Tech Saksham

Case Study Report

Data Analytics with Power BI

“An Analysis of Unemployment in Republic of India”

GOVERNMENT ARTS COLLEGE (A), KUMBAKONAM

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ABSTRACT

The word unemployment belongs to a state in which a respective actively seeks employment but is unsuccessful. It is said to be one of the critical measures of the economy's strength. The unemployment rate is the most generally used method to arbitrate a country's unemployment rate. This proposed project "An Analysis of Unemployment in Republic of India" , using Microsoft Power BI, a leading business intelligence tool , to know the present Condition of Unemployment in Rural and Urban area. Using Power BI, we analyze various datasets related to employment. Through interactive visualizations and data-driven insights, we uncover patterns, correlations, and potential drivers of unemployment across different demographic groups and geographic regions. This can be found by honestly dividing the number of people without jobs by the total population covered in a nation's labor force. The rate of unemployment in India has been expanding over the years. This project will also contribute to know the present Condition of Unemployment in Rural and Urban area and, to identify the Causes of Unemployment in India To Examine the Government Programmers Unemployment. And giving a suggestions and findings for solution for unemployed in society.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement

Unemployment remains a critical issue in India, impacting the nation's economic landscape. As one of the world's most populous countries with a diverse workforce, fluctuations in the unemployment rate have far-reaching implications for India's growth and development. Traditional data analysis methods, are time-consuming and often fail to provide a real-time insights. We will utilize data from reliable sources, including the Centre for Monitoring Indian Economy (CMIE), government reports, and other relevant datasets. Microsoft Power BI will serve as our primary tool for data visualization, exploration, and analysis.

1.2 Proposed Solution

Microsoft Power BI is a powerful business intelligence (BI) tool developed by Microsoft. It enables users to visualize, analyze, and share data insights from various sources. By leveraging Microsoft Power BI, we aim to provide actionable insights for policymakers, businesses, and individuals to address unemployment challenges effectively. Our analysis will contribute to informed decision-making and the formulation of targeted policies to promote sustainable job growth and economic prosperity. In summary, Microsoft Power BI empowers users to transform raw data into meaningful visualizations, enabling informed decision-making across organizations.

1.3 Feature

1. **Data Connectivity:**
   - Power BI allows you to connect to a wide range of data sources, including databases, cloud services, spreadsheets, and APIs.
   - You can import data from SQL Server, Excel, SharePoint, Azure, and more.
2. **Data Transformation and Modeling:**
   - Transform and shape your data using Power Query Editor.
   - Create relationships between tables and build a data model.
3. **Data Visualization:**
   - Design interactive reports and dashboards using drag-and-drop functionality.
   - Choose from various visualizations (charts, graphs, maps, tables) to represent data effectively.

1.4 Advantages

- In summary, Microsoft Power BI empowers users to transform raw data into meaningful visualizations, enabling informed decision-making across organizations.

1. **Improved Data Visibility and Insights:**
   - Power BI allows you to transform raw data into visually immersive insights. Interactive dashboards and reports provide a clear view of your data, helping you make informed decisions.
2. **Increased Efficiency and Productivity:**
   - With Power BI, you can automate data processing, visualization, and reporting tasks. This streamlines workflows and saves time, leading to improved efficiency.

3.Better Decision-Making Capabilities:

- By analyzing data trends, patterns, and correlations, Power BI empowers decision-makers. Real-time data updates enable timely and accurate decisions.

4.Improved Real-Time Collaboration and Communication:

- Teams can collaborate seamlessly using shared dashboards and reports. Real-time updates ensure everyone is on the same page.

5.Reduced Costs and Improved ROI:

- Power BI eliminates the need for manual data handling and reduces dependency on IT teams. This cost-effective solution delivers a positive return on investment (ROI).

- In summary, Power BI is a phenomenal tool for organizations seeking data-driven intelligence. Its user-friendly interface, real-time capabilities, and integration options make it a popular choice for business analytics worldwide

1.5 Scope

The scope of this project extends to all banking institutions that aim to leverage data for decision-making and customer engagement. The project can be further extended to incorporate more data sources and advanced analytics techniques, such as machine learning and artificial intelligence, to provide more sophisticated insights into customer behavior. The project also has the potential to be adapted for other sectors, such as retail, healthcare, and telecommunications, where understanding customer behavior is crucial. Furthermore, the project contributes to the broader goal of digital transformation in the banking sector, promoting efficiency, innovation, and customer-centricity.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

- **Data Collection and Storage Services**: Banks need to collect and store customer data in real-time. This could be achieved through services like Azure Data Factory, Azure Event Hubs, or AWS Kinesis for real-time data collection, and Azure SQL Database or AWS RDS for data storage.

- **Data Processing Services**: Services like Azure Stream Analytics or AWS Kinesis Data Analytics can be used to process the real-time data.

- **Machine Learning Services**: Azure Machine Learning or AWS SageMaker can be used to build predictive models based on historical data.

2.2 Tools and Software used

Tools:

- **PowerBI**: The main tool for this project is PowerBI, which will be used to create interactive dashboards for real-time data visualization.

- **Power Query**: This is a data connection technology that enables you to discover, connect, combine, and refine data across a wide variety of sources.

Software Requirements:

- **PowerBI Desktop**: This is a Windows application that you can use to create reports and publish them to PowerBI.

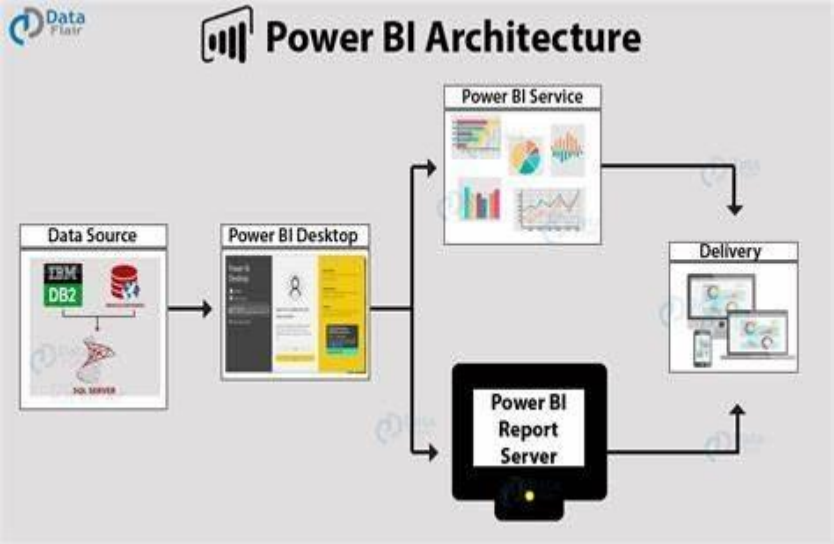
- **PowerBI Service**: This is an online SaaS (Software as a Service) service that you use to publish reports, create new dashboards, and share insights.

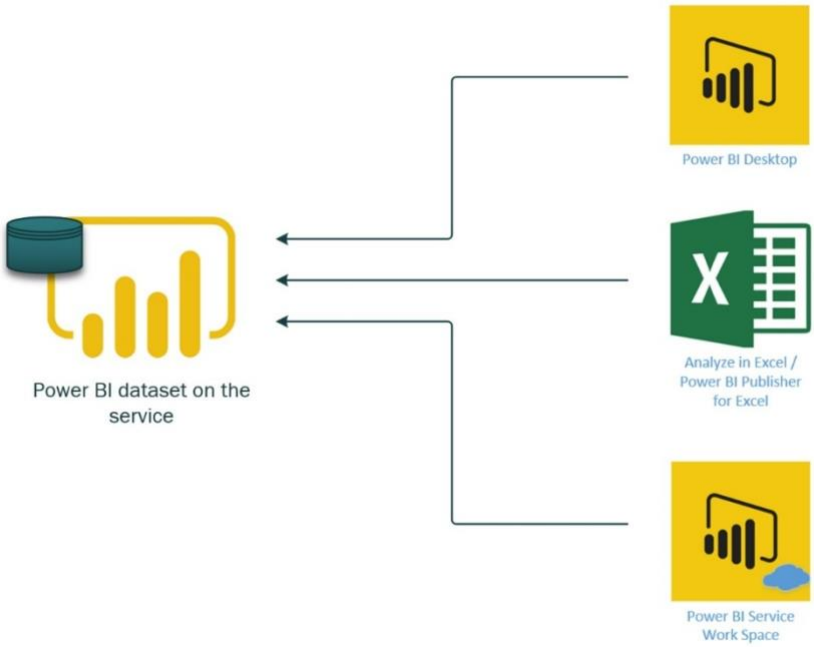
- **PowerBI Mobile**: This is a mobile application that you can use to access your reports and dashboards on the go.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture





1. **Data Collection**: Real-time customer data is collected from various sources.
2. **Data Storage**: The collected data is stored in a database for processing.
3. **Data Processing**: The stored data is processed in real-time using services.
4. **Data Visualization**: The processed data and the results from the predictive models are visualized in real-time using PowerBI. PowerBI allows you to create interactive dashboards that can provide valuable insights into the data.
5. **Data Access**: The dashboards created in PowerBI can be accessed through PowerBI Desktop, PowerBI Service (online), and PowerBI Mobile.

This architecture provides a comprehensive solution for real-time analysis of unemployment in republic of India. However, It's also important to ensure that all tools and services comply with relevant data privacy and security regulations.

CHAPTER 4

MODELING AND RESULT

Manage relationship

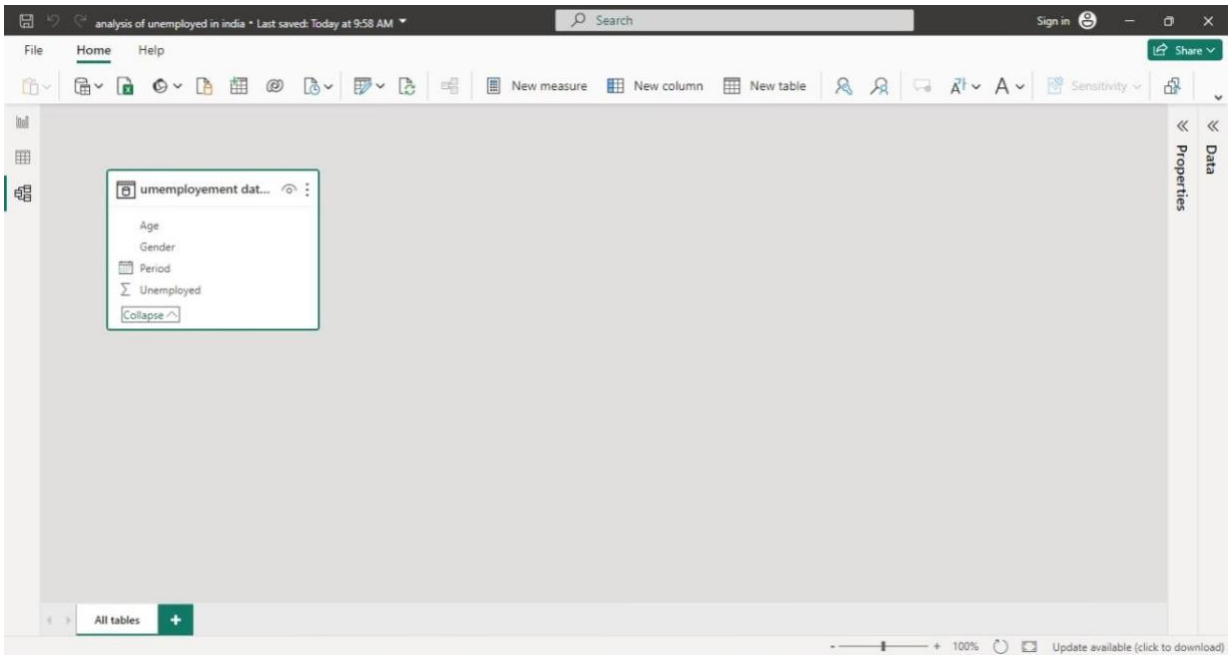
Data Collection: Gather data on unemployment in India from reliable sources such as Government reports, surveys, or databases. Ensure that the data includes information On age, gender, month, and the number of unemployed individuals.

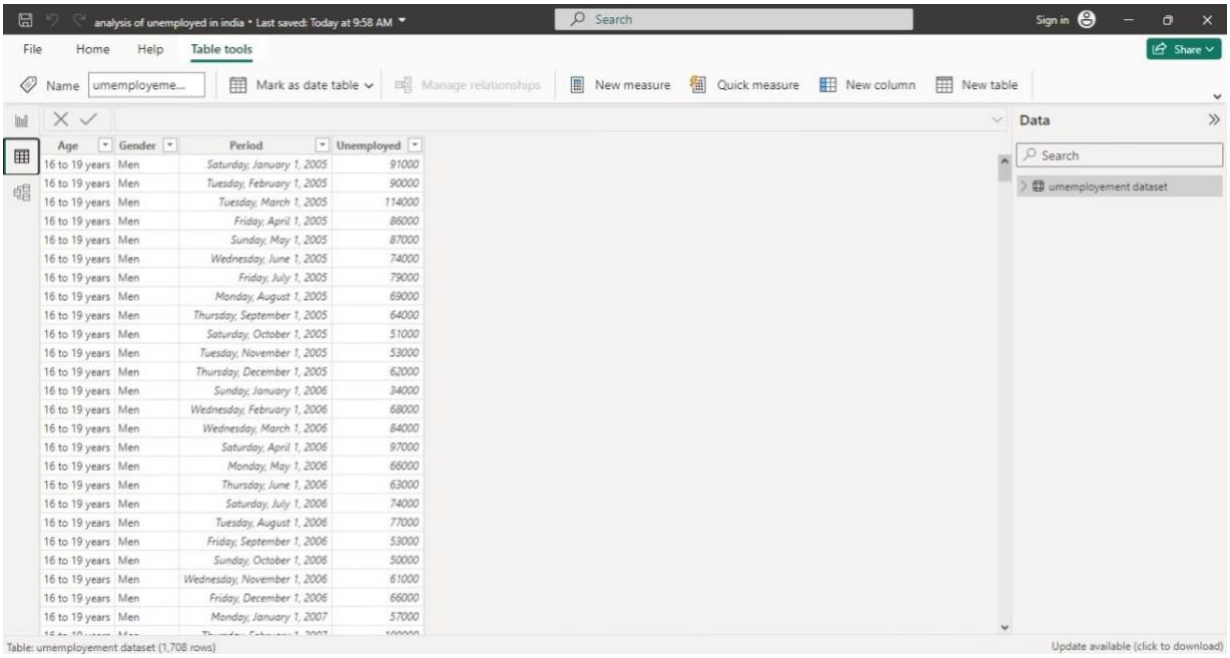
Data Preparation: Import the collected data into Power BI and prepare it for analysis. This may involve cleaning the data, handling missing values, and formatting the Columns appropriately.

Data Modeling: Create a data model in Power BI that includes a table for each Variable: age, gender, month, and the number of unemployed individuals. Establishrelationships between these tables based on common field.

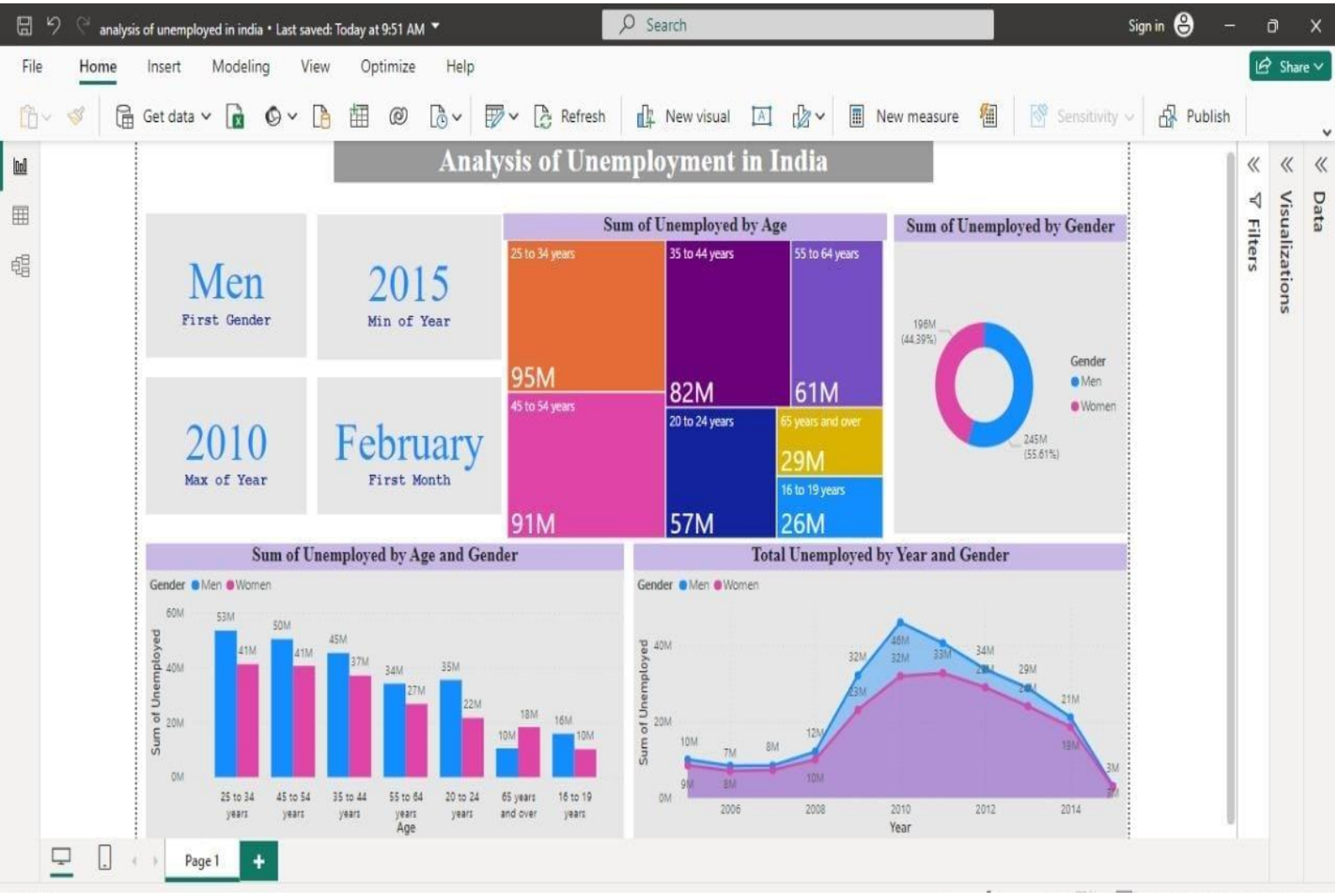
Replacing values

Set some fields to English for easy understanding, we replace values to English with the Power Query Editor.





Dashboard



CONCLUSION

The project " An Analysis of Unemployment in Republic of India " using PowerBI has successfully demonstrated about the unemployed persons in India. In this case study, we explored the impact of Power BI as a powerful data visualization tool. Key findings include:

Enhanced Decision-Making: Power BI enables organizations to transform raw data into actionable insights. Its interactive dashboards and visualizations empower decision-makers to identify trends, patterns, and anomalies.

Data Storytelling: Effective data storytelling is crucial. Power BI allows users to create compelling narratives by combining visuals, filters, and annotations. Clear communication of insights drives informed decisions.

Integration and Scalability: Power BI seamlessly integrates with various data sources, cloud platforms, and other Microsoft tools. Its scalability ensures adaptability to changing business needs.

User-Friendly Interface: Power BI's intuitive interface caters to both technical and non-technical users. Drag-and-drop features simplify report creation and customization.

Continuous Learning: As Power BI evolves, staying updated with new features and best practices is essential.Regular training and community engagement enhance proficiency.

In summary, Power BI empowers organizations to unlock the potential of their data, driving growth and efficiency.

The use of PowerBI has made it possible to present data in a visually appealing and easy-to-understand format, thereby aiding in better decision-making.

FUTURE SCOPE

The future scope of Power BI, a powerful data visualization tool, holds immense promise. As businesses increasingly recognize the value of data analytics and business intelligence, Power BI is poised to play a pivotal role. Here are some key aspects of its future:

Artificial Intelligence Integration:

Power BI will continue to evolve by integrating advanced AI capabilities. Expect features like automated insights, natural language querying, and predictive analytics.

AI-driven data preparation and anomaly detection will enhance decision-making processes.

Augmented Reality (AR) & Data Visualization:

AR and mixed reality will transform how we interact with data. Imagine visualizing complex datasets in 3D space or overlaying insights onto physical objects.

Power BI's integration with AR platforms will enable immersive data exploration and storytelling.

Enhanced Collaboration & Sharing:

Collaborative features will improve team productivity. Real-time collaboration on reports, dashboards, and datasets will become seamless.

Enhanced sharing options will allow stakeholders to access insights effortlessly, fostering better decision alignment.

Increased Connectivity & Multiple Data Sources:

Power BI's future holds remarkable potential, distinguishing itself through expansive connectivity options.

It seamlessly links diverse data sources—ranging from spreadsheets and databases to cloud services like Azure, Amazon Redshift, and Salesforce.

The tool's Web Data Connector extends connectivity by pulling API data directly from the web1.

Democratizing Data Analysis:

Power BI aims to empower every user, regardless of technical expertise. The future will see simplified interfaces, guided analytics, and self-service capabilities.

Democratization of data analysis will enable more individuals to explore insights and contribute to organizational success.

In summary, the future of Power BI is dynamic and adaptive, catering to the evolving needs of data-driven organizations.

References :

1. "**Introducing Microsoft Power BI**" by **Alberto Ferrari, Marco Russo** for learn about data modeling, visualization, digital storytelling, and everything related to Business Intelligence. It covers essential concepts and provides practical insights for using Power BI effectively.

2. "**Microsoft Power BI Quick Start Guide"** by **Devin Knight** for data modeling, DAX (Data Analysis Expressions), and creating interactive reports. It's a great resource for both beginners and those looking to enhance their skills.

Link :

https://github.com/jayasriraja

