Retail Performance and Foot Traffic Analysis Dashboard using Power BI

Introduction

This project explores customer behavior, sales patterns, and employee satisfaction across various retail outlets: sydney, adelaiede, Brisbane, Melbourne and perth in Australia. Using Power BI, the data was transformed into an interactive dashboard that provides a comprehensive overview of how retail store type, customer demographics, sales trends, payment preferences, and foot traffic contribute to business performance. The analysis also includes employee satisfaction, which is critical for internal efficiency and customer service delivery.

Problem Statement

Retail chains often face challenges in understanding customer behavior, optimizing peak store hours, and identifying top-performing product categories and store types. Additionally, businesses struggle to align employee satisfaction with customer experience. Without clear insights, decision-making is delayed, marketing efforts may be misaligned, and customer retention strategies suffer.

Aim of the Project

To design a Power BI dashboard that provides real-time and data-driven insights into retail sales performance and customer foot traffic patterns, enabling stakeholders to make informed decisions about marketing strategies, staffing, product offerings, and customer engagement.

Skills and Concepts Demonstrated

- Data Cleaning and Transformation using Power Query
- Data Modeling and Relationships in Power BI
- Use of DAX for KPI calculations and dynamic metrics
- Interactive Visualizations and custom tooltips
- Time-series analysis and categorical segmentation
- Dashboard design and storytelling with data
- Insight generation for strategic recommendation

Modelling

No data modeling was required as the project utilized a single flat table that contained all necessary fields, including transaction dates, store locations, product categories, foot traffic counts, and sales values. This simplified structure allowed for straightforward calculations and visualizations without the need for relationships or normalization.

Visualization:

The dashboard features various visuals to support easy interpretation:

- Bar and Column Charts to compare gender, age groups, and store types
- Donut Charts to show customer count distribution by product category
- Tree maps to display sales and business name
- Pie Charts for payment method preferences and employee satisfaction
- Slicers and Filters for interactivity based on region, age group, gender, and product category

Key Performance Indicators (KPIs):

1. Total Sales Revenue
2. Customer Demography
3. Top Performing Store Types
4. Top-Selling Product Categories
5. Foot Traffic by sales, opening time & closing time
6. Payment Method Preferences
7. Employee Satisfaction Rate

Insights:

- Customer Demographics: The highest purchasing activity came from young adults category with 30% followed by the senior category with 23%.
- Store Performance: Fashion Hub and Home Essential Stores had the highest sales volume and foot traffic volume.
- Product Trends: Categories like Clothing and furniture showed the strongest engagement.
- Peak Hours: showed higher traffic, especially between 1 PM and 4 PM, indicating prime selling hours.
- Payment Preferences: Customers preferred Digital Wallets (34%) and Credit Cards (30%) with cash being less popular (18%).
- Employee Satisfaction: Over 53% of employees were dissatisfied, suggesting internal operational or morale challenges that could affect service quality.

Dashboard Review:

The Power BI dashboard is fully interactive and user-friendly, allowing stakeholders to:

- Slice data by store type, product category, age group, gender, and payment method
- Observe real-time visualizations of trends and metrics
- Analyze employee satisfaction and customer preferences side-by-side
- Identify peak store activity times for better workforce allocation

Recommendations:

- Improve employee engagement and morale through surveys and HR interventions, addressing the 46% dissatisfaction rate.
- Target marketing campaigns toward the Young adult age group, especially females, who are the most active shoppers.
- Boost product inventory in Clothing and funiture categories during peak hours.
- Focus more on cashless transaction systems, especially Credit Card and Digital Wallet integration, as they account for over 64% of payments.
- Consider staffing reinforcement and promotional activities during afternoon peak hours and on weekdays.
- Evaluate low-performing store types or regions for potential rebranding, support, or restructuring.
- Introduce loyalty programs tailored for high-engagement age groups and regions.

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