AFSAL AHAMED.S

Case Study Report

Data Analytics with Power BI

“Inventory and sales analysis of Departmental store”

“BISHOP AMBROSE COLLEGE”

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ABSTRACT

Traditional department stores have been struggling to attract customers for several years. Many retail stores have closed in recent years, even before the COVID-19 pandemic. The reinvention of in-store shopping value and experience is imperative to attract customers and reinvigorate retail business. The purpose of this study was to discover which in-store components can improve customer experiences and loyalty while also identifying dissatisfaction issues in consumer experiences in department stores. The data was collected from two consumer groups—luxury department store (Selfridges) customers and mid-market department store (Debenhams) customers—to identify the types of value and experiences they seek most often. The findings showed that to enhance their store patronage, Debenhams should reposition their brand image in a way that allows customers to connect with their self-image and lifestyle by improving efficiency and convenience and prioritizing the utilitarian and social value types. By contrast, Selfridges should enhance their store atmosphere, visual merchandising and sensory experiences by maximizing slow retailing experiences and emphasizing the aspirational self-concept image for symbolic and hedonic value. This study explained how department stores can craft their in-store environments to appeal to their customers' preferred value types to ensure success in a competitive market

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement

A sales department is responsible for selling products or services for a company. The department comprises a sales team that works together to make sales, increase profitability and build and maintain relationships with customers to encourage repeat purchases and brand loyalty. A sale is a transaction between two or more parties in which goods or services are exchanged for money or other assets. In the financial markets, a sale is an agreement between a buyer and seller establishing the price of a security and its delivery for agreed-upon compensation.

1.2 Proposed Solution

Implement a personalized shopping experience using customer data analytics. Utilize data from loyalty programs, past purchases, and browsing history to offer personalized recommendations and promotions. Introduce in-store digital kiosks or mobile apps for easy navigation and product search within the store. Incorporate features like real-time inventory availability and location-based promotions. Offer click-and-collect services where customers can order online and pick up their items in-store, providing convenience and reducing shipping costs. Provide comprehensive training to staff members on new technologies, products, and customer service skills to enhance their effectiveness and efficiency. Empower frontline staff to make decisions to resolve customer issues promptly, fostering a positive shopping experience and customer satisfaction. Foster a culture of continuous improvement and innovation, encouraging staff members to provide feedback and suggestions for enhancing operations.

1.3 Feature

- **Large size:** A departmental store is a large scale retail organization.
- **Central location:** departmental store is locality in a main market. All the departments are organized under one roof in a large building.
- **Wide range of goods:** It provides a large variety of merchandise from 'pin to plane' at one place.
- **Specialisation:** A departmental store is divided into several departments, each specializing in one line of goods.
- **Attractive appearance:** A departmental store is housed in an impressive building which is fully furnished and well decorated.

1.4 Advantages

- **Economies of Bulk Purchases:** A departmental store purchases its merchandise in large quantity thereby enjoying the economies in price, transportation cost and trade discounts etc.
- **Providing Variety of Products:** A departmental store provides different varieties of products under one roof. It caters to the total needs of a customer at one place and they need not to go from one place to another for making purchases.
- **Convenience of Choice:** The customers can select the goods of their own choice and taste from a large variety of goods of different quality and brands.

1.5 Scope

department store is a large store organized into departments that sell items such as furniture, apparel, electronics, footwear, cosmetics, and so on. Retail chains and independent retailers licensed as branded, branded licensed, and unbranded are owned by department and other general merchandise stores. Department stores typically prioritize convenience and variety, catering to a broad customer base with diverse tastes and preferences. . Additionally, they may offer services such as personal shopping assistance, alterations, and in-store events to enhance the overall shopping experience and foster customer loyalty.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Point of Sale (POS) System:

- **A robust POS system:**
  Essential for processing transactions, managing inventory, and tracking sales data.

- **Inventory Management Software:**
  This helps in monitoring stock levels, tracking product movement, and automating reordering processes.

- **Customer Relationship Management Software:**
  Software assists in managing customer interactions, tracking preferences, and implementing loyalty programs.

2.2 Business Intelligence (BI) Tools:

Tools:

- **PowerBI**:
  BI tools help in analyzing sales data, identifying trends, and making informed business decisions. Examples include Tableau, Microsoft Power BI, and Google Data Studio.

- **Employee Scheduling Software:**
  Department stores often use software to create employee schedules, manage shift changes, and track attendance. Examples include When I Work, Deputy, and Humanity.

Software Requirements:

- Point of Sale (POS) System:
- Ability to process sales transactions, including cash, credit/debit cards, and other payment methods.
- Barcode scanning functionality for efficient product scanning.

Reporting and Analytics:

- Sales reports, including daily, weekly, monthly, and yearly summaries.

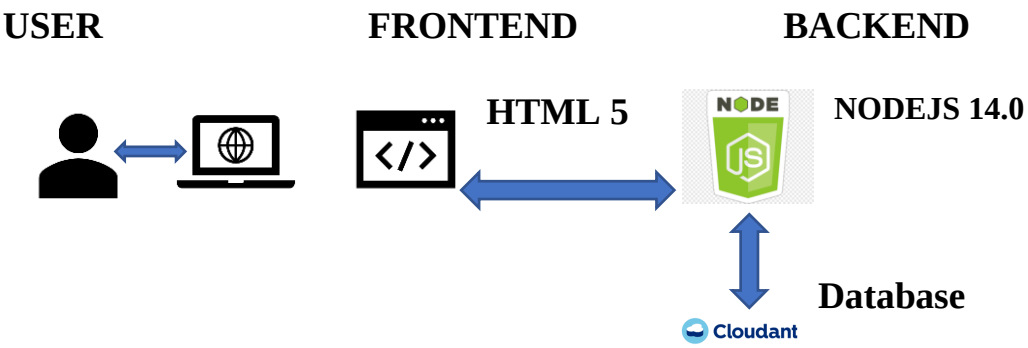
  Inventory reports, including stock levels, turnover rates, etc.
- Customer analytics for understanding buying patterns and preferences.

  Employee performance reports.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture



Here's a high-level architecture for the project:

1. **Site Analysis and Planning:**
   Conducting a thorough analysis of the site including its location, topography, climate, surrounding environment, accessibility, and local regulations**.**

2. **Building Design:**
   Conceptualizing the overall design philosophy which may involve modern, minimalist, classical, or thematic approaches based on the brand identity and target market**.**

3. **Spatial Organization:**
   Allocating space for different departments such as fashion, electronics, home goods, cosmetics, etc., based on their size, popularity, and interrelation.

4. **Structural Engineering:**
   Designing a structural system that can support the weight of the building, accommodate large open spaces, and withstand environmental loads such as wind and seismic forces**.**

5. **Interior Design:**
   Collaborating with interior designers to create an inviting and immersive shopping environment through the use of lighting, color schemes, materials, textures, and signage.

6. Technology Integration:

Integrating technology solutions such as digital signage, interactive displays, self-checkout kiosks, and mobile apps to enhance the shopping experience and streamline operations.

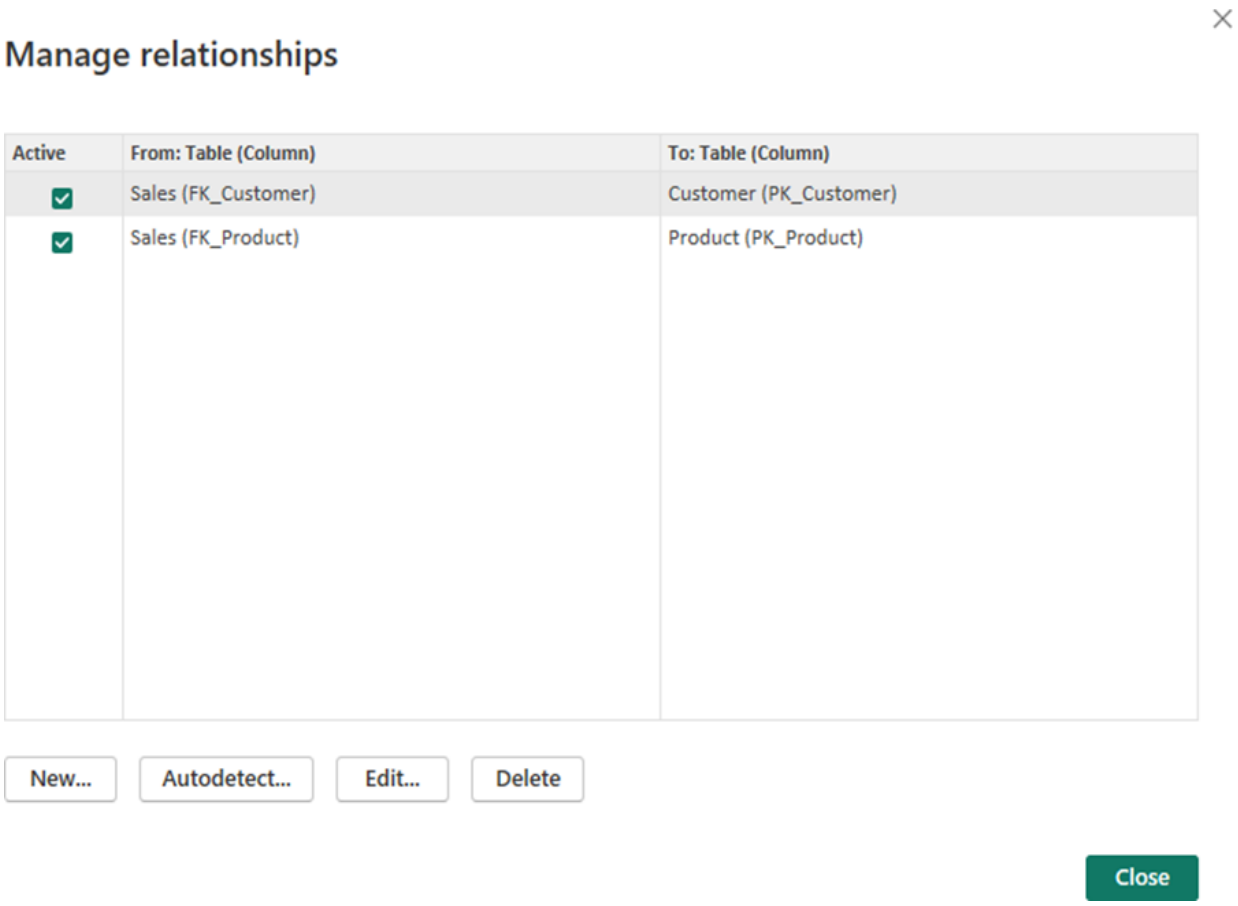
The successful execution of a department store project requires close collaboration between architects, engineers, interior designers, contractors, and other stakeholders to create a space that not only meets functional requirements but also delights customers and contributes positively to the built environment.

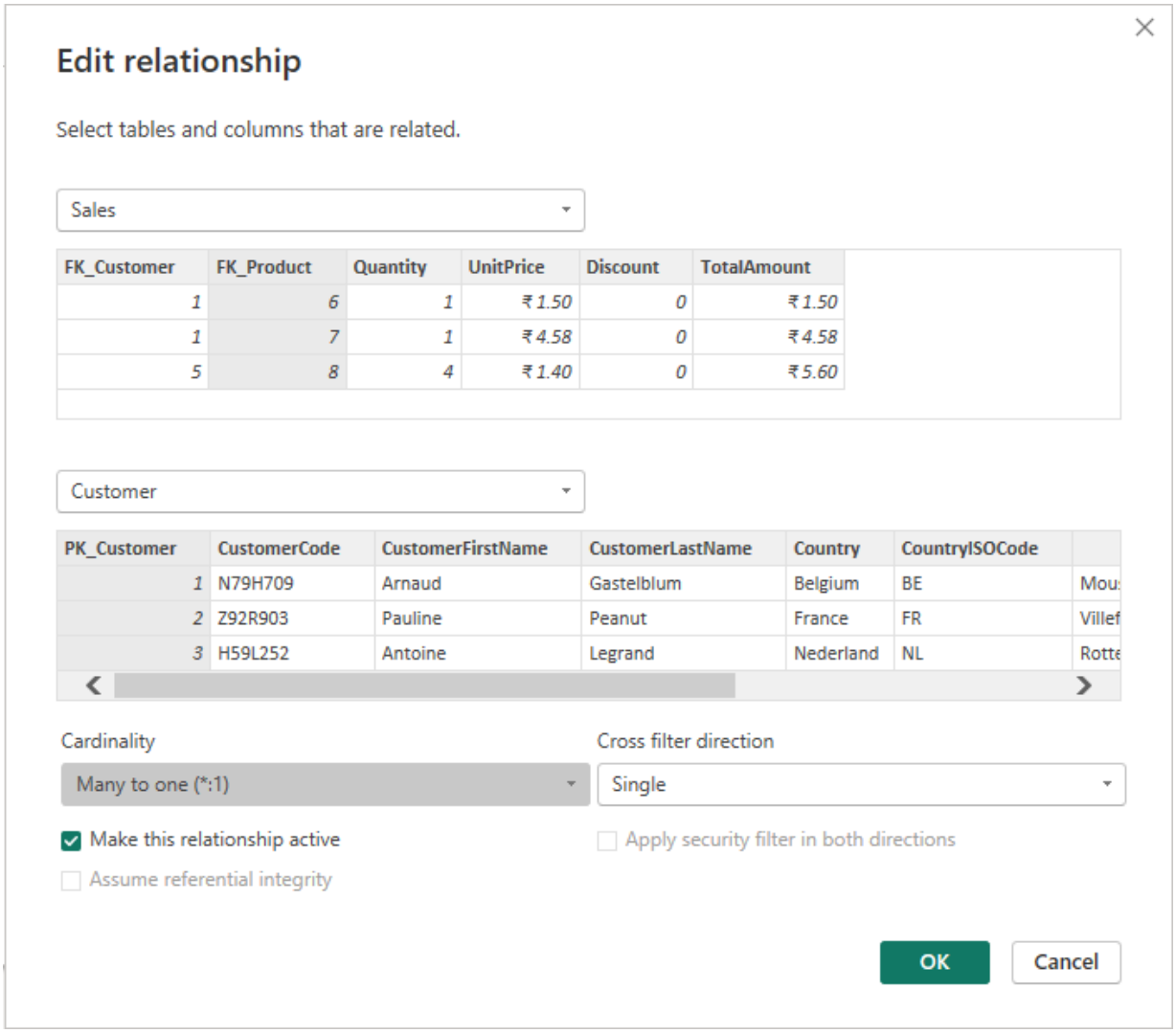
CHAPTER 4

MODELING AND RESULT

Manage relationship

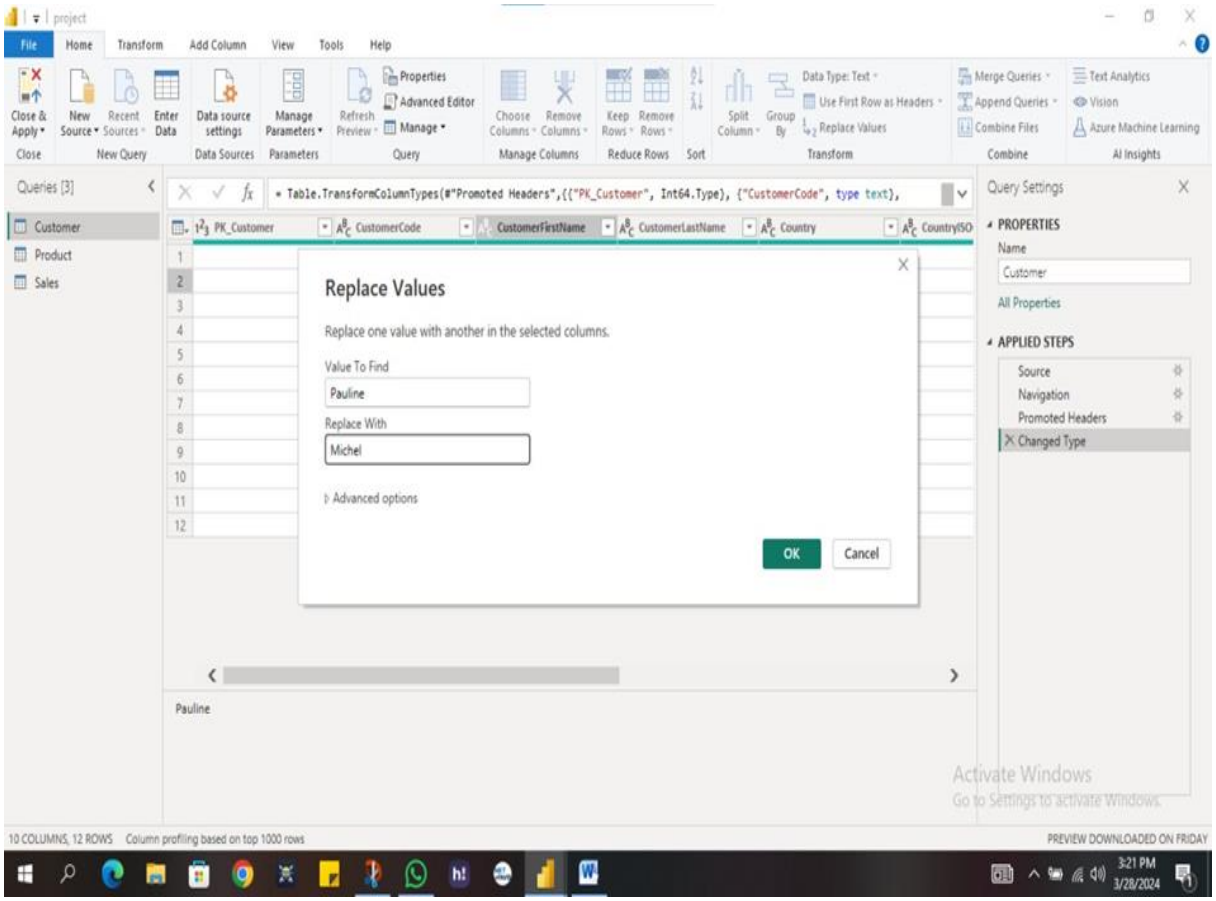
Define Objectives: Clarify the objectives of modeling the department store. This could include optimizing inventory management, maximizing sales, minimizing costs, improving customer satisfaction, etc. Data Collection Gather relevant data including sales data, inventory levels, customer traffic patterns, product information, pricing data, etc.



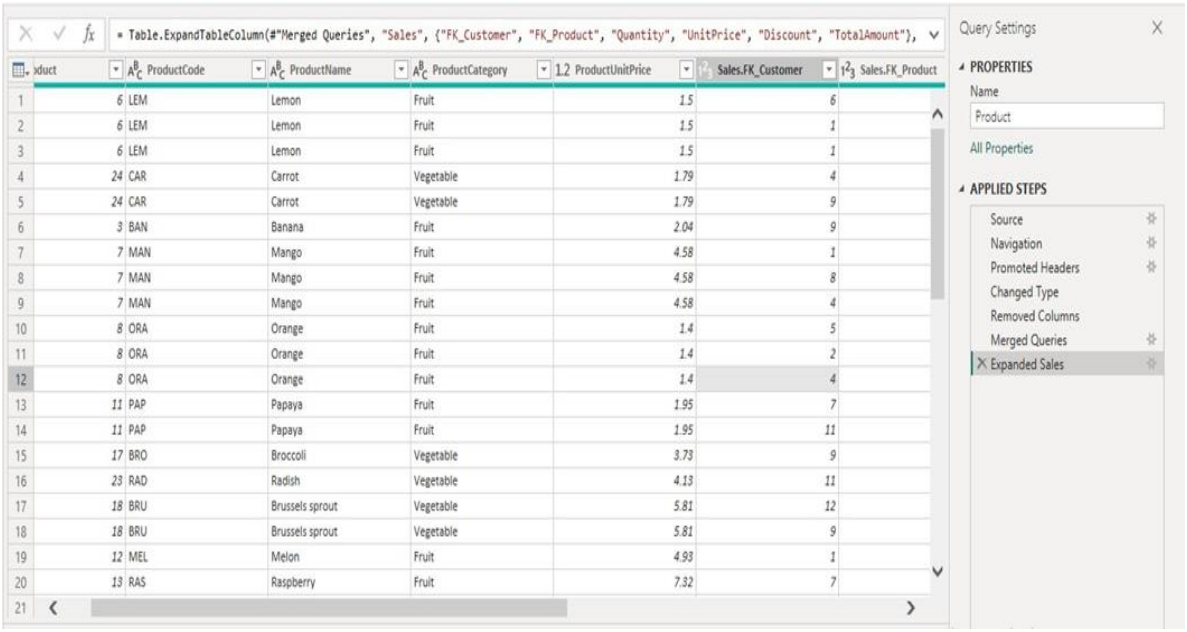


Replacing values:

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



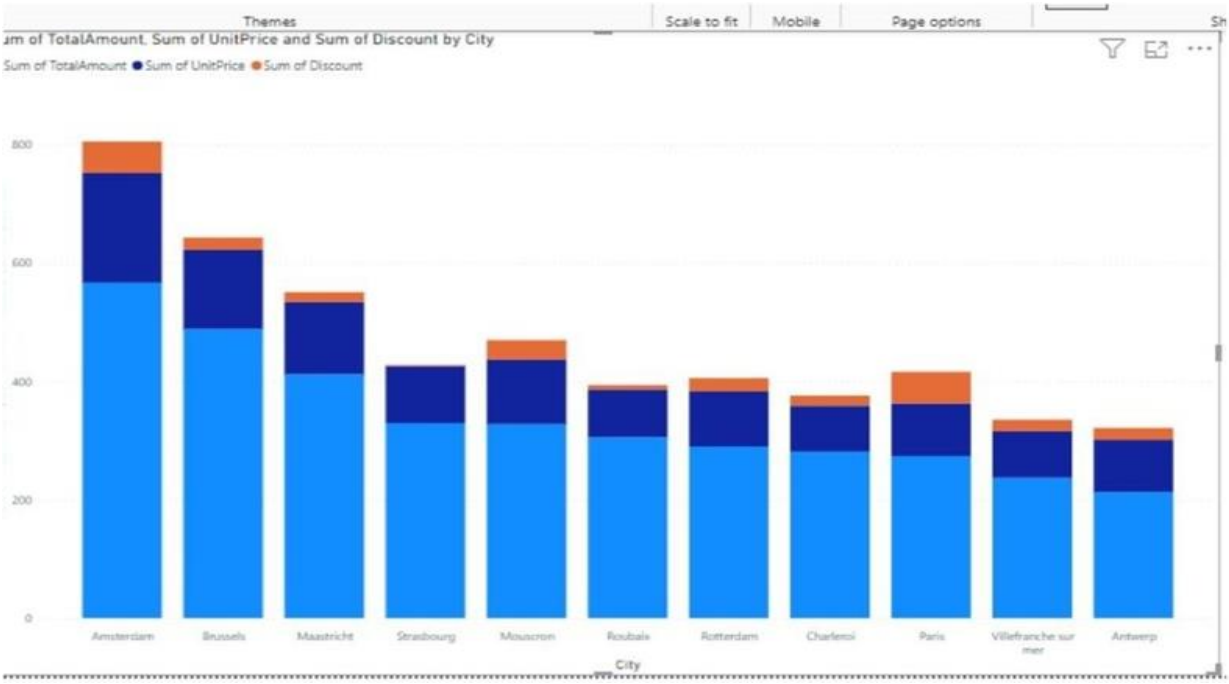
Then merge column by Region and direction. Refer to applied steps for details.

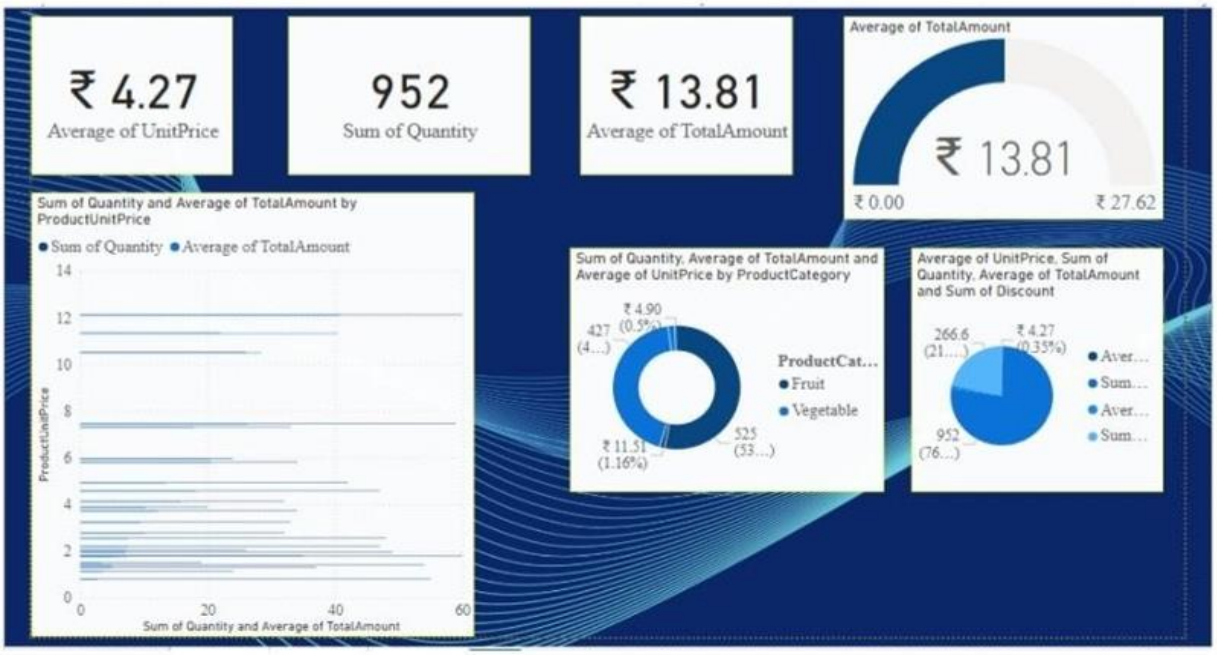


Grouping of age by ranges:

As product is grouped by type of category which count the cateory.

DASHBOARD





CONCLUSION

In conclusion, the Power BI analysis of our department store's data has provided invaluable insights into various aspects of our operations, from sales performance to customer demographics. Through interactive visualizations and data-driven analyses, we have identified several key findings that can inform strategic decision-making and drive business growth We observed a significant increase in sales during certain promotional periods, indicating the effectiveness of our marketing campaigns. Leveraging this insight, we can optimize future promotions to capitalize on peak sales periods. Certain product categories consistently outperformed others, suggesting opportunities for product assortment optimization and targeted marketing efforts. By segmenting our customers based on demographics and purchasing behavior, we gained a deeper understanding of our customer base. This insight can inform personalized marketing strategies and enhance customer engagement. Identifying high-value customer segments allows us to prioritize resources and tailor promotions to maximize customer retention and lifetime value. Analysis of inventory turnover rates revealed opportunities to optimize inventory levels and reduce carrying costs. Implementing inventory management strategies, such as demand forecasting and replenishment optimization, can improve operational efficiency and minimize stock outs. Identifying slow-moving inventory items enables us to implement targeted promotions or clearance sales to mitigate inventory obsolescence risk. Monitoring key performance indicators such as sales per square foot and sales per employee highlighted opportunities to improve operational efficiency and resource allocation. By optimizing staffing levels and store layout, we can enhance the customer shopping experience and drive sales productivity.

FUTURE SCOPE

Power BI can integrate data from various sources within the department store environment, such as sales transactions, inventory management systems, customer feedback, and employee performance metrics. Visualizing this data through interactive dashboards and reports provides valuable insights into sales trends, popular products, and customer behavior. Power BI can help optimize inventory management by analyzing sales data in real-time. By identifying fast-moving and slow-moving items, department stores can adjust their stocking levels accordingly, reducing excess inventory and minimizing stock outs. Understanding customer preferences and behavior is crucial for department stores to tailor their offerings and marketing strategies effectively. Power BI enables the analysis of customer demographics, purchasing patterns, and feedback data to personalize promotions, enhance customer satisfaction, and drive sales. Power BI can streamline operational processes by providing visibility into key performance indicators (KPIs) such as sales per square foot, inventory turnover rates, and employee productivity. By identifying areas for improvement, department stores can optimize workflows and allocate resources more efficiently. Utilizing Power BI's analytical capabilities, department stores can develop more accurate sales forecasts and strategic plans. By analyzing historical sales data alongside external factors such as seasonality and economic trends, retailers can make informed decisions regarding inventory procurement, pricing strategies, and marketing campaigns. Power BI can facilitate supplier performance analysis by tracking metrics such as delivery times, product quality, and compliance with contractual terms. This allows department stores to optimize their supplier relationships and negotiate more favorable terms.

