Exploratory Data Analysis Insights

The data contains three files customer.csv, products.csv, transactions.csv, after feature engineering and performing EDA on main data frame I came with five business insights that I analyse through whole EDA.

Five Business Insights From EDA:

1. Sales Performance by Category

The Books category made the most money, selling a total of ₹192000. This shows that books are very popular among customers. Electronics came in second with ₹181000, and Clothing was third with ₹166000. These three categories are the most popular among customers and bring in the most sales. Other categories like Home Decor made less money. This suggests there might be chances to grow by promoting these products more or adding new items to these categories.

Books seem to sell well all the time, probably because many people like to read. Electronics might sell well because they often cost more and people find them useful. Businesses should keep these popular items in stock and run special deals to sell even more. Also, looking at what customers think about the less popular categories can help find ways to make them better and increase sales. For example, asking customers what they like or don't like about Home Decor items can give ideas on how to improve them.

2. Top Products by Revenue

The ActiveWear Smartwatch is the top-selling product, making ₹39000. This shows that people are very interested in wearable technology. SoundWave Headphones and the SoundWave Novel also sell very well. This shows that both Electronics and Books are popular with customers. The smartwatch's success suggests that people are interested in wearable tech like fitness bands or smart glasses. Books selling well means there's a chance to promote different books together and attract more customers. For instance, if someone buys a popular book, you could offer them a discount on another book they might like.

Businesses can make more money by selling top products with accessories or offering discounts for buying again. Running special promotions for these popular items can really boost sales and keep customers happy. This way, customers might come back to buy more and recommend the products to others. For example, if someone buys a smartwatch, you could offer them a discount on headphones or a fitness band. This could make them happy and more likely to buy from you again

3. Regional Insights

South America brings in the most money, with sales of ₹219000. Europe follows with ₹166000, and Asia with ₹152000. This shows that people in South America spend more, so businesses should focus on promotions there. Asia, with its large population, has lower sales, indicating room for growth. To boost sales in Asia, businesses should offer products that fit local tastes, adjust prices, and run marketing campaigns that appeal to local customers. For example, promoting Electronics in Europe and Asia, where this category is popular, could increase sales. Listening to customer feedback can help understand what people in different regions want, making business strategies better.

4. Seasonal Sales Trends

Sales were highest in September 2024, reaching ₹70000, but then dropped in October and November. This peak might be due to back-to-school shopping or holiday sales. The drop afterward shows the need for steady marketing to keep sales up. Sales picked up again in December, likely because of year-end promotions or festive buying. Businesses should plan for these trends by running special deals before busy times. Making sure there's enough stock during these key months will help avoid missing sales. For example, planning inventory and supply chain logistics around these peaks will ensure products are available when customers want them most.

5. Customer Preferences

Customers really like Books and Electronics across all regions. Books are affordable and appeal to many interests, while Electronics are popular because they cost more per item. To make the most of this, businesses can offer more products in these categories, start loyalty programs, or bundle

items to encourage bigger purchases. For example, pairing popular novels with related items or bundling smartwatches with extra straps can make customers happier and increase sales. Offering discounts on items that customers buy often can also build loyalty. Understanding what customers want and giving them good deals can keep them coming back for more.