Semester-1

Self – Driven Activity

Activity Name	**Data Visualization: Crafting Business Insights in Power BI**
Date of Activity	**12-08-2025 to 14-08-2025**
Mode of Conduct	Offline
Time	3-Days
Program Theme	IPR &Technology Transfer
Mandatory/Elective	Mandatory
Participants *(Online/offline)*	Students: **CSE (AI&ML) 5th semester, number of participants 53 students**
Resource Person/s	**Mr. Abhishek D M**
Description	This workshop aims to equip **CSE (AI & ML)** students with a strong foundation in **data visualization and business intelligence** using **Microsoft Power BI**. By the end of the workshop, participants will: • Understand core principles of data visualization and interactive reporting. • Learn the fundamentals of **Power BI**, including data import, transformation, and visualization techniques. • Develop skills to design **insightful, user-friendly dashboards** and reports. • Gain hands-on experience through **practical exercises and real-world datasets**.

Introduction to Power BI

Microsoft Power BI is a leading business intelligence tool that allows users to connect, analyze, and visualize data in dynamic, interactive ways. With its powerful capabilities, Power BI transforms raw data into insightful reports and dashboards that drive smarter business decisions. Whether it's tracking business performance, uncovering trends, or visualizing complex datasets, Power BI enables users to make data-driven decisions with ease. Its intuitive interface and integration with various data sources make it an invaluable tool for professionals across industries, from finance to technology. In this workshop, participants will gain hands-on experience with Power BI, learning to craft compelling visualizations and share insights effectively.

Microsoft Power BI is a comprehensive suite of business analytics tools designed to help users turn data into actionable insights. By offering a wide range of data connectivity, transformation, and visualization capabilities, Power BI empowers individuals to create stunning, interactive reports and dashboards. Whether you're analyzing sales trends, monitoring key performance indicators (KPIs), or tracking business growth, Power BI simplifies the process of uncovering patterns and trends from complex data.

Key features of Power BI include its ability to connect to numerous data sources, from cloud services to on-premises databases, making it versatile and adaptable to different industries. The platform's **drag-and-drop** interface allows users to easily build reports, while its **Power Query** feature provides powerful data transformation and cleansing options. With the help of **DAX (Data Analysis Expressions)**, users can perform advanced calculations to gain deeper insights into their datasets.

RAJEEV INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Three-Day Alumni-Led Workshop on Data Visualization and Business Intelligence

Data Visualization & Business Intelligence

WORKSHOP

Data Visualization: Crafting Business Insights in Power BI

Chief Patrons:

Dr. Rachana Rajeev
(President, RET, Hassan)

Dr. Ranjith Rajeev
(Vice President, RET, Hassan)

Dr. B N Rathna
(Secretary, RET, Hassan)

Patron:

Dr. Mahesh P K
(Principal, RIT, Hassan)

Organizing Chair:

Dr. Sharath M N
(Assoc. Professor & Head)

Staff Coordinators:

Ms. Chithra H N
(Asst. Professor)

Mr. Lohith D K
(Asst. Professor)

Student Coordinators:

Yashwanth Gowda M
(5th sem CSE(AI&ML))

Charan B S
(5th Sem CSE(AI&ML))

About the Institution (RIT)

Established in 2008, Rajeev Institute of Technology (RIT) is a premier engineering institution known for academic excellence and industry-oriented programs. With highly qualified faculty and a focus on innovation, RIT prepares students for future technological challenges.

RIT has emerged as a hub for technical education and skill development. The institute blends rigorous academics with hands-on learning to nurture competent professionals. Its commitment to research, innovation, and holistic growth shapes graduates ready to excel in a competitive world.

About the workshop

This three-day alumni-led workshop focuses on developing skills in data visualization and business intelligence. Participants will learn how to transform raw data into meaningful insights through effective visual storytelling, dashboard creation, and analytical techniques. The sessions will cover both conceptual foundations and hands-on exercises, ensuring practical learning. We will be using industry-standard tools, including Microsoft Power BI and Tableau, for demonstrations and practice.

Workshop Outline

Day 1 – Fundamentals & Data Preparation
- Introduction to Data Visualization & BI concepts
- Overview of Microsoft Power BI & Tableau
- Connecting to different data sources
- Data cleaning and transformation techniques

Day 2 – Building Dashboards & Visual Stories
- Creating charts, tables, and maps
- Designing interactive dashboards in Power BI
- Using Tableau for comparative analysis
- Applying visualization best practices

Day 3 – Advanced Analytics & Project Work
- Implementing filters, slicers, and drill-through
- Combining multiple datasets for deeper insights
- Real-world case study: End-to-end BI workflow

Resource Person

Abhishek D M
Software Engineer
RIT Alumni

Target Audience

This workshop is tailored for 3rd-year CSE (AI & ML) students of Rajeev Institute of Technology, aiming to deepen their understanding of how AI technologies can be applied to modern education through intelligent systems, personalized learning, and smart teaching tools.

About the Department

The CSE(AI&ML) Department at Rajeev Institute of Technology is committed to providing high-quality education, training, and research opportunities in cutting-edge AI and ML technologies. With a vision to develop skilled professionals who can tackle real-world challenges, the department emphasizes a strong curriculum, hands-on learning, and industry collaborations.

Through research initiatives, skill development programs, and global partnerships, the department aims to shape the future of AI and ML by fostering innovation, ethical practices, and societal impact. Graduates are equipped with the expertise needed for successful careers, higher education, and impactful contributions to industry and research.

Objectives of the Workshop

This workshop is designed to equip students with practical skills in Data Visualization and Business Intelligence using Microsoft Power BI. By the end of the workshop, participants will:

✓ Grasp core concepts of data visualization and BI.

✓ Build interactive dashboards and reports

✓ Apply best practices for clear, impactful visuals.

✓ Work on real-world case studies and a mini project.

Important Dates:

Workshop Dates: August 12, 13, 14 - 2025

Venue:

208 Lab, 2nd Floor, Main Block, RIT, Hassan.

Mode: In-Person Workshop

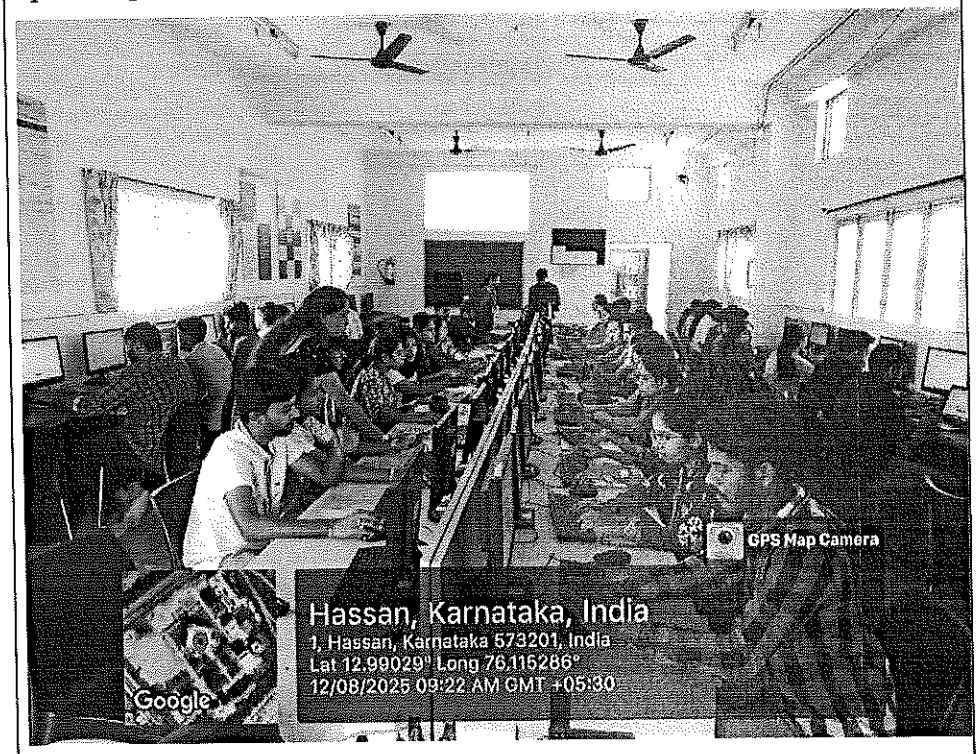
by AVINYA

DAY-1

Fundamentals & Data Preparation

Session-1 (10:00 am to 11:00 am): Introduction to Data Visualization & BI concepts

Data Visualization and Business Intelligence (BI) are essential tools that help transform raw data into clear, actionable insights. Data Visualization involves creating charts, graphs, and dashboards to make complex data easier to understand. It helps highlight key patterns and trends, making it accessible for everyone, whether they're experts or not. Business Intelligence goes a step further, using tools and processes to analyze data and turn it into meaningful reports and insights that drive better business decisions. Together, these concepts allow organizations to make smarter, data-driven decisions, optimize processes, and stay competitive in a fast-paced world.



Session-2 (11:15 am to 1:15 pm): Overview of Microsoft Power BI & Tableau and Connecting to different data sources

Microsoft Power BI is a robust business analytics tool designed to help users visualize, analyze, and share data in an interactive and meaningful way. It integrates with a wide variety of data sources, including databases, spreadsheets, and cloud-based services, making it a versatile platform for businesses of all sizes. Power BI provides users with intuitive drag-and-drop features for creating interactive reports and dashboards, allowing them to uncover trends, monitor performance, and make informed decisions. With capabilities like Power Query for data transformation and DAX (Data Analysis Expressions) for advanced calculations, Power BI is a powerful tool for both data analysts and business decision-makers.

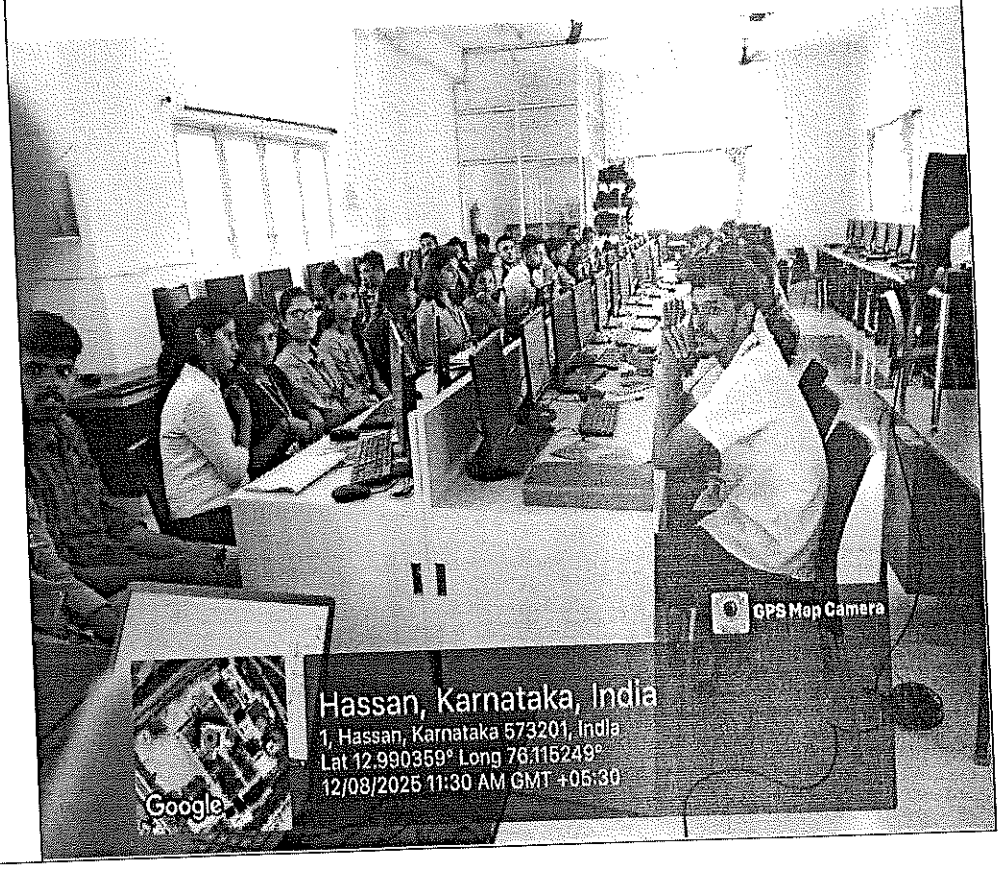
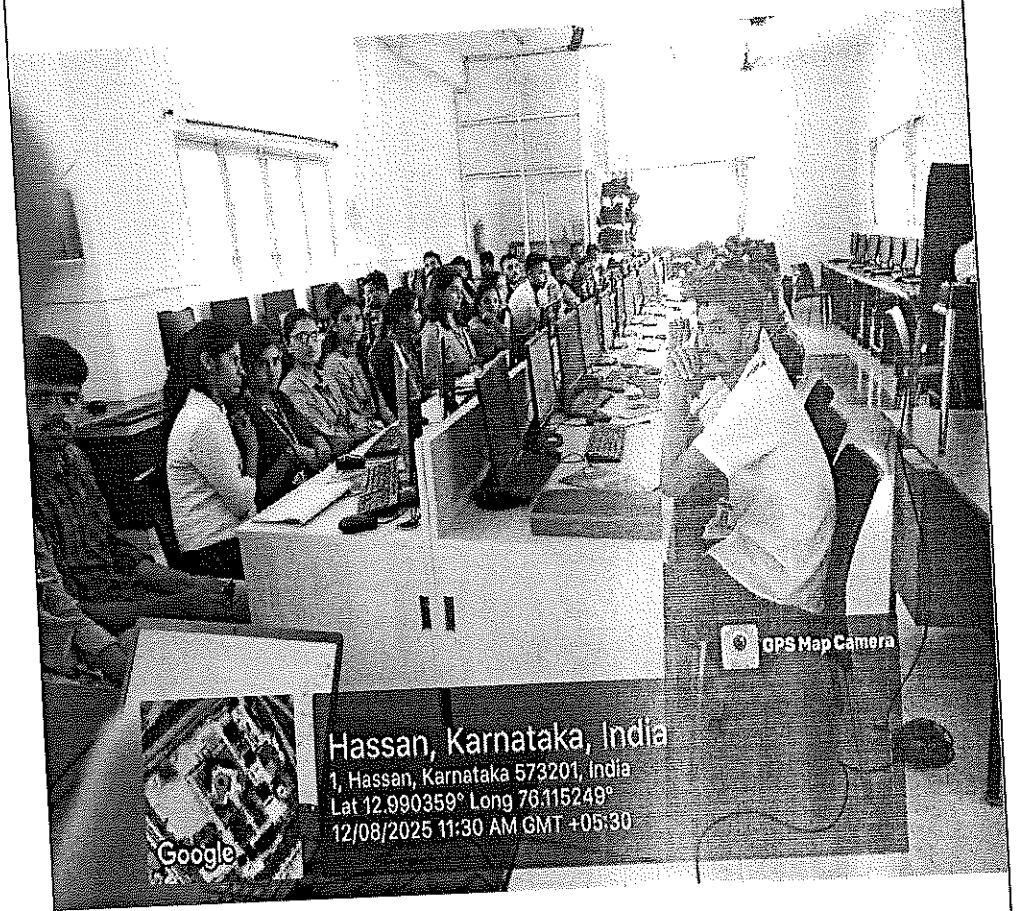


Tableau is another leading data visualization and business intelligence tool known for its intuitive design and powerful analytics capabilities. Tableau allows users to quickly connect to various data sources and create stunning, interactive visualizations without needing to write complex code. It emphasizes self-service analytics, meaning users can explore data on their own, without depending on IT teams. Tableau offers advanced features like drag-and-drop visualization, the ability to create real-time dashboards, and a strong community of users sharing tips and templates. Tableau's strength lies in its ability to handle large datasets and provide fast, actionable insights, making it popular in industries like finance, healthcare, and marketing.



Session-3 (02:00 pm to 5:00 pm): Data cleaning and transformation techniques

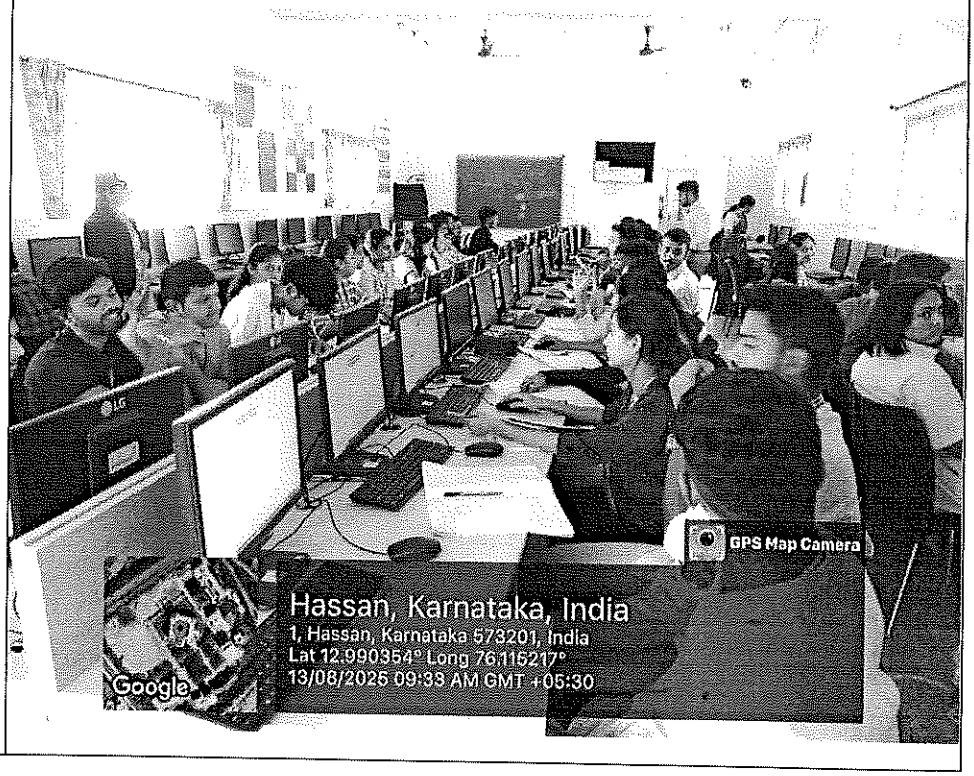
Data Cleaning and Transformation Techniques are essential steps in the data preparation process, ensuring that the data is accurate, consistent, and usable for analysis. **Data cleaning** involves identifying and correcting errors in the dataset, such as missing values, duplicates, outliers, or inconsistencies. Techniques like **imputation** (replacing missing values), **removing duplicates**, and **standardizing formats** are commonly used to improve data quality. **Data transformation** then focuses on converting data into a format suitable for analysis. This can include tasks like **normalizing** or **scaling** numerical values, **aggregating data** for better insights, or **converting data types** (e.g., turning text into categorical variables). Tools like **Power BI** and **Tableau** offer built-in features to perform these operations, such as **Power Query** in Power BI for data manipulation and **Tableau Prep** for visual data cleaning, ensuring that the final dataset is accurate, structured, and ready for meaningful analysis and visualization.

DAY-2

Building Dashboards & Visual Stories

Session-1 (09:00 am to 11:00 am): Creating charts, tables, and maps

Creating charts, tables, and maps is essential for visualizing data, making it easier to understand and interpret complex information. Charts, such as bar graphs, line plots, and pie charts, are great for comparing quantities, showing trends over time, or representing parts of a whole. Tables, on the other hand, provide a more detailed view, allowing for precise data comparison across different categories or groups. They are especially useful when you need to present large amounts of information clearly. Maps are invaluable for geospatial data, helping to display patterns or trends across geographic regions. By using these visual tools, data becomes more accessible, helping stakeholders make informed decisions, identify patterns, and communicate findings effectively.



Session-2 (11:15 am to 1:15 pm): Overview of Microsoft Power BI & Tableau and Connecting to different data sources

Using Tableau for comparative analysis allows users to explore and compare data across multiple dimensions in a visually compelling and intuitive way. Its powerful features, like drag-and-drop functionality, allow for the quick creation of dynamic visuals such as bar charts, heatmaps, scatter plots, and line graphs, which help reveal insights from complex datasets. Tableau's ability to filter, slice, and drill down into data enables users to make side-by-side comparisons effortlessly, whether across time periods, geographical regions, or other categories. Additionally, Tableau's interactive dashboards empower users to adjust views in real time, providing a deeper understanding of trends, relationships, and anomalies. By leveraging Tableau for comparative analysis, businesses can make data-driven decisions faster and more effectively, while uncovering actionable insights that might not be immediately visible in raw data alone.

Session-3 (02:00 pm to 5:00 pm): Applying visualization best practices

Applying visualization best practices is crucial for effectively communicating data insights and ensuring that visuals are both clear and impactful. Key practices include choosing the right chart type for the data, ensuring that visuals are simple and uncluttered, and using color strategically to highlight important trends or comparisons. For instance, bar charts are ideal for comparing quantities, while line graphs are better for showing trends over time. It's important to maintain consistency in design, using appropriate labels, titles, and legends so the viewer can easily understand the context and interpret the data. Additionally, limiting the use of excessive colors or 3D effects helps prevent distractions and keeps the focus on the data itself. Providing interactive elements, like filters or drill-downs, can also enhance the user's ability to explore the data. Ultimately, good data visualization balances aesthetics and functionality, ensuring that the viewer gains clear insights quickly and accurately.

DAY-3

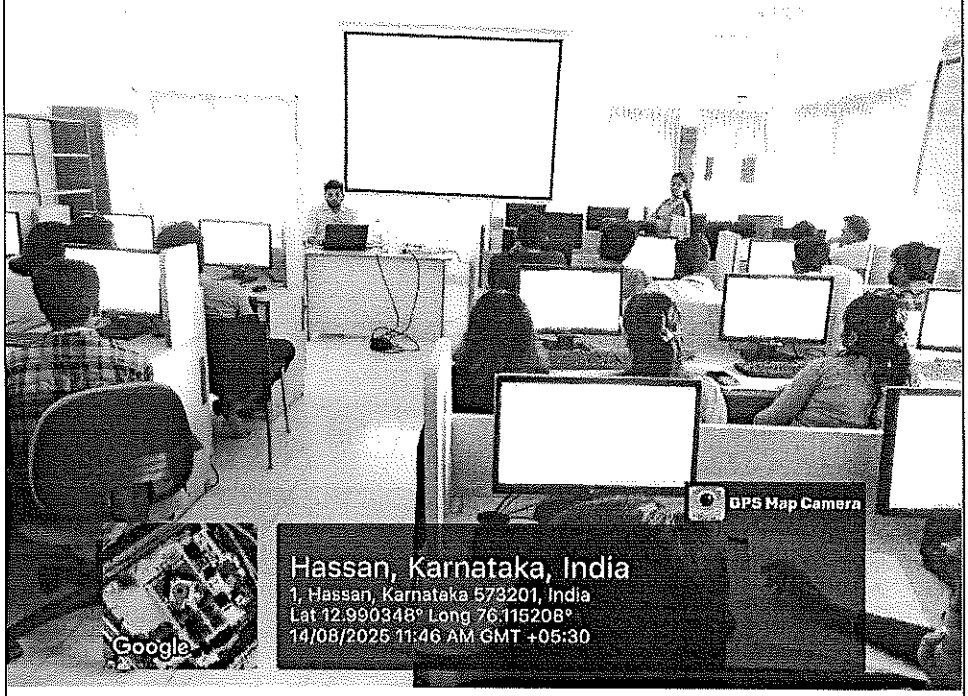
Advanced Analytics & Project Work

Session-1 (09:00 am to 11:00 am): Implementing filters, slicers, and drill-through

Implementing filters, slicers, and drill-through features enhances the interactivity and depth of data analysis, allowing users to explore data from different perspectives. **Filters** are essential for narrowing down the dataset based on specific conditions, ensuring that users can focus on relevant information without being overwhelmed by unnecessary data points. **Slicers**, often used in tools like Power BI, provide a user-friendly way to filter data by selecting categories or ranges, such as dates or regions, directly from the dashboard. This allows users to quickly adjust their views without needing to adjust complex settings. **Drill-through** functionality takes this a step further by enabling users to click on a data point to "drill" into more detailed, related information. This allows for deeper insights, like examining the performance of a specific product or region, without cluttering the main dashboard.

Session-2 (11:15 am to 1:15 pm): Combining multiple datasets for deeper insights

Combining multiple datasets is a powerful technique for uncovering deeper insights that may not be apparent when analyzing each dataset individually. By merging data from different sources, such as sales, customer demographics, or social media metrics, you can create a more comprehensive view of business performance and trends. This process often involves identifying common variables or keys, such as dates, customer IDs, or product categories, to join datasets in a meaningful way. Once combined, the new dataset offers a broader context for analysis, enabling you to discover correlations, identify patterns, and reveal hidden opportunities. For instance, combining sales data with marketing campaign performance can show how specific campaigns impact sales across different regions or demographics. Using advanced tools like Power BI or Tableau, analysts can visualize the integrated data in interactive dashboards, making it easier to spot trends, perform comparative analysis, and generate actionable insights that drive informed decision-making.



Session-3 (02:00 pm to 5:00 pm): Real-world case study: End-to-end BI workflow

A real-world case study of an end-to-end Business Intelligence (BI) workflow can be seen in a retail company seeking to optimize its inventory management and improve sales performance. The company begins by collecting data from various sources, such as point-of-sale (POS) systems, customer transaction data, inventory databases, and external market trends. Using tools like Power BI or Tableau, the data is cleaned and transformed to ensure consistency and remove duplicates or errors.

Once the data is ready, it is integrated into a centralized data model, combining sales data with inventory levels and customer insights to create a comprehensive view of operations. The next step is to visualize this data through interactive dashboards that show real-time sales performance, inventory turnover, and customer buying patterns. Using filters and slicers, store managers can analyze specific products, regions, or time periods, while drill-through features allow deeper exploration into detailed data, such as individual store performance or seasonal sales fluctuations.

Program Outcome	• **Master Power BI**: Learn how to use Power BI tools to create reports and dashboards. • **Data Cleaning & Transformation**: Understand how to clean and prepare data for analysis. • **Interactive Dashboards**: Create interactive and engaging dashboards with slicers, filters, and drill-through features. • **Data-Driven Decisions**: Turn data into actionable insights to support business decisions. • **Advanced Visualizations**: Use custom charts, KPIs, and maps for deeper analysis. • **Sharing & Collaboration**: Share dashboards securely and collaborate with team members. • **Problem-Solving with BI**: Apply Power BI to solve real-world business problems, like forecasting or performance tracking.

Signature of the HOD

Dr. Sharath M N

Head of the Department
Computer Science & Engg.(AI & ML)
Rajeev Institute of Technology, Hassan

Dr. Sahana C P
IIC Vice President

Dr. Prashanth S J
IIC President

Dr. Mahesh P K
Principal

Workshop Attendance List

Sl. No.	USN	Student Name
1	4RA23CI001	AISHWARYA H A
2	4RA23CI002	AISHWARYA M
3	4RA23CI003	AKSHAYA K
4	4RA23CI004	ANKITH K S
5	4RA23CI005	BASAVA PRASAD K M
6	4RA23CI006	BHAVANA D V
7	4RA23CI007	BHAVYA J N
8	4RA23CI008	C P ROHAN
9	4RA23CI009	CHARAN B S
10	4RA23CI011	DARSHAN RAJE URS
11	4RA23CI012	DEENA D
12	4RA23CI013	INCHARA A C
13	4RA23CI014	JAGADEESH NAYAK V
14	4RA23CI015	JOEL KEVIN
15	4RA23CI016	KEERTHANA M
16	4RA23CI017	KIRANA B S
17	4RA23CI018	LAASYA RAMESH
18	4RA23CI019	LAKSHMEESH Y M
19	4RA23CI020	MANYA A
20	4RA23CI021	MANYA M N
21	4RA23CI022	MANYA N P
22	4RA23CI023	MEGHANA H A
23	4RA23CI024	MOHITH G R
24	4RA23CI025	MOKSHITH G R
25	4RA23CI026	NEHA R
26	4RA23CI027	PAVAN H C
27	4RA23CI028	PIYU BERA

Sl. No.	USN	Student Name
28	4RA23CI031	RISHITHA H S
29	4RA23CI032	RUCHITHA H C
30	4RA23CI034	SACHIN A
31	4RA23CI035	SAHANA D M
32	4RA23CI036	SHASHANK B H
33	4RA23CI037	SHWETHA D K
34	4RA23CI038	SIDDESHA M K
35	4RA23CI039	SINCHANA A R
36	4RA23CI040	SINCHANA H N
37	4RA23CI042	SWAPNA K D
38	4RA23CI043	TARUN D M
39	4RA23CI044	VAISHALI K M
40	4RA23CI045	VARSHA S
41	4RA23CI046	VARUN GOWDA C D
42	4RA23CI047	VIKAS R
43	4RA23CI048	YASHWANTH G A
44	4RA23CI049	YASHWANTH GOWDA M
45	4RA23CI050	YOGESH M GOWDA
46	4RA24CI400	BINDU MAYUR
47	4RA24CI402	GAGAN K L
48	4RA24CI403	GOWDA UDAY THAMMANNA
49	4RA24CI404	GUNASHEKARA H K
50	4RA24CI405	JEEVAN H M
51	4RA24CI406	M NAGENDRA
52	4RA24CI408	SANJAY V B
53	4RA24CI409	SHASHANK B M

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