

## **Title: Exploratory Data Analysis (EDA) and Business Insights**

### **1. Revenue Contribution by Product Category**

The "Books" category is the leading revenue generator, contributing **\$192,147.47**. This indicates a high demand for books, making it a critical segment for the business. To capitalize on this, the company could implement targeted promotions, discounts, or bundle offers in this category, potentially increasing both volume and profitability. The revenue from this category significantly outperforms that of other companies like electronics and clothing, which can guide future marketing decisions.

### **2. Seasonal Trends in Revenue**

Revenue patterns show a peak in **September 2024**, with **\$70,603.75** recorded, indicating that seasonal trends play a role in sales. This could be due to back-to-school campaigns, holiday preparations, or end-of-summer promotions. Identifying similar months or events in future years could help the company prepare marketing campaigns in advance, optimizing the timing of offers, discounts, or new product launches during these high-demand periods. Leveraging these trends can maximise sales in future seasons.

### **3. Top-Selling Products**

Among the products, the **"ActiveWear Smartwatch"** and **"SoundWave Headphones"** stand out, with **100** and **97** units sold, respectively. These products are key drivers of revenue and are likely to have strong customer interest. To take advantage of this, the company could consider introducing related accessories, offering bundles with complementary products, or launching new versions to maintain interest. Given their popularity, these products can also be featured in seasonal promotions to drive further sales.

### **4. Regional Sales Opportunities**

The dataset reveals a skewed distribution of revenue across regions, with some regions contributing more significantly than others. This suggests that certain regions have higher demand, making them key targets for future marketing efforts. By identifying regions with lower sales, the company can implement region-specific campaigns, localized offers, or promotions aimed at increasing penetration. Focusing marketing efforts on high-revenue regions can further boost overall performance, while tapping into underperforming regions can ensure broader market coverage.

### **5. Customer Engagement Based on Signup Year**

An analysis of customer sign-up data reveals that customers who signed up earlier contribute more to the company's revenue. This points to the importance of customer loyalty in driving long-term sales. To further engage these customers, the company could introduce a loyalty program or rewards system to incentivize repeat purchases. Encouraging new customers to stay active through personalized offers or promotions could also help drive retention. Ensuring customer satisfaction and engagement over time will maintain a steady revenue stream.

**Conclusion:** The exploratory analysis highlights several actionable insights that can guide future business decisions. By focusing on high-performing product categories, seasonal sales peaks, popular products, regional opportunities, and customer engagement strategies, the company can enhance profitability, optimize marketing efforts, and foster long-term customer loyalty. Implementing these strategies will not only improve sales but also ensure sustainable growth.