Project - Phase I: Planning

GROUP: 37

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IFT533: Data Visualization and Reporting for IT

**Section 1: Dataset Description**

**Dataset Name**: Customer Shopping Preferences Dataset

**Description**:

The Customer Shopping Preferences Dataset provides useful information about consumer behavior and purchasing habits. It provides information about customer demographics, product preferences, purchasing history, and transaction details, allowing firms to customize their strategies efficiently. Understanding customers' preferences is critical for optimizing product offers, boosting marketing campaigns, and increasing customer happiness.  
This dataset contains 3,900 records with variables including age, gender, purchase amount, and frequency of purchases. It also maintains product-specific information such as category, size, color, and seasonal patterns. It also contains feedback ratings and information about promotional deals. Designed as a synthetic dataset, it provides a realistic environment for learning data analysis and machine learning without jeopardizing sensitive personal information.

The dataset offers a starting point for creating data-driven insights that may be applied to improve consumer experiences, expedite processes, and strengthen decision-making. Retail managers, marketing experts, and customer experience teams are among the stakeholders it serves, and it provides a chance to examine and forecast consumer purchasing patterns.

**Acknowledgement:**

This dataset was created artificially using ChatGPT to mimic a genuine consumer shopping experience. Its goal is to give novices and data aficionados a platform where they can develop, enjoy, practice, and learn from a dataset that replicates actual consumer purchasing behavior. A deeper comprehension of data analysis and interpretation in relation to customer preferences and retail scenarios is intended by promoting learning and experimentation in a simulated environment.

**Dataset Attributes:**

1. **Customer ID**
   1. **Description**: Unique identifier for each customer.
   2. **Type**: Categorical
   3. **Domain**: 1 to 3900
2. **Age**
   1. **Description**: Age of the customer.
   2. **Type**: Ratio
   3. **Domain**: 18 to 70
3. **Gender**
   1. **Description**: Gender of the customer (Male/Female).
   2. **Type**: Categorical
   3. **Domain**: Male, Female
4. **Item Purchased**
   1. **Description**: Name of the item purchased.
   2. **Type**: Categorical
   3. **Domain**: Examples include Blouse, Pants
5. **Category**
   1. **Description**: Category of the item purchased (e.g., Clothing, Footwear).
   2. **Type**: Categorical
   3. **Domain**: Examples include Clothing, Footwear, Accessories
6. **Purchase Amount (USD)**
   1. **Description**: Amount spent by the customer in USD.
   2. **Type**: Ratio
   3. **Domain**: $20 to $100
7. **Location**
   1. **Description**: Geographic location of the customer.
   2. **Type**: Categorical
   3. **Domain**: Examples include Montana, California
8. **Size**
   1. **Description**: Size of the purchased item.
   2. **Type**: Categorical
   3. **Domain**: S, M, L, XL
9. **Color**
   1. **Description**: Color of the purchased item.
   2. **Type**: Categorical
   3. **Domain**: Examples include Olive, Yellow
10. **Season**
    1. **Description**: Season during which the purchase was made.
    2. **Type**: Categorical
    3. **Domain**: Spring, Summer, Fall, Winter
11. **Review Rating**
    1. **Description**: Customer’s rating for the purchased item (scale: 2.5 to 5.0).
    2. **Type**: Ratio
    3. **Domain**: 2.5 to 5.0
12. **Subscription Status**
    1. **Description**: Indicates if the customer has a subscription (Yes/No).
    2. **Type**: Categorical
    3. **Domain**: True, False
13. **Shipping Type**
    1. **Description**: Type of shipping selected by the customer.
    2. **Type**: Categorical
    3. **Domain**: Examples include Free Shipping, Standard
14. **Discount Applied**
    1. **Description**: Indicates whether a discount was applied to the purchase.
    2. **Type**: Categorical
    3. **Domain**: True, False
15. **Promo Code Used**
    1. **Description**: Indicates if a promo code was used for the purchase.
    2. **Type**: Categorical
    3. **Domain**: True, False
16. **Previous Purchases**
    1. **Description**: Total number of prior purchases made by the customer.
    2. **Type**: Ratio
    3. **Domain**: 1 to 50
17. **Preferred Payment Method**
    1. **Description**: Most frequently used payment method by the customer.
    2. **Type**: Categorical
    3. **Domain**: Examples include PayPal, Credit Card
18. **Frequency of Purchases**
    1. **Description**: How often the customer makes purchases.
    2. **Type**: Categorical
    3. **Domain**: Examples include Weekly, Monthly

**Dataset Screenshot:**

A screenshot of a computer

Description automatically generated

**Section 2: Prospective Dashboard Users**

1. **Retail Business Managers**
   * **Purpose**: Retail business managers are in charge of attaining sales goals and supervising store operations. They may monitor sales performance across several product categories, regions, and time periods with the aid of a dashboard.
   * **Usage**: They are able to spot slow-moving items, track sales patterns in real time, and effectively manage inventory to satisfy demand. They are also able to evaluate how advertising efforts affect total sales.
2. **Marketing Teams**
   * **Purpose:** The goal of marketing teams' tailored campaigns is to boost sales and encourage consumer interaction.
   * **Usage:** They may examine consumer demographics, purchasing patterns, and the outcomes of promotional efforts thanks to dashboards. To optimize returns on marketing investment, they can determine which campaigns are most effective for particular client segments, such as age or geography, and modify their approaches appropriately.
3. **Customer Experience Teams**
   * **Purpose**: The goal of these teams is to increase client pleasure and foster loyalty.
   * **Usage**: The dashboard assists them in measuring client happiness, tracking feedback through review ratings, and comprehending customer preferences. Strategies to improve the shopping experience, including better product recommendations or expediting the checkout process, can be developed with the use of insights about common complaints or preferences.
4. **Product Development Teams**
   * **Purpose:** The goal of these teams is to develop or enhance products in response to consumer demand.
   * **Usage**: They can examine statistics on popular product attributes like size, color, or preferred categories using the dashboard. This ensures greater market fit and increased sales by assisting in the identification of trends and the development of new items that meet consumer wants.
5. **E-commerce Platform Managers**
   * **Purpose**: The goal of e-commerce administrators is to supervise the online channels through which transactions take place. Enhancing user experience and increasing online revenue are their two main objectives.
   * **Usage**: They may monitor consumer preferences, conversion rates, and website traffic thanks to dashboards. They can make adjustments that enhance the online shopping experience and increase sales by examining data on delivery options, preferred payment methods, and cart abandonment rates.
6. **Data Analysts**
   * **Purpose**: The goal of data analysts is to glean insights from unprocessed data in order to inform business choices.\
   * **Usage**: They do in-depth research on trend analysis, consumer segmentation, and purchasing trends using dashboards. Their research can be used to improve operations, develop company plans, and locate new growth prospects.
7. **Financial Analysts**
   * **Purpose**: The goal of financial analysts is to assess the company's financial health with an emphasis on cost control and profitability.
   * **Usage**: They keep an eye on spending trends, revenue sources, and the financial effects of sales and promotions by using dashboards. This aids in their ability to project future earnings and pinpoint areas where expenses can be cut without sacrificing product quality or client happiness.
8. **Supply Chain Managers**
   * **Purpose**: The goal of supply chain managers is to guarantee the smooth movement of commodities from suppliers to consumers.
   * **Usage**: Dashboards offer information on demand projections, inventory levels, and logistical efficiency. In order to guarantee that goods are accessible when and where customers need them, supply chain managers can minimize surplus inventory, cut down on stockouts, and expedite delivery times by examining these KPIs.
9. **Corporate Wellness Managers**
   * **Purpose**: The goal of these managers is to support workers' health and welfare in work settings.
   * **Usage**: They can use the dashboard to find patterns in employee buying habits, like how frequently they buy health-related products. The design of wellness programs that address the needs of employees, including encouraging better lifestyles through focused product discounts or workplace efforts, might be influenced by this data.
10. **App Developers**
    * **Purpose**: The goal of app developers is to produce digital tools that improve user experiences across a range of domains, such as lifestyle and fitness.
    * **Usage**: App developers can incorporate tailored suggestions for customers, such fitness or health advice depending on user behavior, by utilizing dashboard data. For instance, the app might recommend relevant products or activities if the data shows that users enjoy particular product categories during particular seasons, increasing user pleasure and engagement.

**Section 3: List of User Requirements & Potential Questions**

**User Requirements**

**Comparative Analysis:**

Individual or group measurements should be able to be compared to more general standards or averages using the dashboard. For example, companies can assess the effectiveness of loyalty programs by comparing the average expenditure of members to non-members. With the help of this tool, users may evaluate performance in context and pinpoint areas that need work.

**Analysis of Attribute Relationships:**

The dashboard ought to include resources for investigating connections among various data elements. Users can examine, for instance, how average purchase quantities are affected by discount usage or how customer age corresponds to product preferences. These kinds of insights can uncover hidden trends and guide data-driven choices to improve sales tactics and client happiness.

**Regional Analysis:**

To see and analyze sales data geographically, users need tools like choropleth maps and heatmaps. Businesses can adjust their strategy to suit local tastes by using this to uncover regional patterns and variances. For example, determining which states sell the most winter apparel might help direct future inventory planning and focused marketing campaigns.

**Forecasting and Predictive Insights:**

By integrating predictive analytics, the dashboard ought to assist users in foreseeing patterns and actions in the future. Users can predict consumer preferences for future seasons or the demand for particular products by examining past data. This facilitates proactive decision-making and guarantees that companies are ready for both opportunities and problems in the future.

**Interactive and Intuitive Interface:**

All users, regardless of technical proficiency, must be able to efficiently navigate and understand the dashboard thanks to an intuitive interface. Interactive features like drop-down menus, sliders, and clickable charts ought to be incorporated into the interface. Without requiring a lot of training, users may immediately understand complicated data insights thanks to clear and aesthetically pleasing graphs and charts.

**Customizable Reporting:**

Users ought to be able to create reports that are suited to certain business requirements. Custom reports assist stakeholders in concentrating on pertinent data, whether they are monitoring return rates for operational improvement or summarizing weekly sales for management. Additionally, reports can be exported for use in presentations or additional analysis, giving users more freedom in how they use the data.

**Data Filtering by factors:**

Users should be able to apply filters on the dashboard according to a variety of transactional (such as purchase amount, product type) and demographic (such as age, gender, and location) factors. Teams can gain targeted insights by using this functionality to examine particular client categories or transaction trends in detail. Marketing teams, for instance, can examine the purchasing patterns of young individuals who regularly buy devices.

**Seasonal and Temporal Trends:**

The dashboard must make it possible to examine seasonal and time-based trends in consumer behavior. Users can identify peak times, such as holiday seasons or sales events, by tracking how purchases change over the course of the year. This knowledge aids in maximizing inventory levels and scheduling marketing campaigns to take advantage of times when demand is high.

**Potential Questions**

1. Which product categories generate the highest revenue?
2. How do purchasing trends vary by season?
3. What is the average purchase amount by age group?
4. Which regions contribute most to total sales?
5. What is the distribution of review ratings for different product categories?
6. How frequently do customers use promo codes or discounts?
7. Which shipping types are preferred for high-value purchases?
8. What is the impact of subscription status on purchase behavior?
9. Which payment methods are most popular across different regions?
10. How do customer purchase patterns vary based on frequency of purchases?
11. What are the most popular item colors and sizes?
12. How do review ratings correlate with purchase amounts?
13. Which products are commonly purchased together?
14. What are the spending habits of customers with high purchase counts?
15. How do product preferences differ by gender?
16. Which locations show the highest usage of promo codes?
17. How do customer feedback ratings vary by item category?
18. Which product features drive repeat purchases?
19. What is the top-performing region for subscription-based customers?
20. How does age affect preferences for product categories?

**Section 4: References**

1. Sourav Banerjee. *Customer Shopping Trends Dataset*. Kaggle, 2024, <https://www.kaggle.com/datasets/iamsouravbanerjee/customer-shopping-trends-dataset>
2. Mural Board Link: <https://app.mural.co/t/project373258/m/project373258/1731619110561/91ce729475358157ad3ba50e93d507db527e9d4c>