.

**Analysis 2**: Cross Distribution of Remote Work Frequency with Department, Gender, and Age Group

The analysis of remote work frequency across departments, gender, and age groups revealed several key insights. First, the distribution across departments showed a consistent trend, with hybrid work frequency being the most common in all departments, as illustrated in the stacked bar chart. This indicates that hybrid work is a universal approach, adaptable to any department, with no exceptions. It suggests that all departments can effectively implement hybrid work policies, balancing remote and onsite requirements as needed. Second, the cross-distribution analysis by gender revealed no significant differences between males and females, as both genders showed similar results for hybrid, onsite, and remote work frequencies. This highlights that gender does not impact the ability or preference for remote work. Finally, the analysis across age groups revealed an interesting generational difference: older employees (50-60 years old) tend to prefer onsite work more than younger employees, while younger employees (22-29 years old) show a higher preference for remote and hybrid work models. These findings highlight the importance of tailoring remote work policies to accommodate generational differences while ensuring inclusivity and adaptability across all departments and demographics.

**Analysis 3**: Remote Work Frequency Over Time

The analysis of remote work frequency over time, based on the Hire\_Date, reveals significant trends in workplace dynamics. From 2014 to 2024, the adoption of Hybrid Work has shown a consistent upward trend, becoming the dominant work model in recent years. The data indicates a sharp increase in hybrid work adoption after 2020, likely influenced by the global shift in work policies during the COVID-19 pandemic. Conversely, Onsite Work has steadily declined over the years, reflecting a gradual move away from traditional office-based setups. Remote Work, while less common than hybrid work, has experienced slight growth, particularly in the post-2020 period. By 2024, hybrid work has solidified as the preferred approach, offering a balance between flexibility and productivity. These findings highlight a clear shift in organizational strategies toward adopting hybrid work models, while maintaining provisions for remote and onsite work as necessary.

**Analysis 4**: Employee Retention Analysis

### The analysis of resignation rates across different remote work frequencies reveals insightful trends. The Hybrid Work model has the highest number of employees, with a resignation rate of approximately 11.33%, slightly higher than Onsite Work at 10.43%. The Remote Work model, while accommodating fewer employees overall, has the highest resignation rate at 11.37%. This suggests that although hybrid and onsite work policies retain employees more effectively, fully remote roles may face challenges in retaining staff. The overall distribution indicates that hybrid work continues to dominate as the preferred work arrangement, balancing flexibility and retention. These findings highlight the importance of offering balanced work models to improve employee satisfaction and reduce turnover.

**Analysis 5**: Employee Satisfaction Analysis

The analysis of Employee Satisfaction across Remote\_Work\_Frequency, Age\_Group, and Gender reveals interesting patterns. For employees working under the Hybrid Work model, satisfaction scores are consistently higher across all age groups and genders, with the highest average being 3.02 for males aged 40-49. Onsite Work shows slightly lower satisfaction levels, with notable variability, particularly among younger employees aged 22-29, where females score higher than males. The Remote Work model has the lowest satisfaction scores overall, with averages ranging between 2.97 and 3.00, indicating that fully remote setups may not meet the needs of employees as effectively as hybrid or onsite models.Across all work frequencies, older employees (50-60) show more consistent satisfaction levels compared to younger groups (22-29), where satisfaction tends to vary more significantly. The results highlight that hybrid work provides the most balanced satisfaction levels across demographics, making it the preferred choice for organizations aiming to improve employee morale and engagement.

**Analysis 6**: Performance and Employee Satisfaction Analysis

The analysis of Performance and Employee Satisfaction across Remote\_Work\_Frequency and Gender provides critical insights. The results show that Hybrid Work consistently achieves the highest levels of performance and satisfaction for both males and females, with an average performance score of 3.00 and the majority of employees reporting satisfaction. This highlights the effectiveness of hybrid work in balancing productivity and employee morale.In contrast, Onsite Work displays slightly lower satisfaction and performance levels, particularly for males, with an average performance score of 2.99. Remote Work, while maintaining a strong average performance score of 3.00, reveals a greater proportion of employees reporting neutral or dissatisfied experiences compared to hybrid work, particularly among females.These findings suggest that Hybrid Work not only supports high performance but also fosters a more positive employee experience, making it the preferred model. However, Remote Work may require additional strategies to improve engagement and satisfaction, particularly for female employees, while Onsite Work could benefit from integrating more flexibility to enhance overall satisfaction. These insights can guide organizations in tailoring work policies to maximize both performance and employee well-being.

**Dashboard**

The Dashbord’s ( [Link](https://public.tableau.com/views/FromOfficetoHomeRemoteWorksImpactonProductivityandResignation/Dashboard1?:language=en-GB&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link) ) Primary aim is to offer interactive filters that allow users to analyze data by workplace, resignation rates, productivity, satisfaction levels, and more.

**Challenges**

The data lacks key details such as demographic distribution, transportation costs, and the financial impact of employees based on location. Access to this information would improve analysis and yield more reliable results.

The analysis revealed a pattern of clustering within the workplace, showing a notable equality in two areas. This close similarity may lead to regularity and uniformity, potentially influencing the final outcomes of the analysis.

**Conclusion**

This analysis examined the impact of remote work frequency on satisfaction, performance, and retention across age groups, gender, and departments. Hybrid work achieved the highest satisfaction and performance overall. Remote work showed strong performance but lower satisfaction, particularly among women. Onsite work had the lowest satisfaction and performance, especially for younger employees. Retention was weaker in fully remote roles. Younger employees preferred hybrid and remote work, while older employees favored onsite setups. Hybrid work emerged as the most effective and adaptable model.

Hybrid work appears to offer the best balance between performance, engagement, and retention. While remote work provides flexibility, it also has the highest resignation rate, potentially due to lower engagement. Onsite employees work the most hours and handle more projects but may face higher stress and work-life balance challenges. Employers looking to optimize productivity while retaining employees should consider hybrid models that offer flexibility without isolation.

**Future Works**

I plan to enhance the analysis by incorporating predictive modeling to forecast resignation trends based on workplace conditions. Additionally, I will explore sentiment analysis if employee feedback data is available to understand deeper dissatisfaction factors. A more granular breakdown of productivity metrics by industry, job role, and tenure could provide valuable insights. I also aim to apply time-series analysis to track long-term trends in remote work adoption and its effects on performance. Finally, integrating external economic or demographic data could help identify external factors influencing workplace satisfaction and turnover rates.

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