

Data Analytics Project Report On

Strategic Product Placement Analysis

(Unveiling Sales Impact With Tableau Visualization)



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ABSTRACT

Strategic product placement plays a critical role in influencing consumer behavior and maximizing retail sales. This project, titled "Strategic Product Placement Analysis: Unveiling Sales Impact with Tableau Visualization," focuses on analyzing how the positioning of products within retail spaces affects sales outcomes. The core objective is to provide data-driven insights that assist businesses in refining their marketing and placement strategies.

Using a dataset comprising sales figures, product placements, and consumer demographics, the project employs Tableau to visualize relationships between these variables. The aim is to help stakeholders identify the most effective product positioning strategies and enable them to make informed decisions. This study is supported by the integration of a Flask-based web interface that hosts dashboards and visual stories created in Tableau. The user interface offers interactive pages such as Home, About, Dashboard, Story, and Contact.

Through this application, users can view insights derived from data such as sales by product type, shelf performance, and consumer trends. The analysis benefits various industries including retail chains, consumer goods companies, advertising agencies, and media production firms, each of which can utilize the findings to enhance their strategic decisions.

The end result is an intuitive, data-rich web solution that helps businesses improve revenue by optimizing how and where products are displayed. This project not only demonstrates the power of data visualization tools like Tableau but also highlights the importance of combining analytics with user-friendly design for real-world applications.

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Project Overview

1.2 Purpose

2. IDEATION PHASE

2.1 Problem Statement

2.2 Empathy Map Canvas

2.3 Brainstorming

3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

3.2 Solution Requirement

3.3 Data Flow Diagram

3.4 Technology Stack

4. PROJECT DESIGN

4.1 Problem Solution Fit

4.2 Proposed Solution

4.3 Solution Architecture

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

7. RESULTS

7.1 Output Screenshots

8. ADVANTAGES AND DISADVANTAGES

9. CONCLUSION

10. FUTURE SCOPE

11. APPENDIX

Source Code(if any)

Dataset Link

GitHub & Project Demo Link

1. INTRODUCTION

1.1 Project Overview

In today's competitive market, understanding consumer behavior and optimizing product placement are crucial for driving retail success. This project, titled "**Strategic Product Placement Analysis: Unveiling Sales Impact with Tableau Visualization**," explores how the arrangement of products within a store or digital environment can influence customer decisions and boost sales. The project uses real-world sales and demographic data to analyze and visualize the effect of product positioning on consumer interaction and purchasing trends. Tableau, a powerful data visualization tool, is employed to create interactive dashboards, while a Flask-based web application is developed to host and present these insights in a user-friendly manner.

1.2 Purpose

The purpose of this project is to:

- Analyze how product positioning impacts consumer behavior and sales performance.
- Provide visual, data-driven insights that help businesses make informed marketing and merchandising decisions.
- Enable stakeholders to explore various positioning strategies and identify the most effective ones.
- Build a user-friendly web application where users can interact with dashboards and extract key findings.

2. IDEATION PHASE

2.1 Problem Statement

A retail company seeks to understand how the positioning of products within a store or platform influences sales and consumer engagement. Despite having access to sales data, product placement details, and customer demographics, the company lacks clear insights into which positioning strategies yield the best results. Without data-driven analysis, they risk inefficient layouts, missed sales opportunities, and suboptimal marketing strategies. This project aims to fill that gap by visualizing and analyzing the impact of product placement using Tableau.

2.2 Empathy Map Canvas

| | |
|--------|---|
| Thinks | Wants to know which placement strategy attracts more customers. |
| Feels | Confused and uncertain about why some products perform better. |
| Says | "We need to optimize our shelves to drive more conversions." |
| Does | Collects data but struggles to turn it into actionable insight. |
| Hears | Feedback from sales teams and customers about hard-to-find items. |

2.3 Brainstorming

- How does shelf position impact sales of different categories?
- Can product visibility be quantified and optimized?
- Which areas in the store generate the most revenue?
- Is there a pattern in consumer demographics and product interest?
- How can we visually show sales performance based on placement?
- What interactive dashboards could help in real-time decision-making?

These brainstorming points guided the formation of the dashboard views and overall structure of the solution.

3.REQUIREMENT ANALYSIS

3.1 Customer Journey Map

Stage 1: Awareness

The retail company identifies a need to understand how product positioning affects sales and seeks a data-driven approach.

Stage 2: Research

They explore data analytics and visualization tools like Tableau and understand the potential of interactive dashboards.

Stage 3: Decision

The company decides to adopt a solution combining data visualization with a web application to share insights.

Stage 4: Action

They deploy an interactive dashboard and story using Tableau, hosted in a Flask-based web UI for internal and client use.

3.2 Solution Requirements

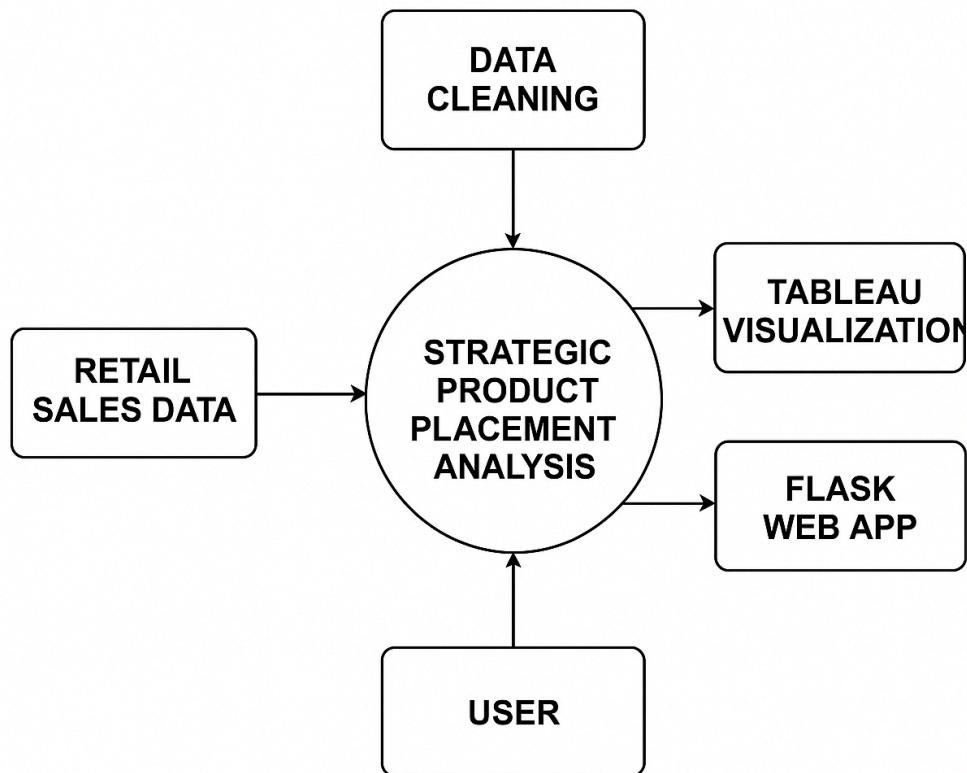
Functional Requirements:

- Dashboard showing product positioning vs. sales.
- Storyline visualizing customer behavior patterns.
- Interactive web pages (Home, About, Dashboard, Story, Contact).
- Embedded Tableau views.

Non-Functional Requirements:

- Responsive design and fast load time.
- User-friendly UI.
- Secure access to embedded Tableau links.
- Cross-browser compatibility.

3.3 Data Flow Diagram



Input: CSV file containing sales, placement, and demographic data.

Processing: Cleaned and prepared using Excel/Python.

Output: Tableau dashboards embedded into a Flask web UI for analysis.

3.4 Technology Stack

| Layer | Tool/Technology |
|-------------------|-------------------------|
| Data Processing | Excel / Python |
| Visualization | Tableau |
| Backend Framework | Flask (Python) |
| Frontend | HTML, CSS |
| Deployment | Localhost / Web browser |

4.PROJECT DESIGN

4.1 Problem-Solution Fit

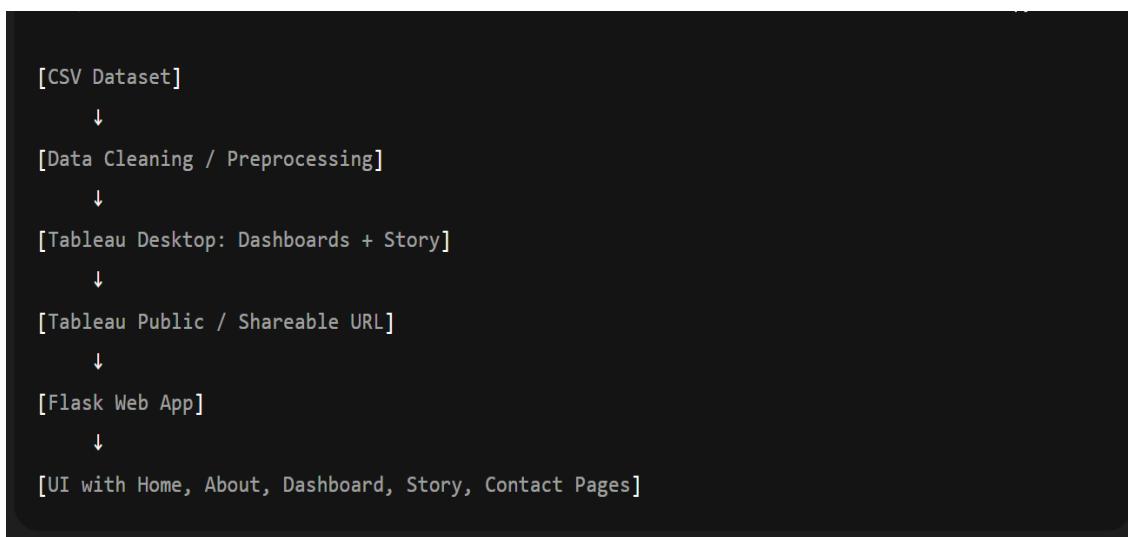
The core problem is the lack of clarity on how product positioning affects customer engagement and revenue. The solution uses data analytics and Tableau visualization to bridge this gap, providing businesses with actionable insights.

4.2 Proposed Solution

To design a solution that:

- Analyzes the correlation between product placement and sales.
- Uses Tableau to build insightful dashboards and stories.
- Embeds the visualizations into a Flask-based web app.
- Offers an interactive UI for business stakeholders to navigate insights.

4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

The project is structured into the following phases to ensure systematic development and timely delivery:

| Phase | Task Description | Duration |
|-----------------------|--|----------|
| Requirement Gathering | Understand client needs, define goals, and collect data. | 2 days |
| Data Preprocessing | Clean and prepare sales and demographic data. | 2 days |
| Dashboard Design | Create dashboards and stories in Tableau. | 3 days |
| Web Integration | Develop Flask app and embed Tableau dashboards. | 3 days |
| Testing & Debugging | Check performance, fix errors, and refine UI. | 2 days |
| Documentation | Prepare project report and finalize deliverables. | 1-2 days |

6.FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

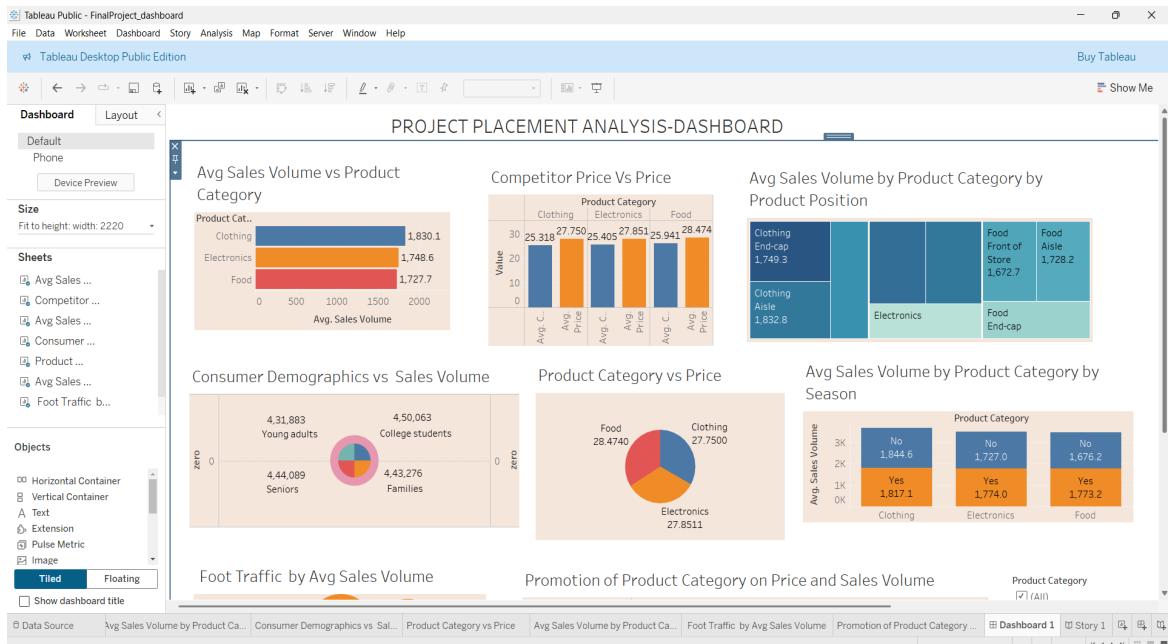
To ensure that the web application and Tableau dashboards perform reliably under expected usage, the following performance criteria were tested:

- **Load Time:** All Tableau visualizations were tested for optimal loading under typical internet speeds.
- **Responsiveness:** The web UI adapts across devices (laptop, tablet, and mobile).
- **Navigation Flow:** Page transitions (Home → About → Dashboard → Story → Contact) were smooth and intuitive.
- **Embedding Speed:** Embedded Tableau views rendered within 2–4 seconds on average.
- **Browser Compatibility:** Tested on Chrome, Firefox, and Edge for consistent appearance and behavior.

The application passed all key performance checks and provided a seamless user experience.

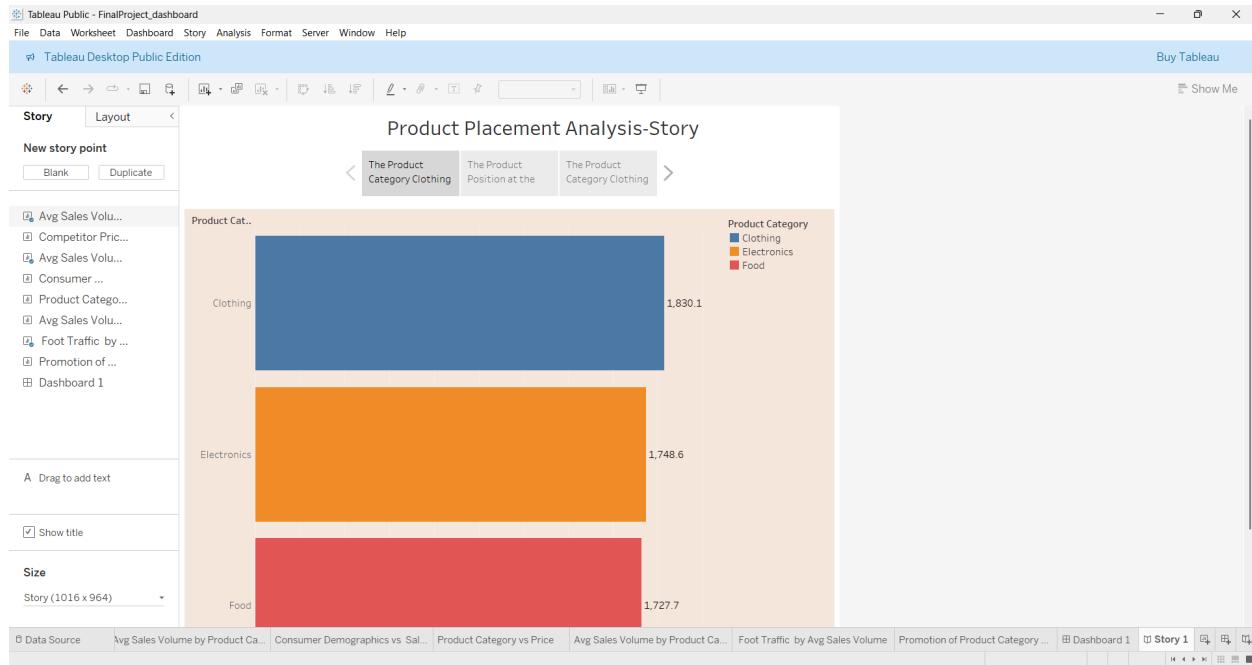
7.RESULTS

Dashboard

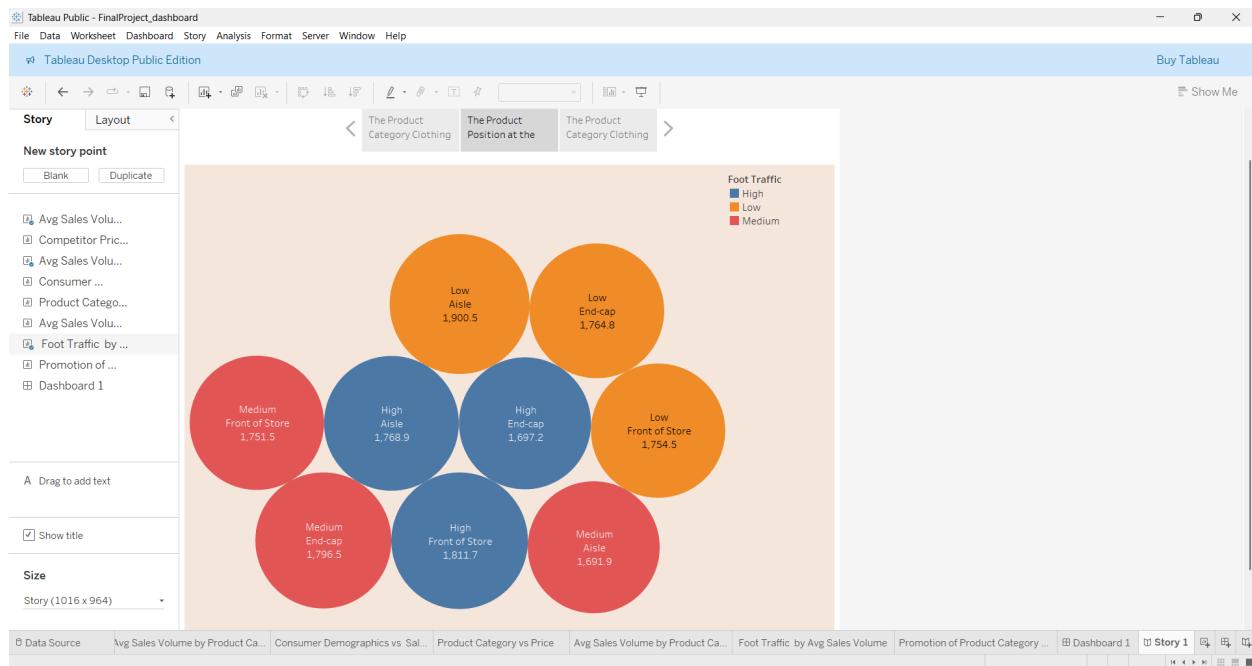


Story

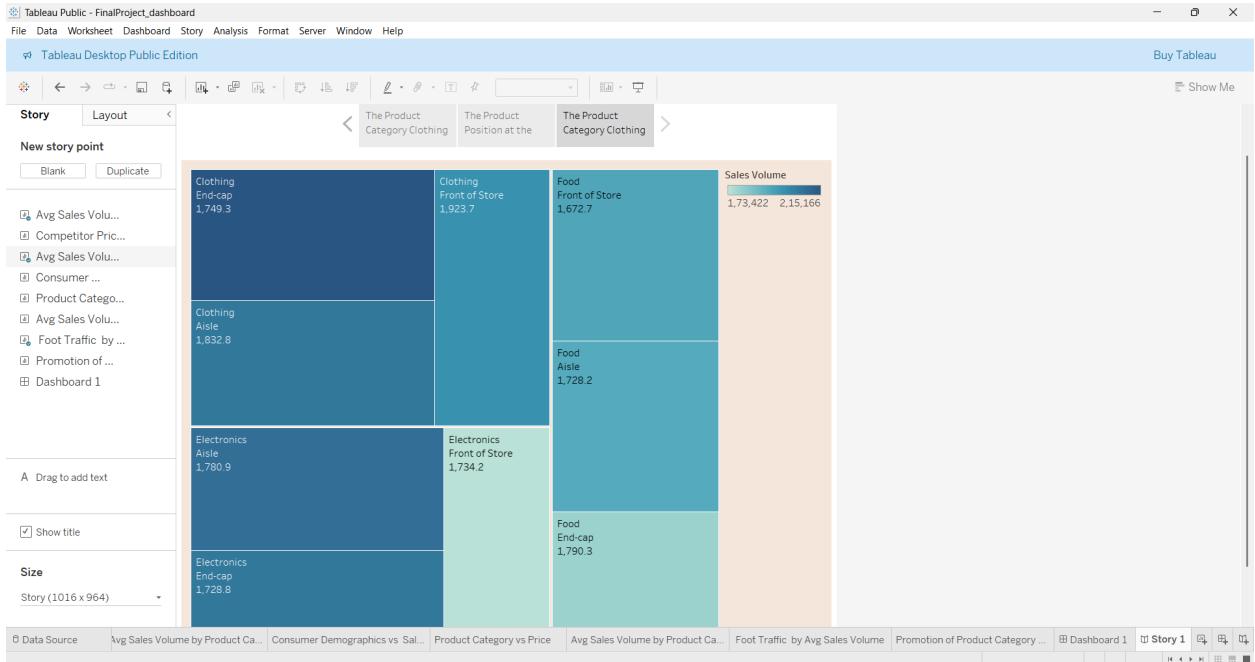
Story1



Story2

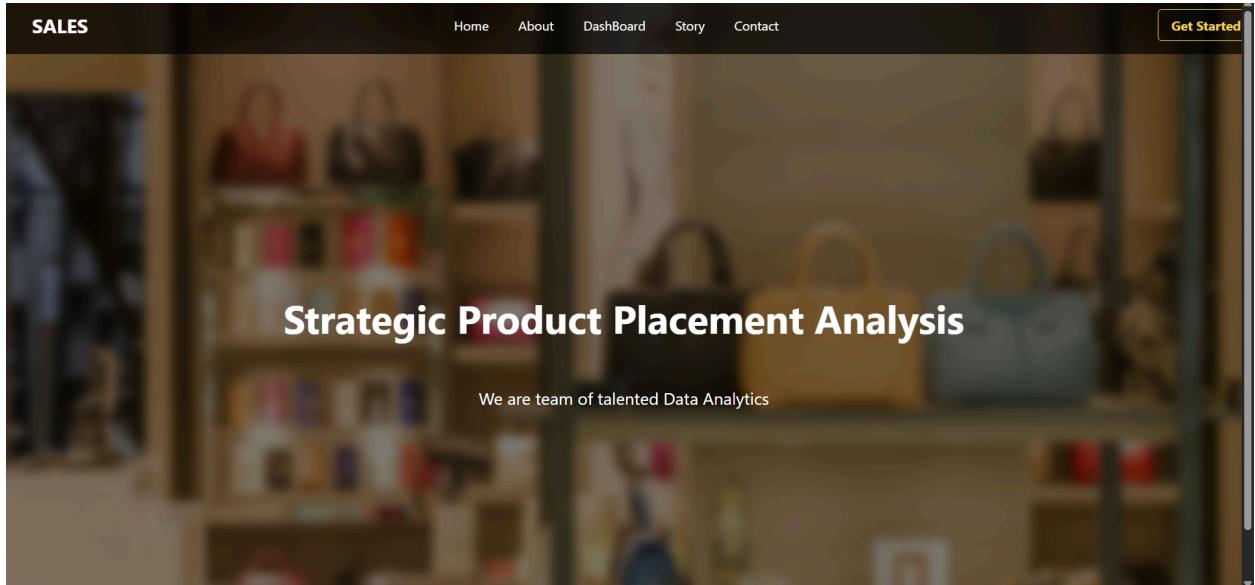


Story3



WEB INTEGRATION

Home Page



About Page

SALES

Home About DashBoard Story Contact **Get Started**

ABOUT

The Project Involves

- ✓ Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypothesis, and evaluate outcomes and generate insights from the data.
- ✓ Data preparation is the process of cleaning, transforming, and organizing data in order to make it suitable for analysis. It is an important step in the data analysis process, as the quality of the data used can have a significant impact on the accuracy and reliability of the results.
- ✓ Data visualization is the process of creating graphical representations of data in order to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.



Dashboard Page

PRSALES PLACEMENT ANALYSIS - DASHBOARD Home About DashBoard Story Contact **Get Started**

PROJECT PLACEMENT ANALYSIS-DASHBOARD

| Product Cat.. | Avg. Sales Volume |
|---------------|-------------------|
| Clothing | 1,830.1 |
| Electronics | 1,748.6 |
| Food | 1,727.7 |

| Competitor | Product Category | Value |
|-----------------|------------------|--------|
| Avg. Competitor | Clothing | 25.318 |
| Avg. Price | Electronics | 27.750 |
| Avg. Competitor | Food | 25.405 |
| Avg. Price | Electronics | 27.851 |
| Avg. Competitor | Food | 25.941 |
| Avg. Price | Clothing | 28.474 |

| Product Category | Product Position | Avg Sales Volume |
|------------------|------------------|------------------|
| Clothing | End-cap | 1,749.3 |
| Clothing | Aisle | 1,832.8 |
| Electronics | Aisle | 1,780.9 |
| Electronics | End-cap | 1,728.8 |
| Food | Front of Store | 1,672.7 |
| Food | Aisle | 1,728.2 |

| Demographic | Avg Sales Volume |
|------------------|------------------|
| Young adults | 431,883 |
| College students | 450,063 |
| Families | 443,276 |
| Seniors | 444,089 |

| Category | Price |
|-------------|---------|
| Food | 28.4740 |
| Clothing | 27.7500 |
| Electronics | 25.3180 |

| Season | Product Category | Avg Sales Volume |
|--------|------------------|------------------|
| No | Clothing | 1,844.6 |
| Yes | Clothing | 1,817.1 |
| No | Electronics | 1,727.0 |
| Yes | Electronics | 1,774.0 |
| No | Food | 1,672.7 |
| Yes | Food | 1,728.2 |

Story Page

The screenshot shows a web page titled "PRODUCT PLACEMENT ANALYSIS - STORY". At the top, there's a navigation bar with links for Home, About, DashBoard, Story, Contact, and a "Get Started" button. Below the title, it says "STORY SCENE-1" and "Product Placement Analysis-Story". A horizontal banner at the top of the main content area contains three statements: "The Product Category Clothing has highest Average Sales Volume", "The Product Position at the Front of store as High Sales Volume and", and "The Product Category Clothing at front of store has highest". Below this is a 2x2 grid of colored boxes representing sales volume for different product categories and positions. The grid is as follows:

| Sales Volume | |
|--------------------------------|---------------------------------------|
| Clothing End-cap 1,749.3 | Clothing Front of Store 1,923.7 |
| Clothing Aisle 1,832.8 | Food Front of Store 1,672.7 |
| Food Aisle 1,728.2 | |

Contact Page

The screenshot shows a web page titled "SALES" with a dark blue header containing links for Home, About, DashBoard, Story, Contact, and a "Get Started" button. The main content area has two sections: "CONTACT US" on the left and a "Send a Message" form on the right. The "CONTACT US" section includes location details: "Location: Gachibowli Circle, Hyderabad, INDIA", email address: "Email: businessstore@example.com", and phone number: "Call: 89554 48855". The "Send a Message" form consists of four input fields: "Your Name", "Your Email", "Subject", and "Message", followed by a "Send Message" button. At the bottom of the page, a footer bar contains the text "2025 Strategic Product Placement. All rights reserved."

8.ADVANTAGES AND DISADVANTAGES

Advantages:

-  **Data-Driven Insights:** Enables businesses to make strategic decisions based on real sales and placement data.
-  **User-Friendly Interface:** The Flask-based web app offers a clean and interactive user experience.
-  **Effective Visualization:** Tableau dashboards present complex data in an understandable and engaging format.
-  **Customizable:** Easily adaptable for other datasets or retail categories.
-  **Cross-Industry Use:** Useful for retail, advertising, media, and marketing sectors.

Disadvantages:

-  **Dependent on Data Quality:** Insights are only as good as the data collected.
-  **Internet Required:** Tableau Public embedding requires a stable internet connection.
-  **Limited Real-Time Interaction:** Static dashboard snapshots lack real-time database integration.

9.CONCLUSION

The "Strategic Product Placement Analysis" project has effectively demonstrated the power of integrating **data visualization with web technologies** to extract meaningful insights from retail sales data. By using **Tableau** for visualizing complex relationships and **Flask** for building an interactive user interface, the project provides a complete solution for analyzing the impact of product positioning on consumer behavior and sales performance.

The dashboards created using Tableau offer a clear understanding of which product placements are most effective, which areas in a store attract the most customer attention, and how demographics influence purchasing decisions. These insights allow businesses to **refine their marketing tactics, optimize shelf layouts, and increase profitability** through data-backed strategies.

Overall, the project bridges the gap between raw data and actionable business intelligence. It not only meets its intended objectives but also sets a strong foundation for future enhancements like real-time data updates, predictive analytics, and cloud deployment. The system is scalable, visually appealing, and highly relevant to various sectors including retail, advertising, entertainment, and consumer analytics.

10.FUTURE SCOPE

-  **Real-Time Data Integration:** Connect the dashboards to live databases for real-time monitoring.
-  **Cloud Deployment:** Host the application on cloud platforms like Heroku or AWS for public access.
-  **Advanced Analytics:** Include predictive modeling using machine learning to forecast sales trends.
-  **Personalization:** Tailor insights for specific customer segments or product categories.
-  **Mobile Optimization:** Enhance responsiveness for better mobile viewing experiences.

11.APPENDIX

Folder Structure

```
Tableau_FinalProject/
├── static/
│   ├── images/          # Background images, product images, etc.
│   └── style.css        # All your CSS files
└── templates/
    ├── index.html      # Home page
    ├── about.html       # About page
    ├── dashboard.html   # Embedded Tableau dashboard
    ├── story.html        # Tableau story embed
    └── contact.html     # Optional contact form/page
└── app.py             # Flask app entry file
```

Using Flask

app.py

```
from flask import Flask, render_template

app = Flask(__name__)

@app.route('/')
def home():
    return render_template("index.html")

@app.route('/about')
def about():
    return render_template("about.html")

@app.route('/dashboard')
def dashboard():
    return render_template("dashboard.html")

@app.route('/story')
def story():
    pass
```

```

        return render_template("story.html")

@app.route('/contact')
def contact():
    return render_template("contact.html")

if __name__ == '__main__':
    app.run(debug=True)

```

Index.html

```

{% extends "base.html" %}
{% block content %}
<div class="header-section">
    <h1>Strategic Product Placement Analysis</h1>
    <p>We are team of talented Data Analytics</p>
</div>
{% endblock %}

```

Navbar.html

```

<nav>
    <div class="brand">SALES</div>
    <div>
        <a href="{{ url_for('home') }}>Home</a>
        <a href="{{ url_for('about') }}>About</a>
        <a href="{{ url_for('dashboard') }}>DashBoard</a>
        <a href="{{ url_for('story') }}>Story</a>
        <a href="{{ url_for('contact') }}>Contact</a>
    </div>
    <a href="#get-started" class="get-started">Get Started</a>
</nav>

```

Base.html

```

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">

```

```
<title>Strategic Product Placement</title>
      <link      rel="stylesheet"      href="{{ url_for('static',
filename='style.css') }}">
</head>
<body>
  {% include 'navbar.html' %}
  {% block content %}{% endblock %}
</body>
</html>
```

Data Set Link:

<https://www.kaggle.com/datasets/amitvkulkarni/impact-of-product-positioning-on-sales>

GitHub Link:

<https://github.com/Likithamudili/Strategic-Product-Placement-Analysis-Final-Project/tree/main>