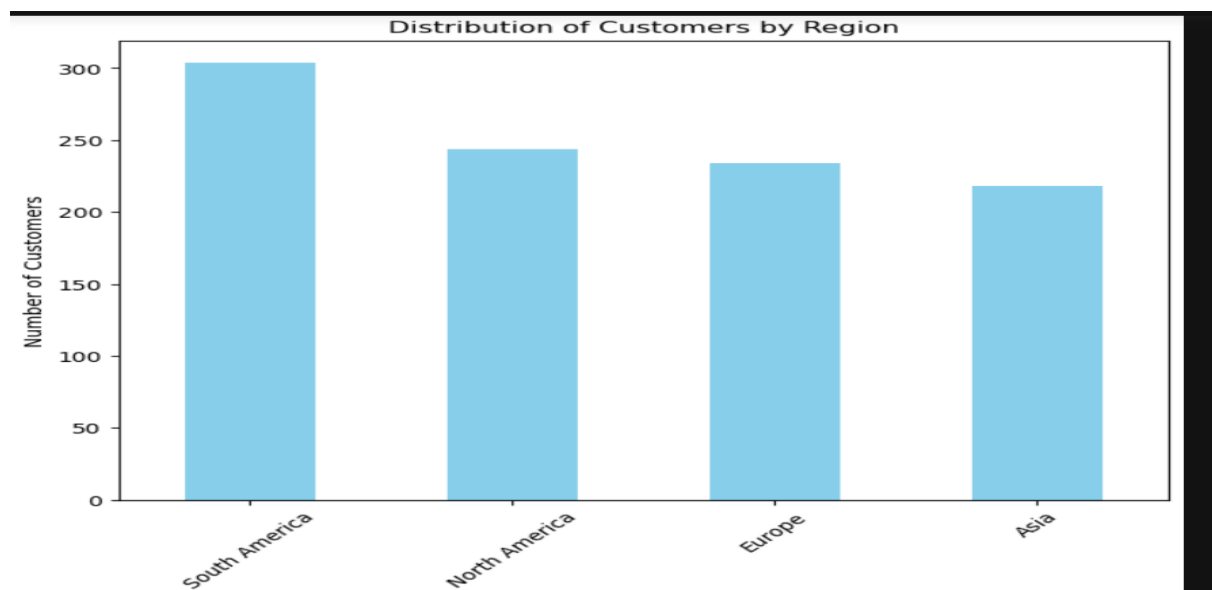


Exploratory Data Analysis (EDA) and Business Insights

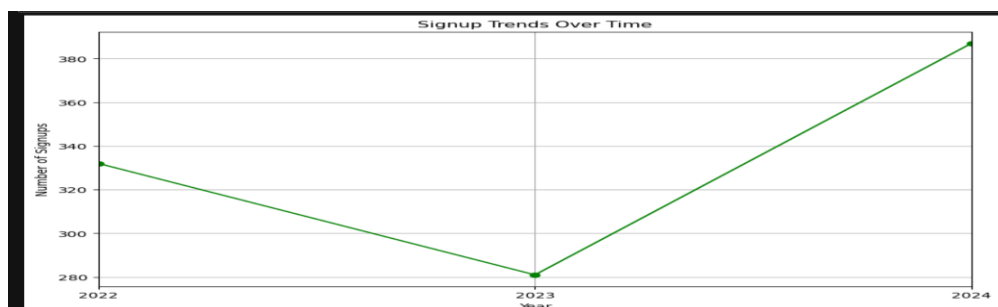
After the data cleansing and pre-processing data had been used for visualisations and from those visualisation following Business insights were identified by me, however there might be many more present in there but the most highlighted ones were found by me and are described below.

1) Distribution of Customers by Region



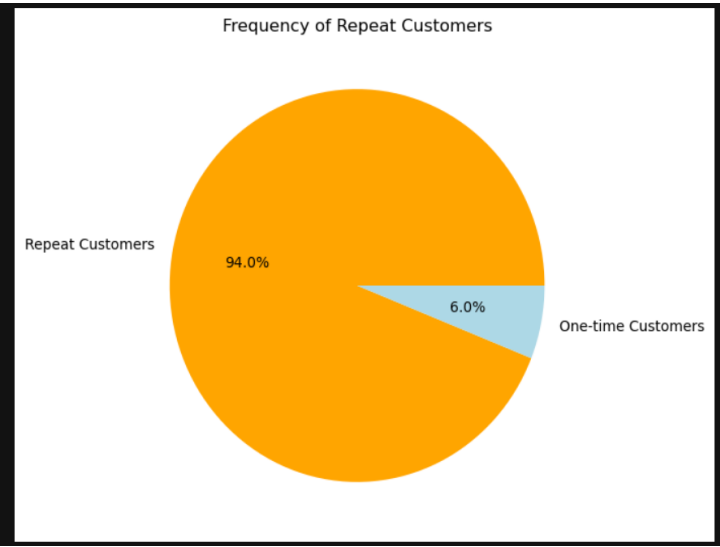
The bar chart shows that South America has the largest customer base, which points to a strong market presence and potential for further growth in the region. North America, Europe, and Asia have a similar number of customers, though slightly fewer than South America. This balance suggests there's still plenty of room to grow in these regions. Asia, in particular, could be a key area to focus on, with targeted efforts to increase market share. By investing more resources in underperforming regions and fine-tuning marketing strategies to tap into unmet demand, businesses can unlock new opportunities. These insights can guide smarter decisions around expansion, product localization, and reaching customers where they need it most.

2) Signup Trends Over Time



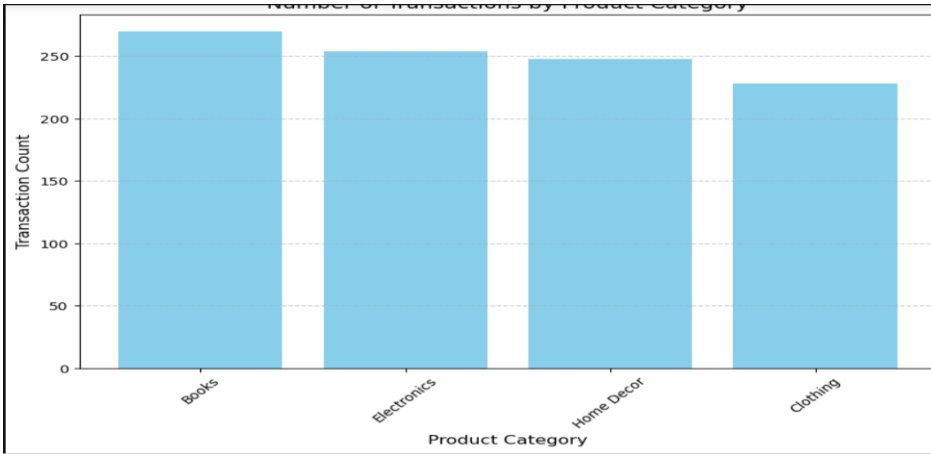
This chart shows signup trends from 2022 to 2024, revealing some interesting shifts. Signups dropped noticeably from 340 in 2022 to just 280 in 2023, hinting at challenges like reduced marketing, increased competition, or changing customer preferences. However, 2024 saw a remarkable turnaround, with signups skyrocketing to 380, even surpassing 2022 levels. This rebound likely reflects successful efforts such as better campaigns, improved services, or tapping into new markets. To maintain this positive momentum, businesses should focus on what worked in 2024 while digging into the reasons for the 2023 slump. Understanding these patterns will help avoid future dips and ensure steady growth in the years ahead.

3) Frequency of Repeat Customers



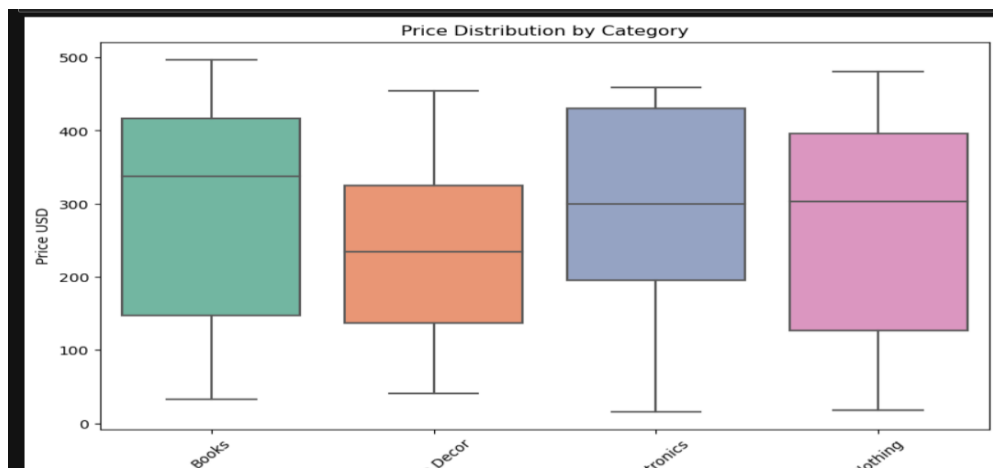
This chart shows that 94% of customers come back to buy again, while only 6% make a single purchase. Having such a high percentage of repeat customers is a great sign—it shows that people are happy with what they’re getting and trust the business. However, the 6% who don’t return could be an opportunity to grow. If the company can figure out why these customers didn’t come back—maybe by gathering feedback or improving certain areas—it could turn more of them into regular buyers. Focusing on this could boost loyalty even further and help the business grow stronger over time.

4) Number of Transactions by Product Category



1. **Books, Electronics, and Home Decor** have the highest transaction counts, showing strong customer interest in these categories.
2. **Clothing** has a comparatively lower transaction count, which might indicate issues like low demand, pricing challenges, or limited variety.
3. Invest more in marketing and stock for Books, Electronics, and Home Decor to maintain their momentum.
4. For Clothing, investigate customer preferences, market trends, or competitor strategies to improve sales.
5. Use promotions or bundles for top-performing categories to maximize revenue.

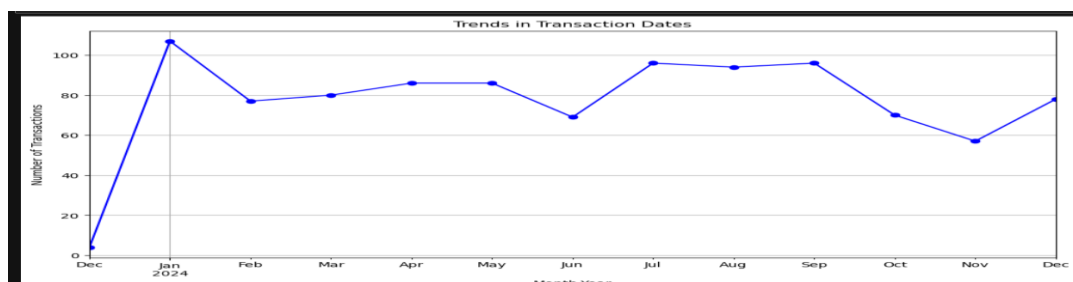
5) Price Distribution by Category



1. **Books** have the most extensive price range, with prices varying widely and a high median, indicating a diverse pricing strategy.
2. **Home Decor** has the narrowest price range and the lowest median, suggesting consistent and affordable pricing in this category.
3. **Electronics** show moderate price variation and a mid-range median, reflecting balanced pricing.
4. **Clothing** has a large price range, with some items reaching high prices, but the median is moderate, highlighting varied pricing approaches.

Recommendations are Capitalize on the broad price range of Books for higher profits. Introduce premium Home Decor products to widen the range. Optimize inventory for Electronics and Clothing to cater to all price segments.

6) Trends in Transaction Dates

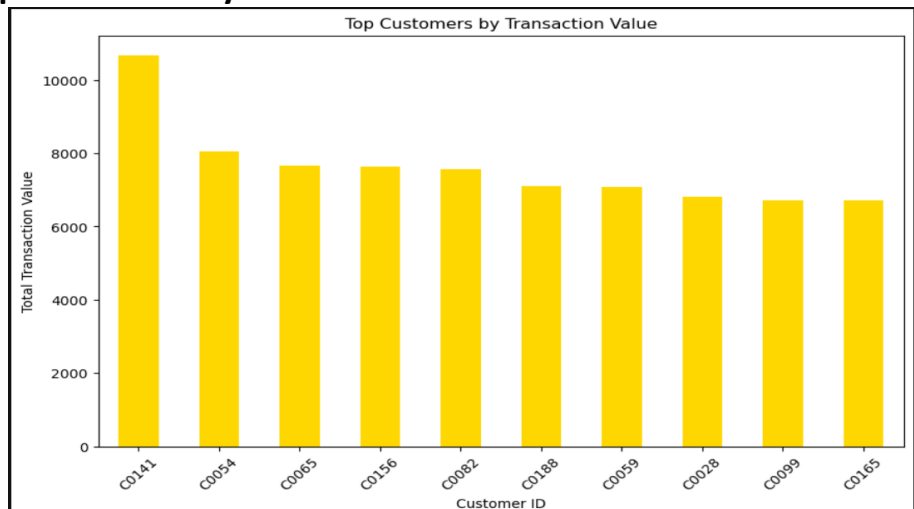


1. January was a huge month, likely because of New Year sales or post-holiday shopping.

2. From February to May, things stayed steady with a consistent number of transactions.
3. There's a clear drop in June, but things picked back up and hit another high in August.
4. The last quarter was a bit bumpy—transactions dipped in October and November but recovered nicely in December, probably due to holiday shopping.

Insights are- We can focus on boosting sales during slow months like June and October, and make the most of high-demand months like January, August, and December with well-timed promotions and deals.

7) Top Customers by Transaction Value



The bar chart showcases the top customers ranked by their transaction value. Customer **C0141** stands out with a transaction value exceeding 10,000, clearly leading the pack. Close behind are customers **C0054**, **C0065**, **C0156**, and **C0082**, each contributing around 8,000 to 9,000. These customers are vital to the business's revenue and deserve focused attention through loyalty programs, personalized offers, or exclusive perks. Strengthening relationships with them could boost long-term engagement. Additionally, they are excellent candidates for cross-selling or upselling, which could increase their overall value to the business. Understanding their behavior could also help improve retention strategies across the board.