S.A. ENGINEERING COLLEGE
(An Autonomous Institution Affiliated to Anna University Chennai)
Accredited by NAAC 'A' Grade & ISO 9001:2015 Certified Institution

REPORT ON

DATA ANALYTICS WITH POWER BI

REPORT

(VAC on "**Data Analytics with Power BI**")

1. *INTRODUCTION*

Data plays a crucial role in today's digital world, and businesses rely on analytics to make informed decisions. The "Data Analytics with Power BI" course provided a comprehensive understanding of how data analytics works and its real-world applications.

During the course, I first learned about Data Analytics, its significance, and how organizations use it to gain insights from raw data. I explored different types of analytics, including descriptive, predictive, and prescriptive analytics, and understood how they help in decision-making.

After building a strong foundation in data analytics, I was introduced to Power BI, a powerful business intelligence tool. I learned how Power BI is used for data visualization, reporting, and interactive dashboard creation. The course covered essential concepts like importing and transforming data, applying filters, and using DAX functions to enhance data analysis.

Additionally, I gained hands-on experience with:

- Working with Excel files in Power BI, including importing and cleaning data.
- Creating a SQL database from structured data and managing it for efficient analysis.
- Connecting Power BI to SQL databases, retrieving data, and transforming it for visualization.
- Building interactive dashboards using data from multiple sources, enabling real-time decision-making.

Through practical assignments and projects, I applied my learning to real-world scenarios, enhancing my skills in data-driven problem-solving.

2. *COURSE DETAILS*

- **Name of the Course:** Data Analytics with Power BI
- **Institution:** S.A. Engineering College
- **Duration:** 23-01-2025 to 29-01-2025
- **Mode:** Offline

3. *UNDERSTANDING:*

- This course provided a strong foundation in Data Analytics and its real-world applications. I learned how data is collected, processed, and analyzed to extract meaningful insights for decision-making. The course covered key types of analytics: Descriptive, Predictive, and Prescriptive, helping me understand how businesses leverage data.

- I gained hands-on experience with Power BI, learning to import, clean, and visualize data using Excel and SQL databases. I also explored data connectivity, DAX functions, filters, and dashboard creation, enabling me to build interactive reports for better insights.
- Overall, this course enhanced my ability to analyze data effectively and create dynamic visualizations, strengthening my skills in business intelligence and decision-making.

4. *LEARNING OBJECTIVES*

The "Data Analytics with Power BI" course helped me develop essential skills in data analysis and visualization. The key learning objectives included:

- Exploring the Power BI Interface and Tools
  - Understanding the layout and functionalities of Power BI.
  - Learning how to import and clean data from various sources.
  - Navigating different views like Report View, Data View, and Model View.
- Data Visualization and Reporting Techniques
  - Creating charts, graphs, and reports for better data interpretation.
  - Using filters, slicers, and drill-throughs for enhanced reporting.
  - Customizing visuals and applying formatting techniques.
- Creating Interactive Dashboards
  - Designing dynamic and user-friendly dashboards.
  - Integrating multiple data sources for comprehensive analysis.
  - Implementing real-time data updates and interactivity features.
- Data Modeling and Transformation
  - Establishing relationships between tables for better data management.
  - Using Power Query Editor for data cleaning and transformation.
  - Applying DAX (Data Analysis Expressions) for calculated measures and columns.

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5. *COURSE MODULES COVERED:*

This course covered essential concepts and hands-on practice in Excel, Power BI, and MySQL Workbench to create dynamic dashboards and analyze data efficiently. The key modules included:

Data Analytics

- Understanding the importance of data analytics in decision-making.
- Exploring different types of analytics:
  - Descriptive Analytics – Understanding past trends.
  - Predictive Analytics – Forecasting future trends.
  - Prescriptive Analytics – Recommending data-driven actions.

Power BI

- Overview of the Power BI interface, including Report, Data, and Model views.
- Importing data from various sources like Excel and SQL databases.
- Cleaning and transforming raw data using Power Query Editor.

Data Visualization

- Creating charts, graphs, and reports to present data insights.
- Using filters and slicers to make reports more interactive.
- Customizing visuals and applying formatting for better readability.

Data Modeling in Power BI

- Establishing relationships between tables to manage complex datasets.
- Using DAX (Data Analysis Expressions) for calculated fields and measures.

Advanced Features

- Exploring AI and machine learning capabilities in Power BI.
- Publishing reports to Power BI Service for cloud-based sharing and collaboration.

Hands-on Practice with Excel, Power BI, and MySQL Workbench

Throughout the course, I worked with Excel, Power BI, and MySQL Workbench to develop practical data analytics skills:

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1. Excel for Data Preparation
    - Importing and structuring raw data.
    - Performing data cleaning and transformations.
    - Exporting data for further analysis in Power BI.

2. Power BI for Dashboard Creation
    - Connecting Power BI to Excel and MySQL databases.
    - Designing interactive dashboards with dynamic visuals.
    - Implementing real-time updates and drill-through functionalities.

3. MySQL Workbench for Database Management
    - Creating and managing databases for structured data storage.
    - Writing SQL queries to extract relevant data.
    - Connecting Power BI to MySQL for seamless data integration.

6. ***HANDS-ON EXPERIENCE***

The course included practical assignments, case studies, and real-time projects, allowing me to apply my learning in Excel, Power BI, and MySQL Workbench to create interactive dashboards.

Practical Assignments and Case Studies

I worked on real-world datasets, gaining experience in data preparation, visualization, and dashboard creation. The hands-on tasks helped me understand how data analytics is used in different scenarios.

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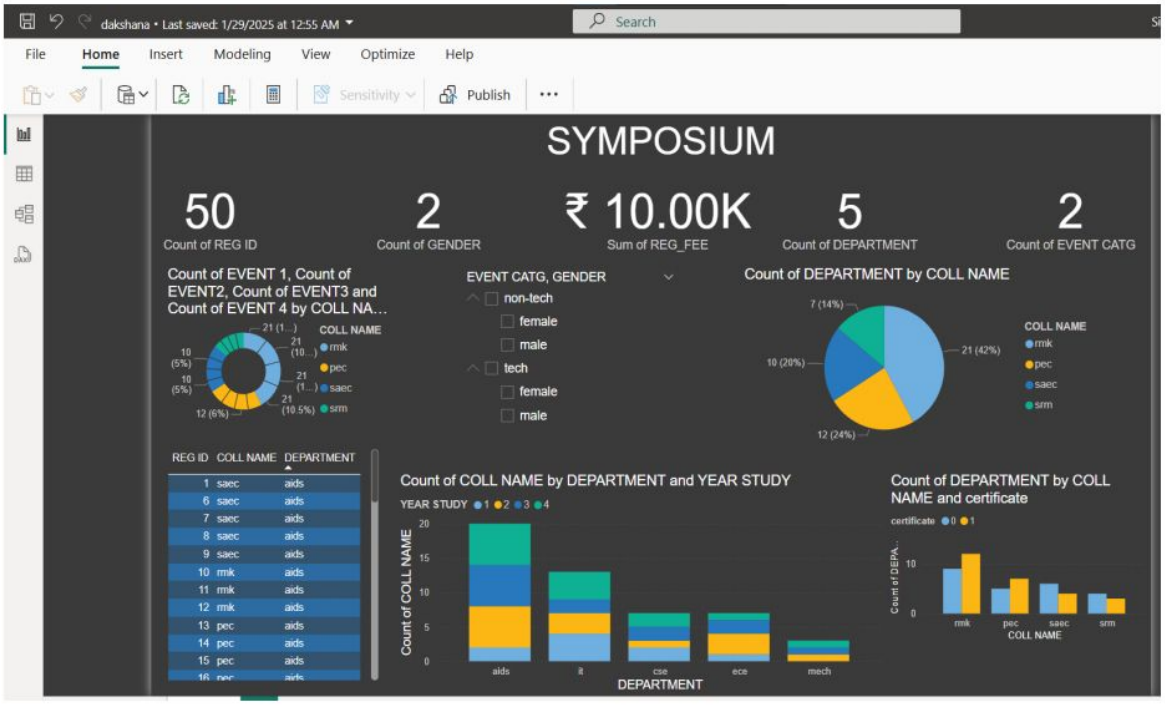
Real-Time Data Visualization Projects

During the course, I completed three key projects using Excel, Power BI, and MySQL Workbench:

1. Symposium Data Analysis

- Created event-related data in Excel, including participant details, sessions, and schedules.
- Designed an interactive dashboard in Power BI to display participant insights, session popularity, and event statistics.
- Stored and managed the structured data in MySQL Workbench



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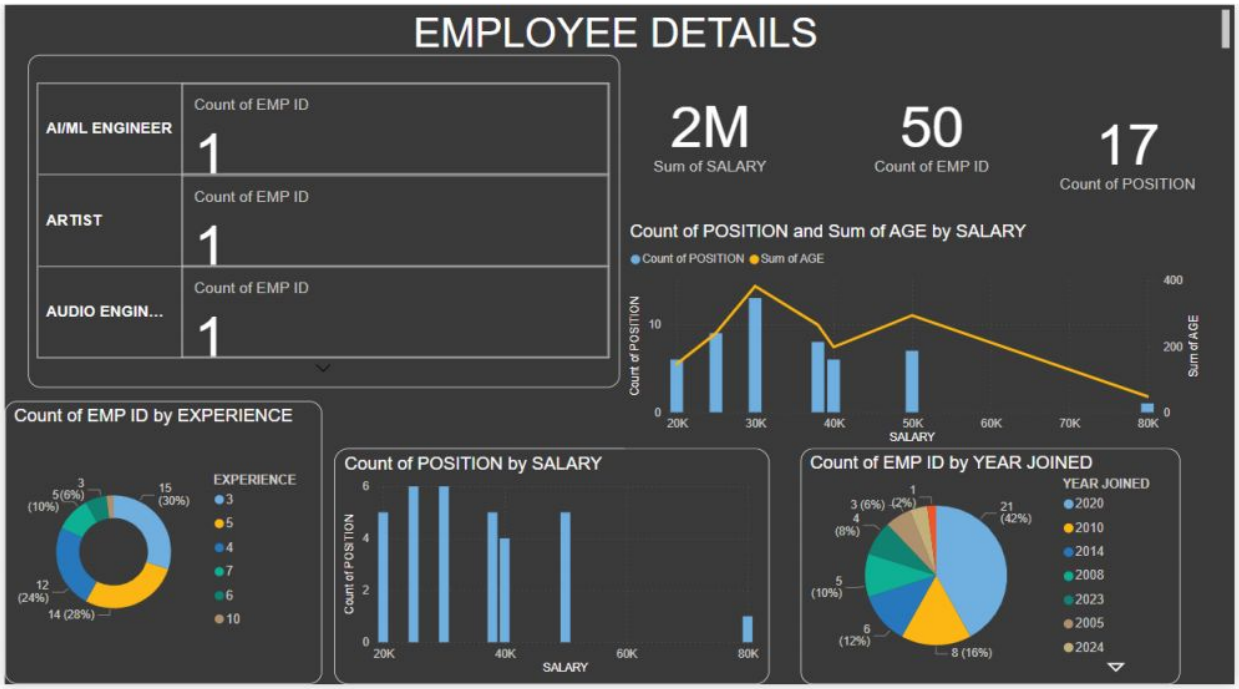
2. Employee Details Management

- Collected employee-related data in Excel, including department, salary, and performance metrics.
- Developed a Power BI dashboard to analyze workforce distribution, salaries, and performance trends.
- Stored the data in MySQL Workbench, enabling efficient data retrieval and management.



3. Monthly Budget Analysis (Final Project)

- Created an Excel dataset for monthly income, expenses, and savings.
- Designed a Power BI dashboard to track spending patterns and financial insights.
- Used MySQL Workbench to organize and manage the financial data.

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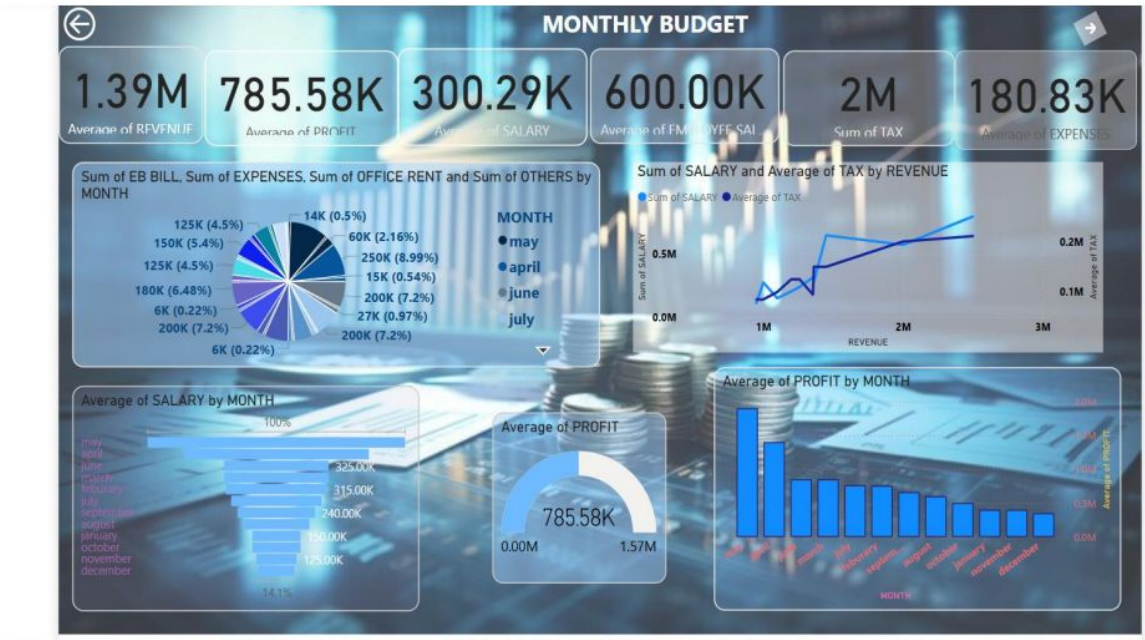
The person investing in his office



The same person investing in his home

7. *OUTCOME OF THE COURSE*

Completing the "Data Analytics with Power BI" course provided me with practical skills in data analysis, visualization, and database management. Through hands-on assignments and projects, I gained real-world experience in working with Excel, Power BI, and MySQL Workbench to process and analyze data effectively.

Key Learning Outcomes:

1. Proficiency in Data Handling
    - Learned how to create structured datasets in Excel, ensuring proper data formatting and organization.
    - Understood how to clean and preprocess data before using it for visualization and analysis.
2. Power BI Dashboard Creation
    - Developed interactive dashboards for various real-world scenarios:
        - **Symposium Analysis** – Tracked participant details and session engagement.
        - **Employee Management** – Analyzed workforce distribution and salary trends.
        - **Monthly Budget Tracking** – Visualized income, expenses, and savings trends.
    - Used filters, slicers, and dynamic visuals to enhance user interaction and data exploration.
3. SQL Database Management
    - Created structured databases in MySQL Workbench to store and retrieve data efficiently.
    - Wrote SQL queries to extract relevant insights from large datasets.
    - Connected Power BI with MySQL, enabling real-time data updates and interactive reporting.

4. Business Intelligence & Decision-Making
    - Applied data analytics techniques to gain actionable insights from raw data.
    - Understood how businesses use Power BI for performance monitoring and decision-making.
    - Learned to interpret trends, patterns, and key performance indicators (KPIs) from dashboards.
5. Improved Technical and Analytical Skills
    - Gained hands-on experience in using Excel functions, Power Query, and DAX expressions for calculations and data modeling.
    - Developed the ability to transform complex datasets into meaningful visual reports.
    - Strengthened my problem-solving skills by working on data-driven projects.

8. CONCLUSION

The "Data Analytics with Power BI" course has strengthened my skills in data handling, visualization, and database management. Through projects like Symposium Analysis, Employee Management, and Monthly Budget Tracking, I gained hands-on experience in Excel, Power BI, and MySQL Workbench, enabling me to create interactive dashboards and data models for real-world applications.

This course enhanced my problem-solving and analytical skills, providing a strong foundation in business intelligence and data-driven decision-making. The knowledge gained will be valuable for academic and professional growth, helping me apply data analytics in practical scenarios.

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THANK YOU

Submitted by:

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