

RETAIL DATA VISUALIZATION WITH TABLEAU

An industrial training report submitted to Periyar university, Salem.

In partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE

IN

COMPUTER SCIENCE

By

KARTHIK R

[Reg. No.: U23PG507DTS014]



DEPARTMENT OF COMPUTER SCIENCE

PERIYAR UNIVERSITY

**NAAC 'A++' Grade with
CGPA3.61(Cycle-3)**

**State University – NIRF Rank 56–State Public University Rank 25
Salem–636011,Tamilnadu,India.**

(OCTOBER – 2024)

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Associate Professor,
Department of Computer Science,
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Salem-636011.

CERTIFICATE

This is to certify that the industrial training report entitled "**RETAIL DATA VISUALIZATION WITH TABLEAU**" submitted in partial fulfillment of the requirements for the award of the degree of **Master of Computer Science** to Periyar University, Salem, is a record of bonafide work carried out by **KARTHIK R(Reg No: U23PG507DTS014)** during the period of 2023-2025, studying in the Department of Computer Science at Periyar University, Salem, under my supervision and guidance. This report has not formed the basis for the award of any degree or similar title to any candidate of any university.

Place: Salem-636011

Date:

Signature of the Guide

Signature of the HOD

Submitted of the Viva-Voice Examination held on _____

Internal Examiner



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CERTIFICATE OF COMPLETION

This is to Certify KARTHIK R for
the hands on course achievement On DATA VISUALIZATION WITH TABLEAU

with Excellent Performance at Cognitive i IT Solutions Pvt Ltd.

From 14-03-2024 To 20-07-2024

Dr. Jayaprakash Narayanan V
CEO / DIRECTOR

HR MANAGER





COGNITIVE i IT SOLUTIONS (P) LTD
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Date: 05-09-2024

TO WHOM IT MAY CONCERN

This is to certify that **Karthik R M.sc(DS)** of **Periyar University, Salem** has successfully completed the **DATA VISUALIZATION WITH TABLEAU** internship at **Cognitive i IT Solutions (P) Ltd, Salem** from **14-03-2024** to **20-07-24**.

During this period, she/he demonstrated a strong understanding of Tableau, contributing significantly to our projects.

She/he has shown excellent problem-solving skills, teamwork, and a strong work ethic. We believe that she/he will be a valuable asset to any organization in the field of TABLEAU. We wish her/him all the best in future endeavors.



AUTHORIZED SIGNATURE

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I am grateful to **Dr. C. CHANDRASEKAR, M.C.A.,M.Phil.,Ph.D.**, Head of the Department of Computer Science at Periyar University, Salem, for providing the facilities that allowed me to successfully complete this internship training project successfully.

I would also like to express my sincere thanks to my guide, **DR. S. SATHISH ASSOCIATE PROFESSOR**, Department of Computer Science at Periyar University, Salem, for their immense help.

I also express my special thanks to all the Staff Members of Computer Science Department, Periyar University, Salem for their immense help.

I wish to express my deep sense of gratitude to my parents and family for their moral support and encouragement throughout the industrial training report.

Place: Salem-636011

Date:

Signature of the Student

KARTHIK R

DECLARATION

I hereby declare that the internship report titled "**RETAIL DATA VISUALIZATION WITH TABLEAU**" submitted to Periyar University in partial fulfilment of the requirements for the award of the **Master of Computer Science** degree in the Department of Computer Science, Periyar University, Salem, during the year 2023-2025. To the best of my knowledge, the work reported herein is not part of any degree or award conferred on an earlier date to any other candidate.

Place: Salem-636011

Date:

Signature of the Student

KARTHIK R

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Abstract

This report presents the tasks and projects undertaken during the internship at **Cognitive i IT Solutions Pvt Ltd Salem**. The hands-on course achievement **Data visualization** with Tableau, from 14-03-2024 to 20-07-2024 focused on analyzing **Retail** using Tableau. The main responsibilities included cleaning, analyzing, and visualizing large datasets to derive insights on sales performance, product lines and time periods. Through this internship, valuable experience was gained in data and understanding of how data visualization can drive decision-making in sales and business contexts

1. Introduction

The internship at **Cognitive i IT Solutions Pvt Ltd** was part of the M.Sc. (Computer Science) at Periyar University. The internship provided hands-on experience in analyzing real-world a **Retail Teams**, with a focus on improving data visualization skills. The primary objective of the internship was to contribute to the development of a sales performance analysis system.

TABLEAU DASHBOARD

Tableau is a popular Business Intelligence product on the market today. Its appeal originates from its capacity to handle Big Data, given that it can be relatively easy to implement, study, and operate. Tableau helps businesses make data-driven choices by extracting insights from the raw data and producing stunning visuals..

Users may organize and customize the components of Tableau dashboards in any way that best suits their unique needs. Dashboards can feature a variety of data visualizations, including maps, charts, graphs, tables, and custom illustrations.

Objective:

- Apply data analysis techniques using Tableau to real-world datasets.
- Improve visualization skills for better data presentation and understanding.
- Assist in the development of tools that can provide insights into sales performance analysis, Tableau usage, and deriving actionable insights from marketing data

Limited Public Information:

- The company might be a relatively new or small business that hasn't released much information to the public.

Private Company:

- COGNITIVE I IT SOLUTIONS (P) LTD could be a privately held company, meaning they don't share their financial information or operational details with the public.

TABLEAU DASHBOARD EXAMPLE

- Sales Performance Dashboard
- Financial Dashboard
- Customer Analytics Dashboard
- Supply Chain Dashboard Social Media Dashboard

2. Company Overview

Cognitive I IT Solutions (P) LTD is a leading start-up company and highly innovative software world, robotics integrator and technologies provider, established to provide leading edge intelligent technical solutions and consulting services to research software businesses, organizations and government in order to allow the efficient and effective secure access and communication with various heterogeneous information resources and services, anytime, and anywhere

Mission: Our mission is to complete our services with robust, extensible and customizable security-enhanced solutions for information sharing, data exchange, services invocation and communication..

Vision: Cognitive I IT Solutions was founded with the vision to enable “Secure IT Access to Any Service, Research Analysis and Development Anytime, Anywhere”.

About Us :

The COGNITIVE I IT SOLUTIONS (P) LTD was established by the Government of India in the Year 2019. It is an autonomous and Non-Profit research centre body Established under Section 8 of Act No. 18 of 2022 of MCA and MSME Approved Govt. of India.

3. Internship Duties and Responsibilities

During the internship, various tasks were completed related a Marketing Teams analysis using Tableau. Key responsibilities included:

1.Data Cleaning and Preparation:

- Raw Retail Teams,was provided, containing performance metrics, attendance records, and demographic information.
- The data needed to be cleaned by removing inconsistencies, handling missing values, and formatting for analysis.
- Excel and Tableau Prep were used to prepare the data for analysis.

2. Data Analysis:

- After cleaning the data, trends in sales performance, customer preferences, and correlations between demographics and outcomes were analyzed
- Calculated fields were created in Tableau to generate additional insights.

3. Dashboard Creation in Tableau:

- Interactive dashboards were developed to visualize key insights.
- Dashboards included filters for highlighting the top 5 and bottom 5 sub categories based on the sales, and other parameters, enabling a detailed exploration of the data.
- Various visualizations, including bar charts, heat maps, and line graphs, were used to display trends and performance data.

4. Presentation of Findings:

- Findings and dashboards were presented to supervisors and team members.
- Feedback was received on ways to improve the visualizations and make the dashboards more user-friendly

5.Tools/software:

Data Sources

- Databases: Connect to popular databases like MySQL, PostgreSQL, Oracle, SQL Server, and more.
- Spreadsheets: Import data from Excel, Google Sheets, and other spreadsheet applications.

Tools

- Python: Use Python to automate tasks, create custom visualizations, and integrate Tableau with other applications.
- R: Integrate R for statistical analysis and modeling within Tableau.
- JavaScript: Create interactive dashboards and visualizations using JavaScript.
- Tableau Server API: Programmatically interact with Tableau Server to automate tasks and manage dashboards.

4. Skills and Knowledge Acquired

Several valuable skills were developed during the internship:

1. Technical Skills:

- **Data Cleaning and Transformation:** Developed proficiency in using Excel and Tableau Prep for data cleaning and transformation tasks.
- **Tableau:** Gained in-depth knowledge of Tableau for building dashboards, creating calculated fields, and using filters effectively.
- **Data Analysis:** Acquired skills in identifying key trends and correlations within large datasets.

2. Soft Skills:

- **Problem-Solving:** Encountered various data challenges, such as missing values, and applied problem-solving techniques to address them.
- **Communication:** Improved communication skills by presenting data-driven insights to a non-technical audience.
- **Time Management:** Successfully managed multiple tasks, such as data cleaning, analysis, and visualization, within the given time frame.

5. Challenges and Solutions

1.Data Inconsistencies

- **Challenge:** The raw data contained several inconsistencies, such as missing values and duplicate records.
- **Solution:** Used Tableau Prep to clean the dataset by addressing inconsistencies and formatting the data appropriately.

2. Dashboard Performance

- **Challenge:** The large dataset resulted in slow-loading dashboards,
- **Solution:** Performance was optimized by using data extracts and simplifying complex calculations in Tableau

6. Key Learnings and Contributions

Key Learnings:

- Hands-on experience was gained in cleaning, analyzing, and visualizing sales data.
- Advanced Tableau features, such as calculated fields and interactive filters, were used to create effective visualizations.
- A deeper understanding was acquired of how data can be leveraged to improve decision-making in sales data.

Contributions:

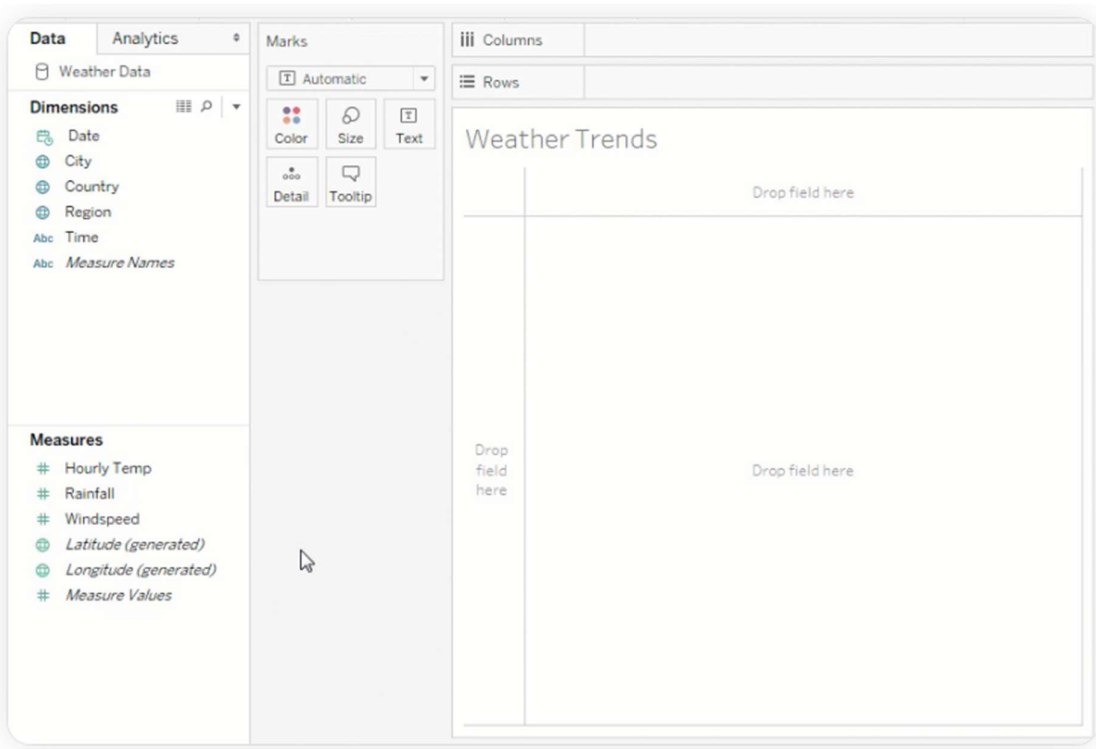
- Interactive dashboards were created to analyze sales performance and attendance.
- Insights were provided to help sales institutions identify key trends and areas for improvement.

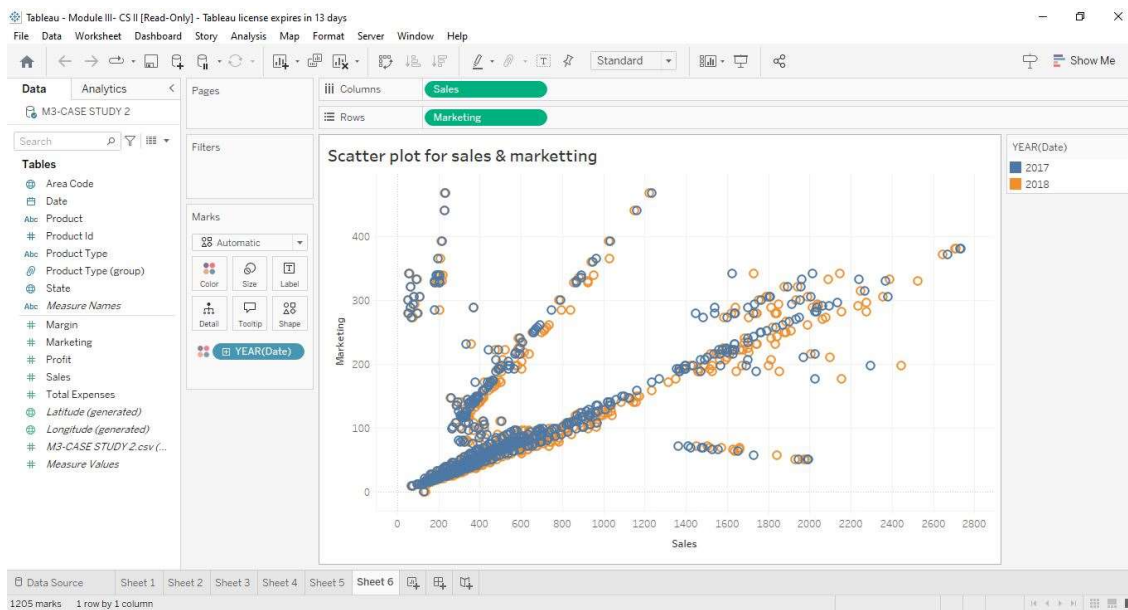
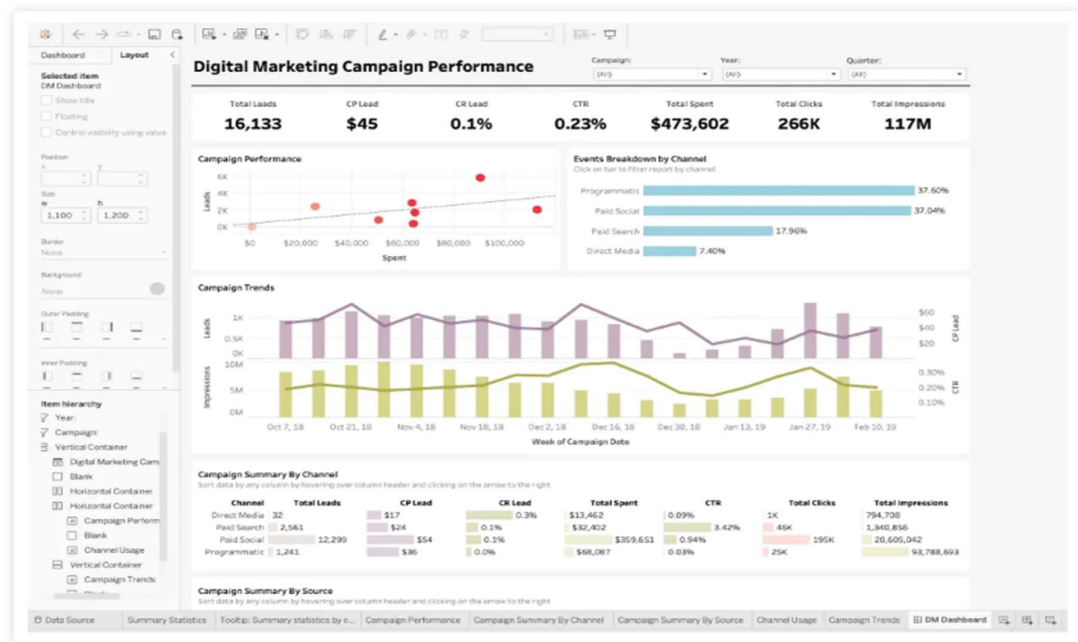
7.Conclusion

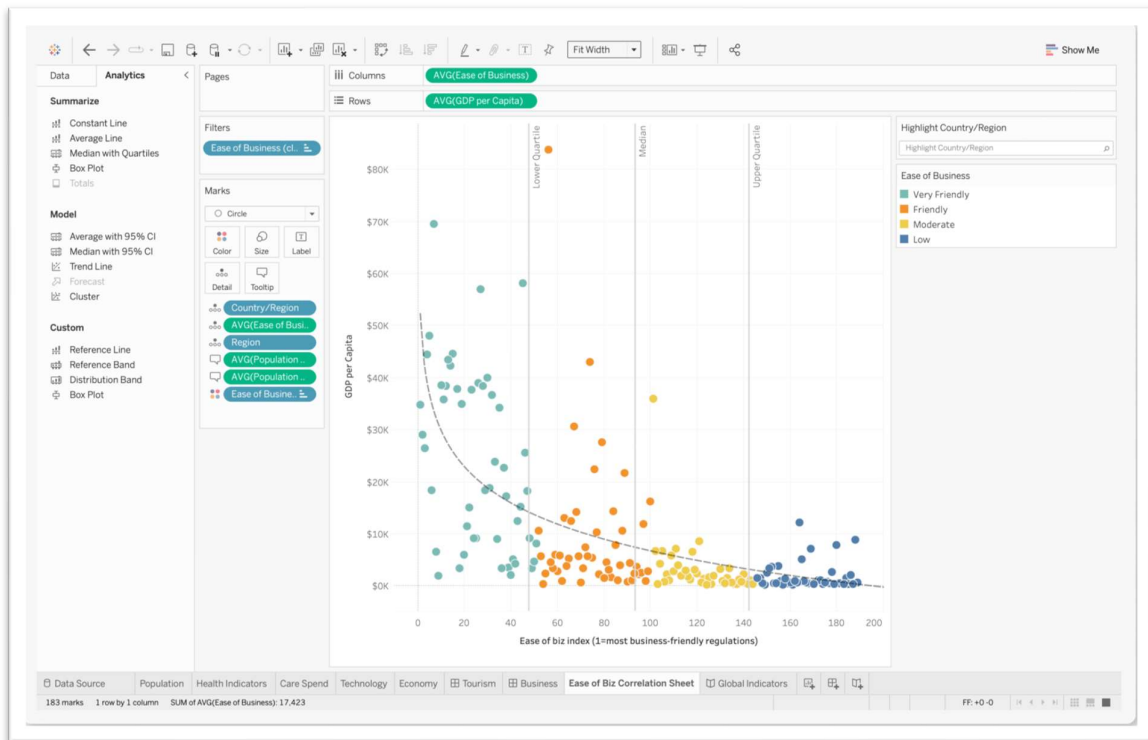
The internship experience at **Cognitive i IT Solutions Pvt Ltd** was an enriching learning journey. Practical exposure to data analysis and visualization using Tableau improved technical capabilities significantly. Working on real-world Marketing Teams provided insights into how marketing companies can use data to make informed decisions. In the whole, the internship contributed to both technical and professional growth.

Appendix

- Appendix A: Example of a Marketing team Performance Dashboard
- Appendix B: Sample Dataset Used for Analysis







- Tools for data visualization in marketing

1. Tableau
2. Looker Studio (former Data Studio)
3. Power BI