Analysis Report

Introduction

The Ecomstore is a large company that sells various products in various categories to customers around the globe. The company now wants to expand its horizons, make more profits and become a global behemoth. This data analysis report includes the results of the statistical and/or machine learning techniques used to identify correlations, trends, or patterns observed in the dataset containing various information about various orders received by the company over the last three years. The report aims to provide solutions for the company's goals of expanding its business and maximizing profits.
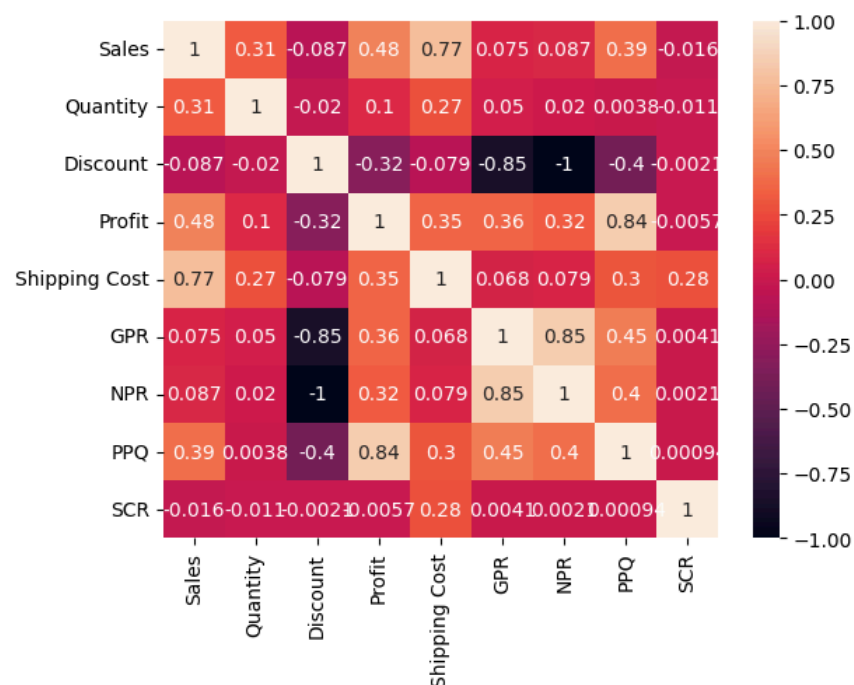
Analysis of different Indicators

This report identifies Ecomstore as an ecommerce company with its operations spread over different markets, such as;

- US
- APAC (Asia Pacific)
- EU (European Union)
- Africa

- EMEA (Europe, Middle East, and Africa)
- LATAM (Latin America)
- Canada

And providing wide range of products under different categories and subcategories that include;

- Technology: Accessories, Copiers, Machines and Phones
- Office Supplies: Appliances, Art, Binders, Envelopes, Fasteners, Labels, Paper, Storage and Supplies
- Furniture: Bookcases, Chairs, Furnishings and Tables

The correlation matrix provides useful correlations between different parameters, which determine the strategy to approach the data analysis. The following is the correlation matrix for the different parameters used in this data analysis.

|	Sales	Quantity	Discount	Profit	Shipping Cost	GPR	NPR	PPQ	SCR
Sales	1	0.31	-0.087	0.48	0.77	0.075	0.087	0.39	-0.016
Quantity	0.31	1	-0.02	0.1	0.27	0.05	0.02	0.0038	-0.011
Discount	-0.087	-0.02	1	-0.32	-0.079	-0.85	-1	-0.4	-0.0021
Profit	0.48	0.1	-0.32	1	0.35	0.36	0.32	0.84	0.0057
Shipping Cost	0.77	0.27	-0.079	0.35	1	0.068	0.079	0.3	0.28
GPR	0.075	0.05	-0.85	0.36	0.068	1	0.85	0.45	0.0041
NPR	0.087	0.02	-1	0.32	0.079	0.85	1	0.4	0.0021
PPQ	0.39	0.0038	-0.4	0.84	0.3	0.45	0.4	1	0.00094
SCR	-0.016	-0.011	-0.0021	0.0057	0.28	0.0041	0.0021	0.00094	1

Customer Base Analysis

- Over the last three years, the company has seen a slow but steady growth of its customer base, gaining almost **95 unique customers each year** over the timeframe of three years. The company currently has **1590** customers with different demographic backgrounds.
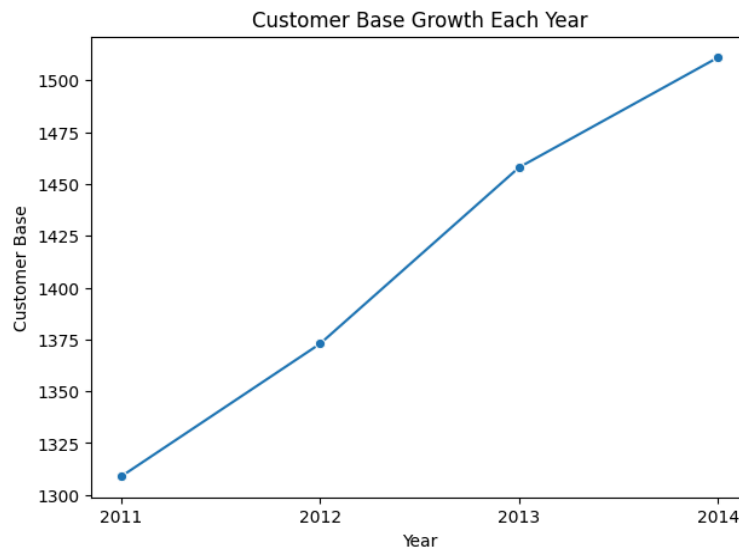

- Preceding the corporate and home office segments, the consumer segment is the company's largest customer base.
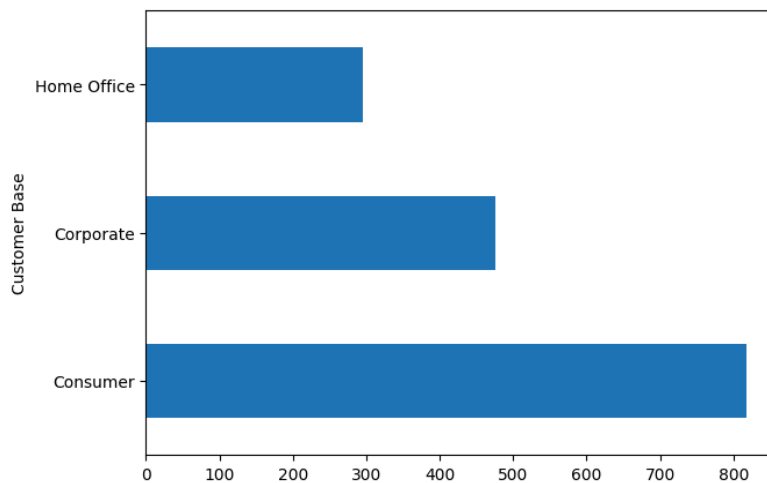
- The company has an almost equal customer base in different markets. However, the ***Canadian market, as an exception, has a significantly low customer base.***
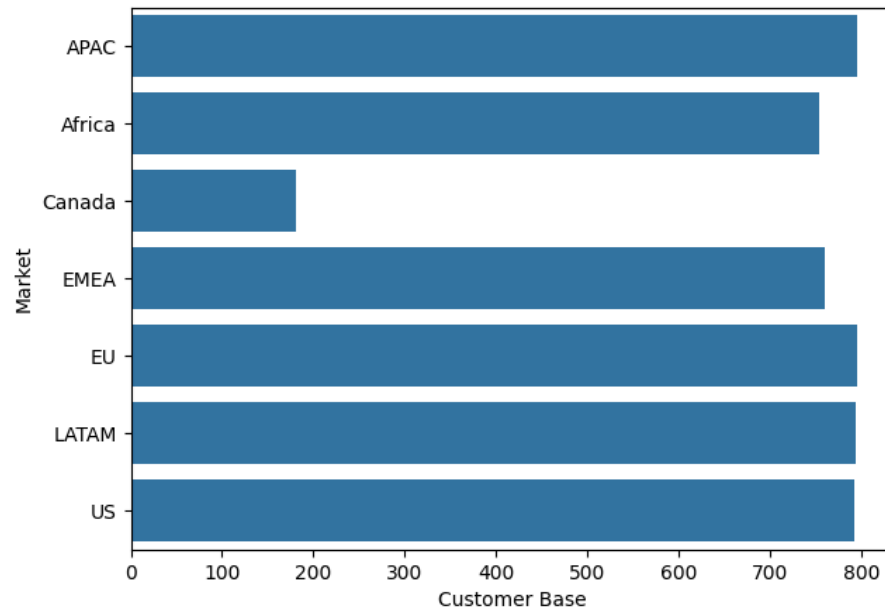
- It is clear that in all markets, the consumer segment has the largest customer base, followed by the corporate and home office segments.
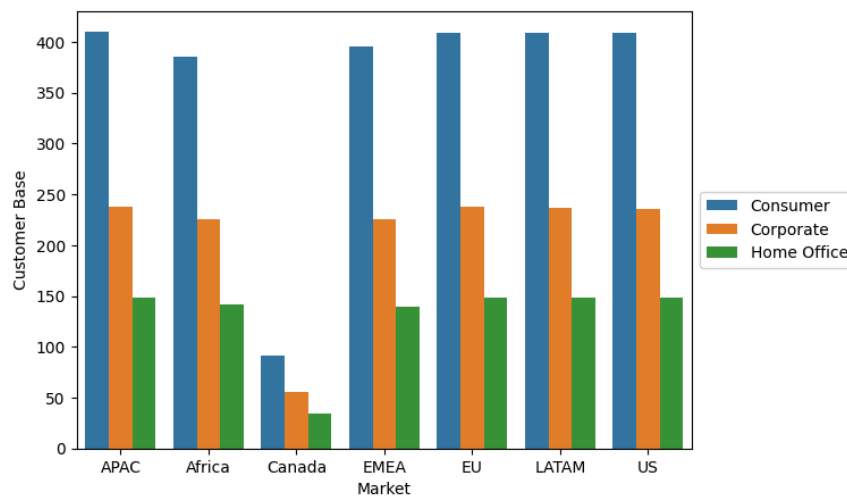
- The distribution of customers is almost even in the different regions of the market. This shows that the company has evenly expanded its business in all the regions of the markets where it operates.
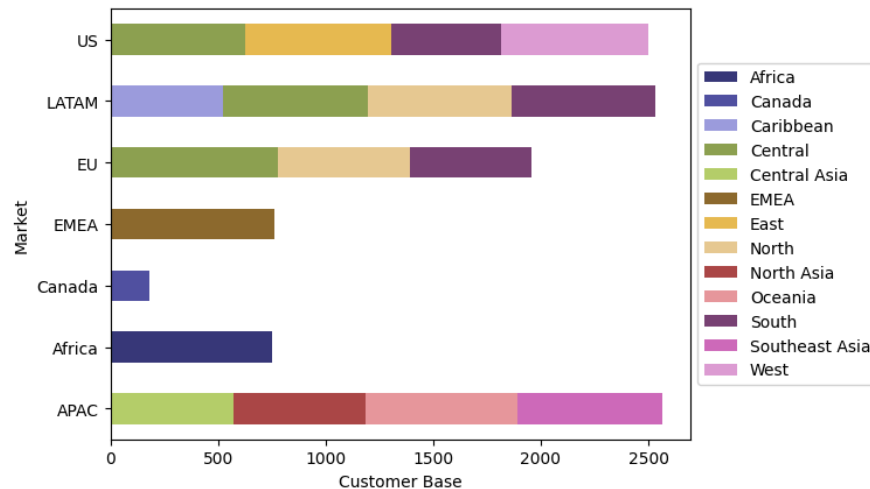
- ***The consumer base in the Canadian market has remained low and stagnant over the past three years,*** whereas a positive trend can be seen in the markets of Africa, EMEA, the US, the EU, and APAC. However, an unsteady trend is observed for the LATAM market.
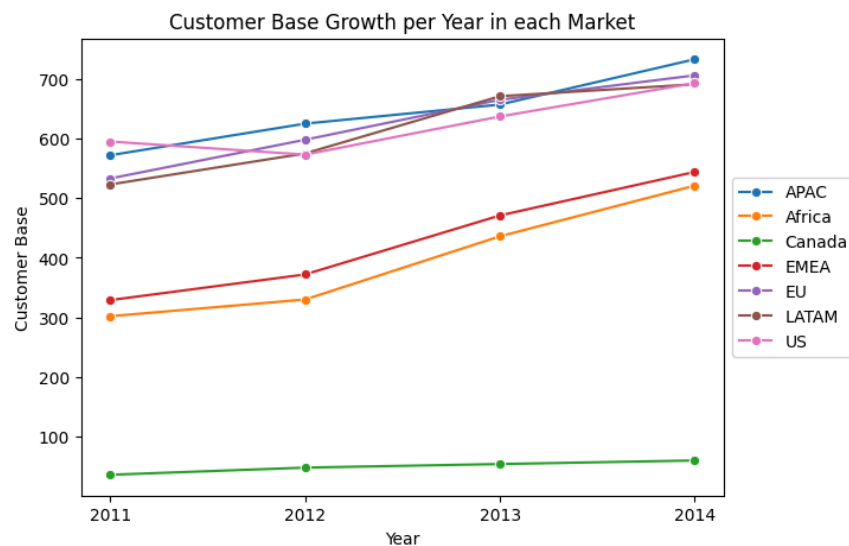
● The customer base growth has remained steady and positive for all the product categories that the company deals with.

Customer Base Growth per Year in each Category
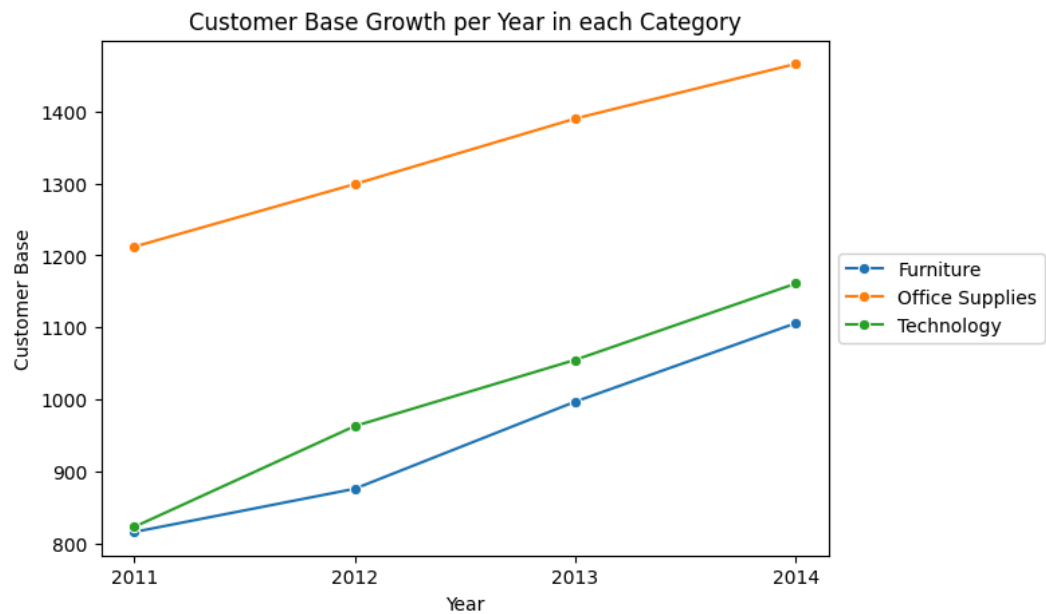
Sales Analysis

● The company has experienced significant growth in its sales over the past three years. The growth has remained steady and constant and possibly results from a similar trend in its customer base.


Total Sales Over Time
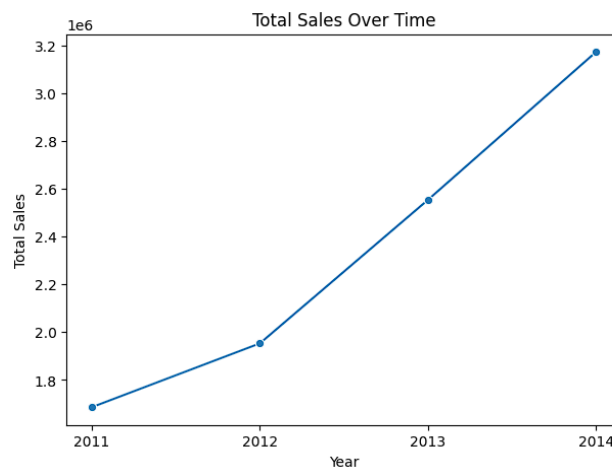
- The company derives its maximum sales from the APAC, EU, US, and LATAM markets, with some moderate sales from the African and EMEA markets and some *significantly lower sales from the Canadian market, which is due to the low consumer base in Canada.* **The trends in sales are mostly similar to the customer base trends when we consider the growth of sales in different markets.**
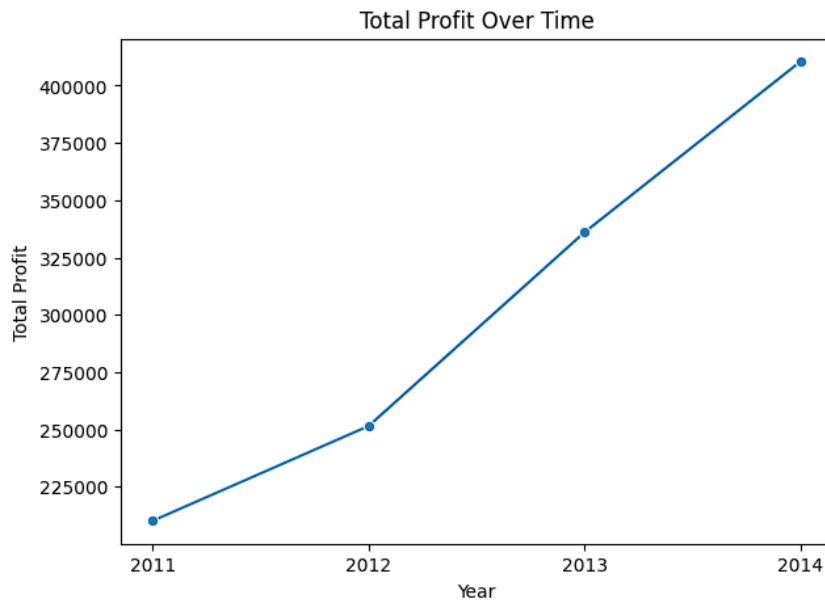

Sales Over Time for Different Markets
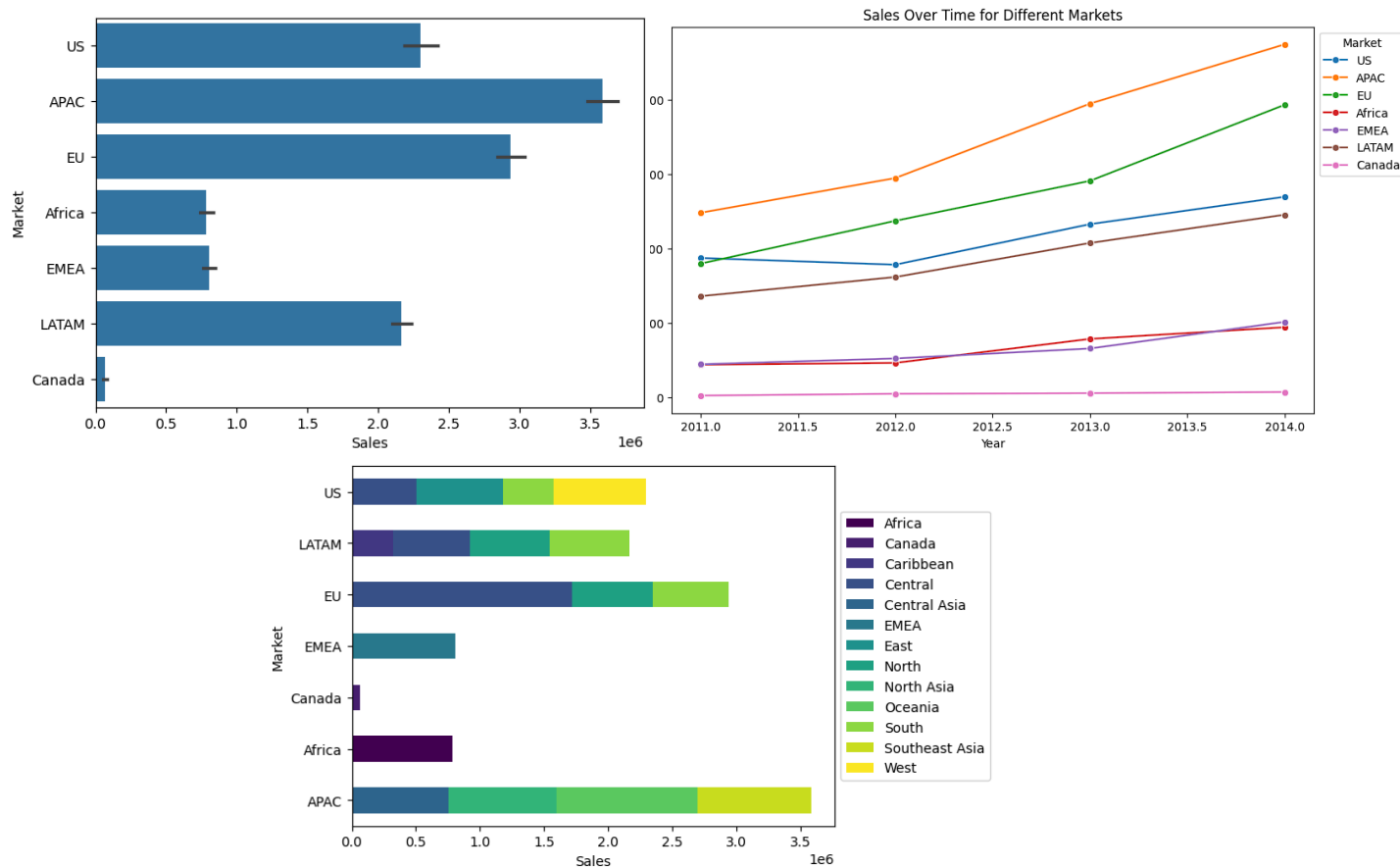
- Both sales and the consumer base show a similar hierarchy with respect to the segment, category and subcategory of products.
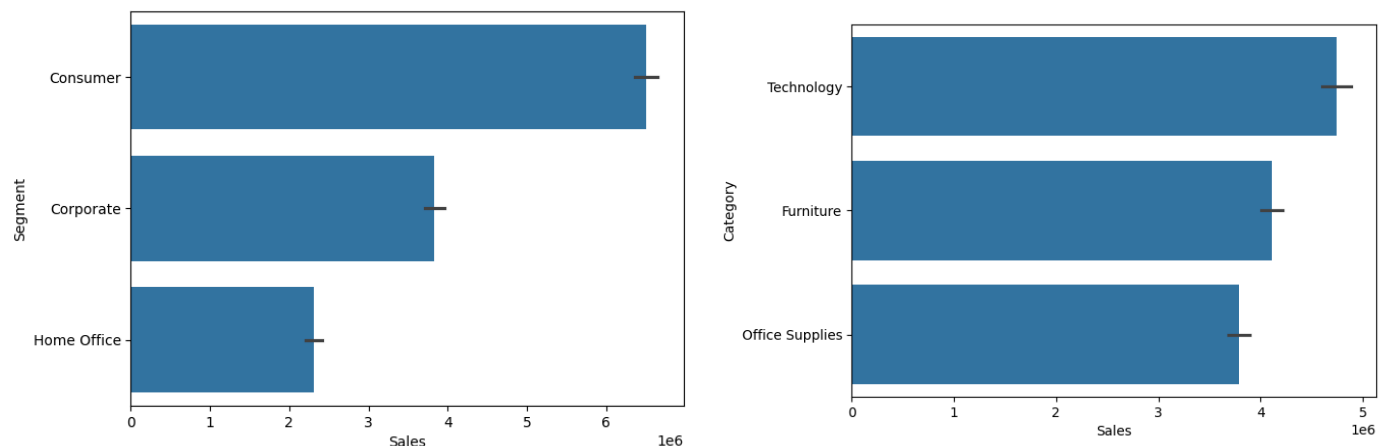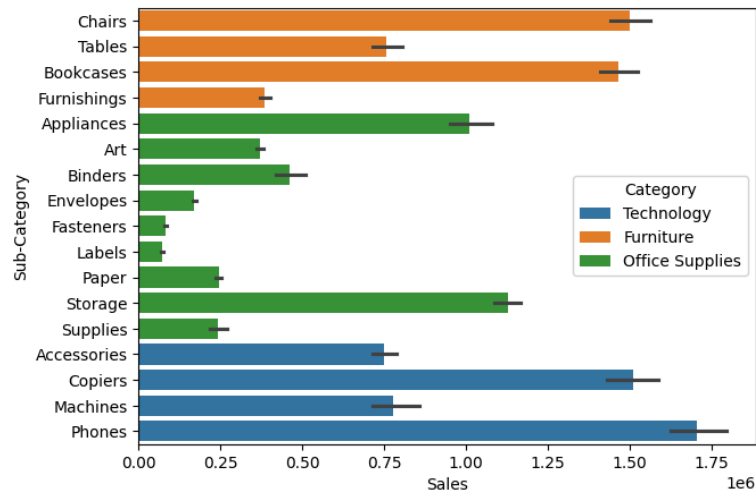
Profit Analysis

- The company has been generating increasing profits over the last three years. The steady growth in profits is an indication of the excellent financial performance of the company, which also provides the basis for taking further risks of expansion into markets with a low customer base.

- The statistics for profit show a good correlation with that of sales. Here too, we can observe a similar trend in the share of profits among various markets and the growth of profit for different markets over time. The growth has either remained constant or has increased for various markets.
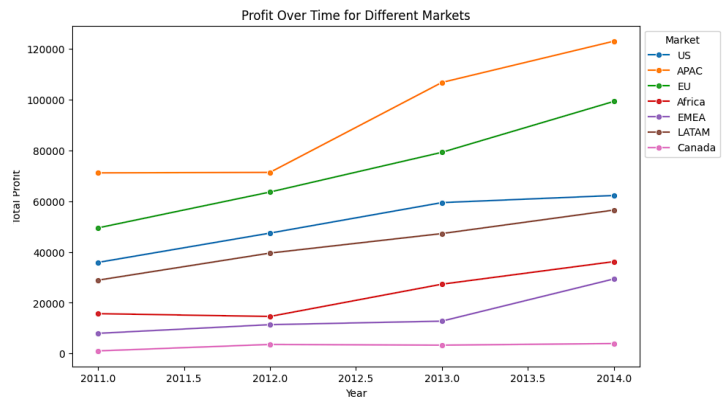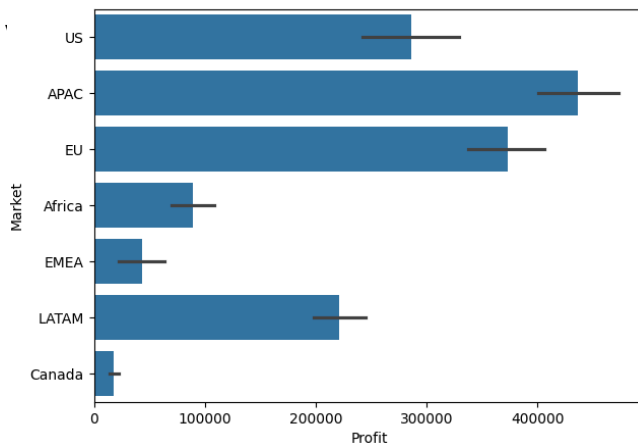

- The category of office supplies comes in second with the highest profit, while the category of furniture has the lowest profit. ***The losses resulting from the sale of tables can be to blame for this.***
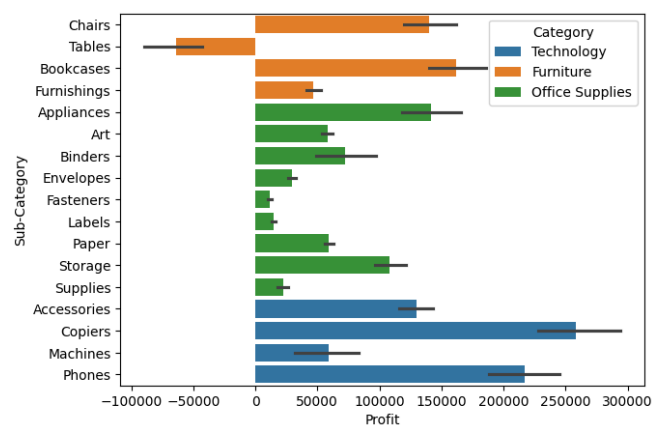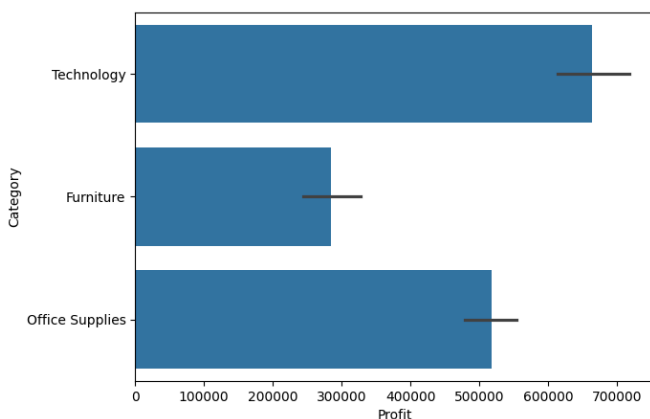
Financial Ratio Analysis

- The financial ratios being used for analysis are GPR, NPR and PPQ.
    - ❖ GPR: Gross Profit Ratio
    - ❖ NPR: Net Profit Ratio
    - ❖ PPQ: Profit per Quantity
- For the company, the average NPR and GPR had increased from 2011-2013 which dropped in 2014, whereas the PPQ dropped in 2013 and then renounced back in 2014.
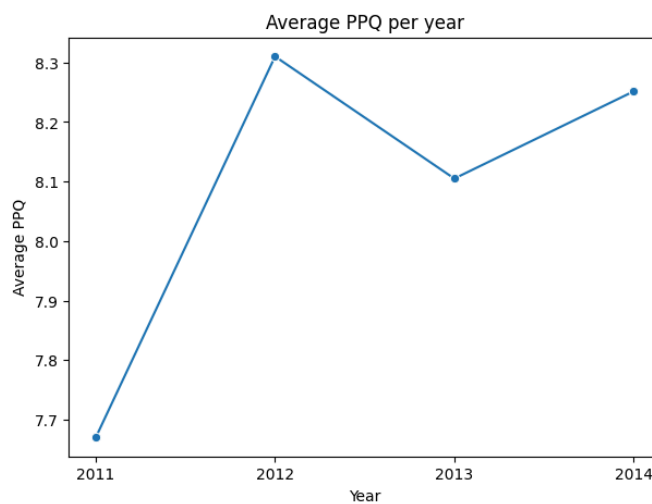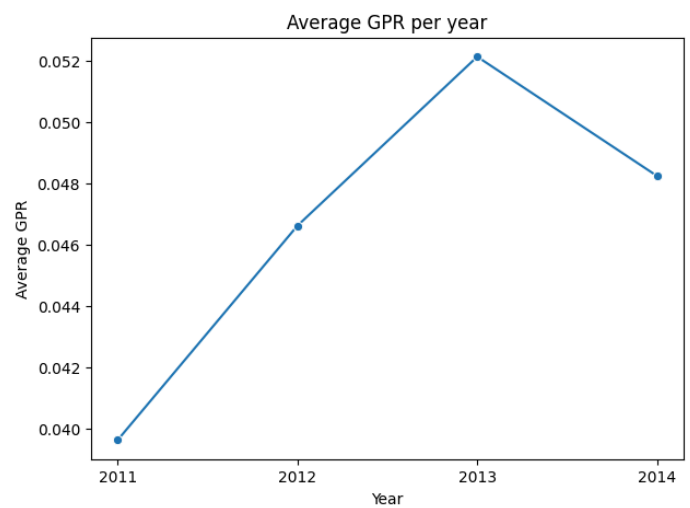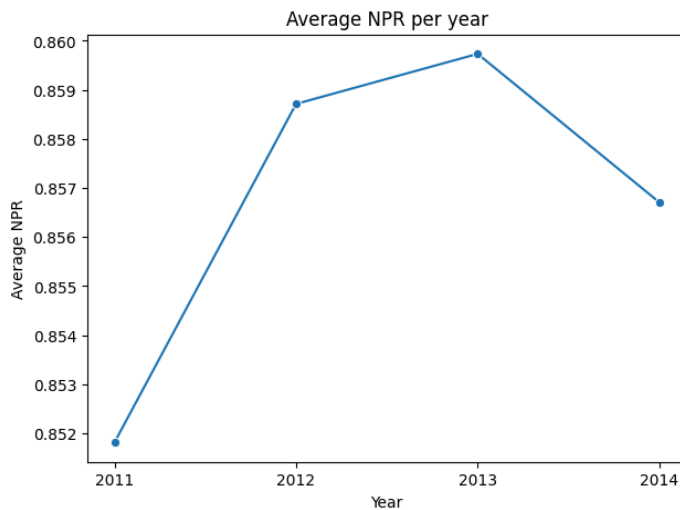
- The average GPR is the maximum for the **Canada** market in the span of three years, which **represents the *scope of expansion in the Canada market.*** Also, it is able to maintain almost constant GPR over time. The market in **Africa** has shown a *good increase in average GPR* over the years,though it has remained negative over the years.
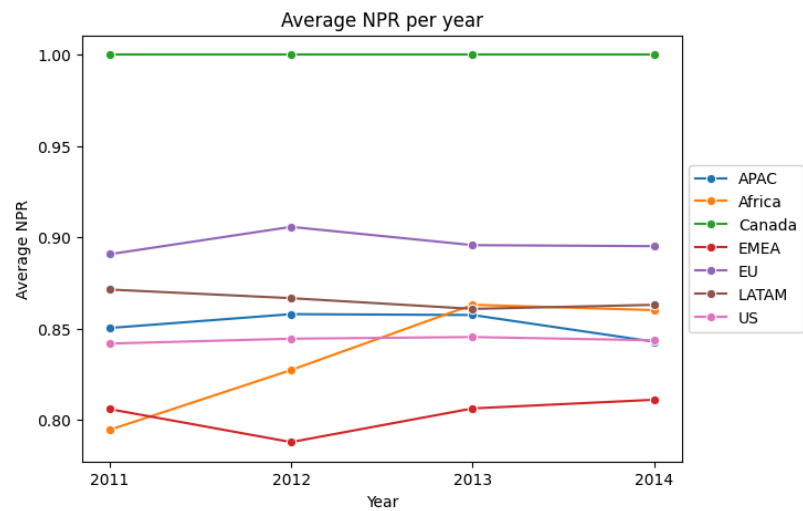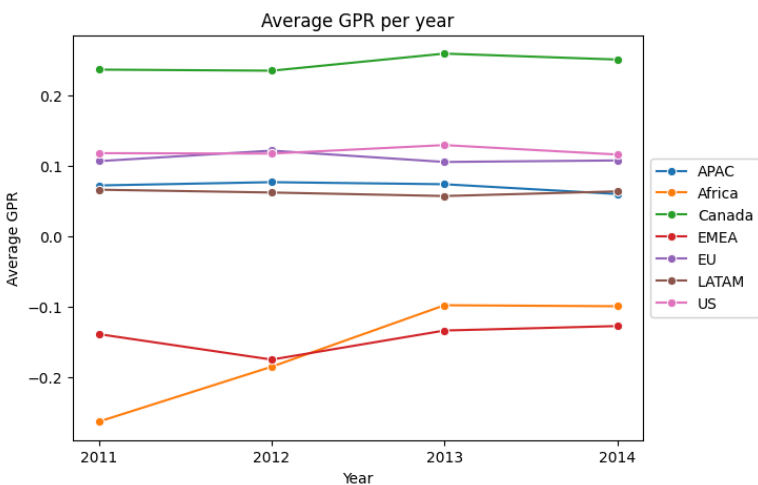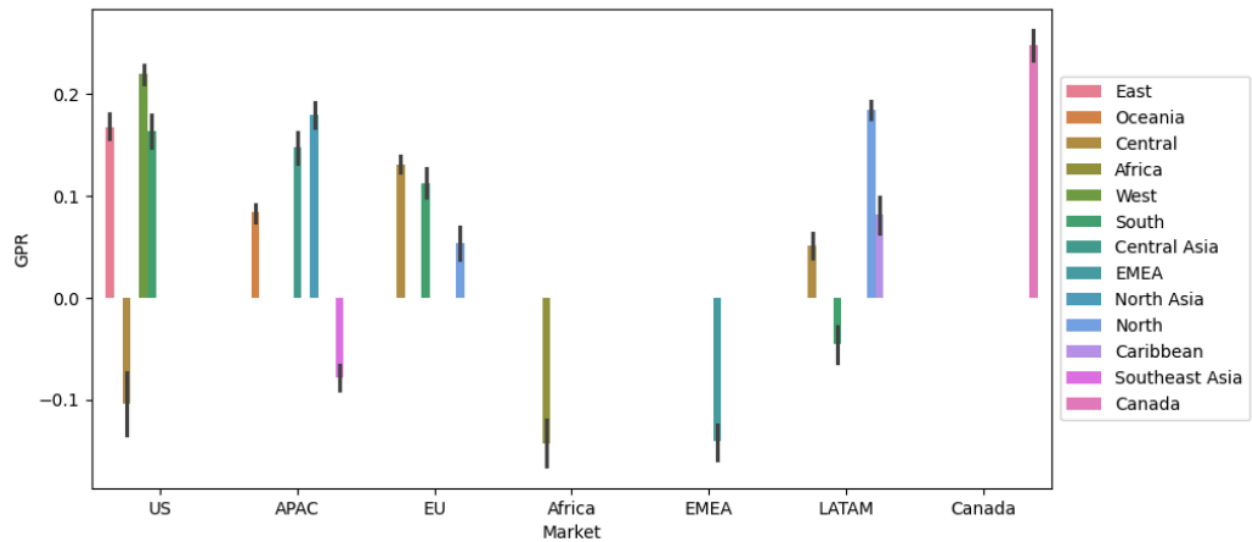
- The average PPQ has been *highest* for the **Canada** market in *the consumer* and *corporate* segments in the span of the three years. Also, with time, the PPQ of the **Africa** Market is *increasing* at the highest rate.
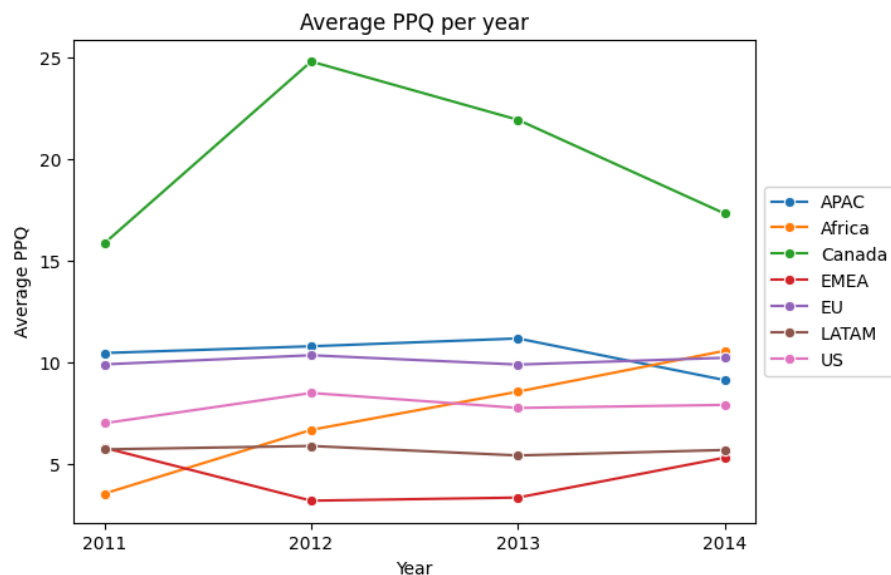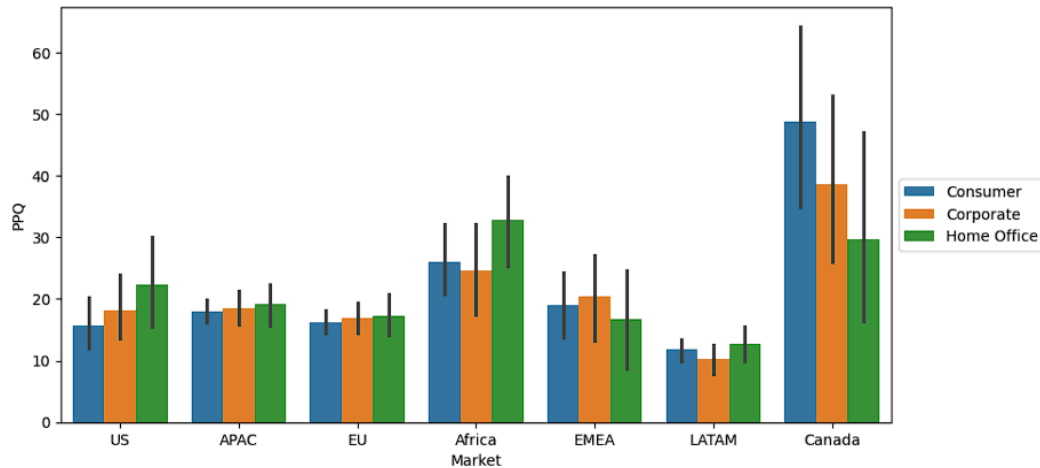

- The average GPR for all three segments, i.e., Consumer, Corporate and home office, has almost been the *same* in the past three years but, the average GPR, NPR and PPQ has *dropped* in the following years from 2013 for **the consumer** and **corporate** Segment whereas it has shown a tremendous *increase* for the home **office** segment.

Average GPR per year

Average PPQ per year

Average NPR per year
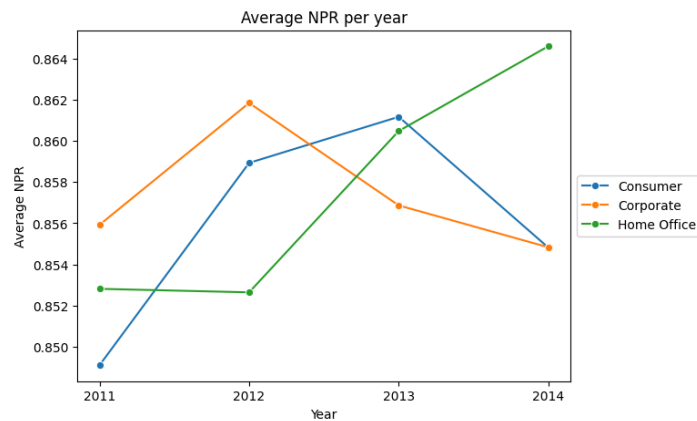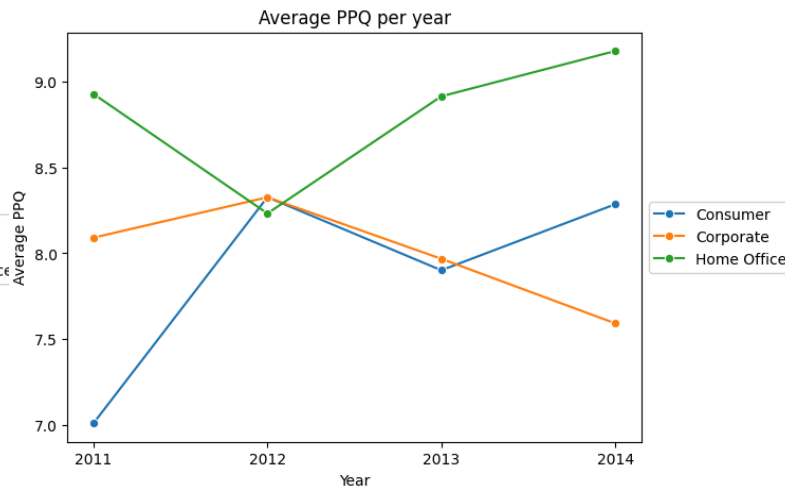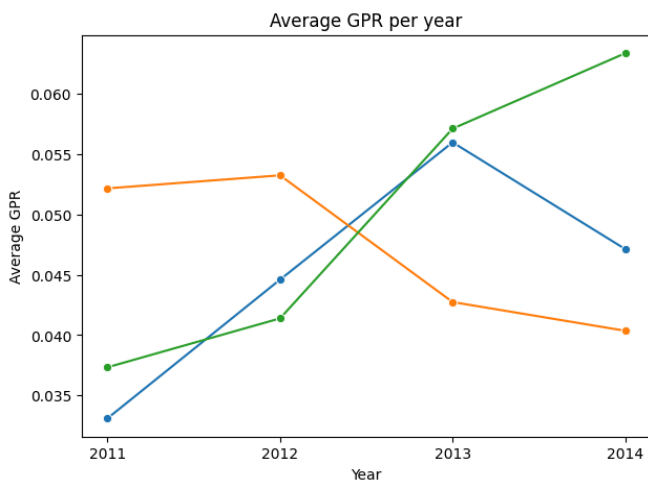
- The average NPR, GPR and PPQ of **the** corporate segment has shown a *decline* in subsequent years which indicates that *the company should focus on other two segments for expansion instead of the Corporate Segment*.
- The average GPR has been the *highest* for **Office Supplies** category in the past three years, which represents the company's highest profit from office supplies in the past years, but the average GPR of **technology** has *increased* over the years and has become *equal* to that of office supplies.

Average GPR per year
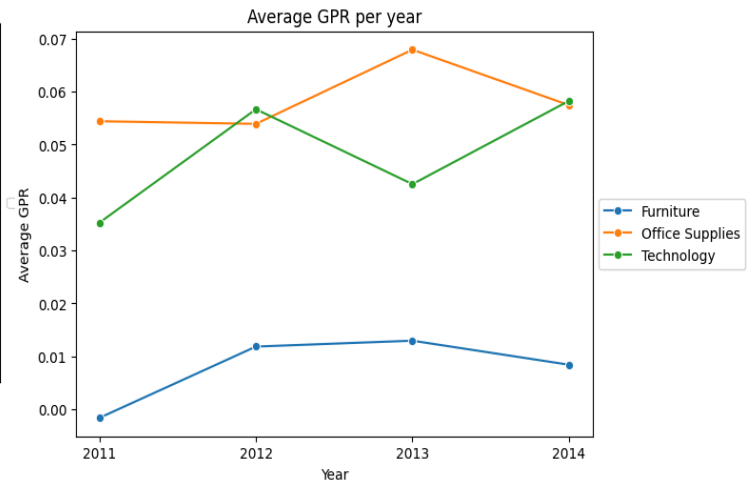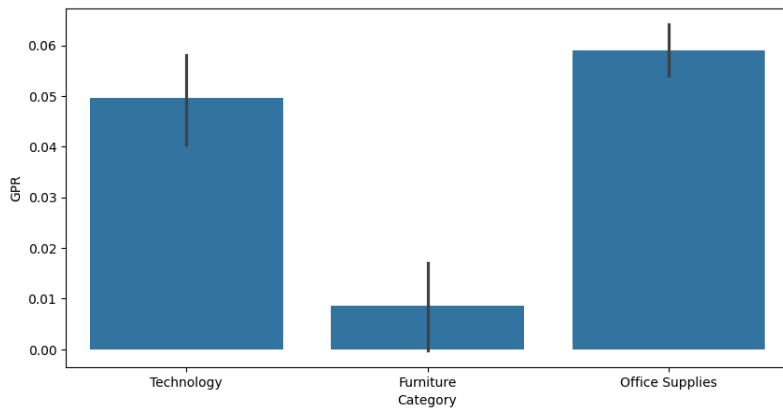
- All of the sub-categories have almost maintained the *same* average GPR with time, while **tables** and **machines** have maintained the *negative* GPR. **Tables** has a *negative* GPR for all of the segments, while **Machines** has a *negative* GPR only for the *corporate* segment.


Average GPR per year
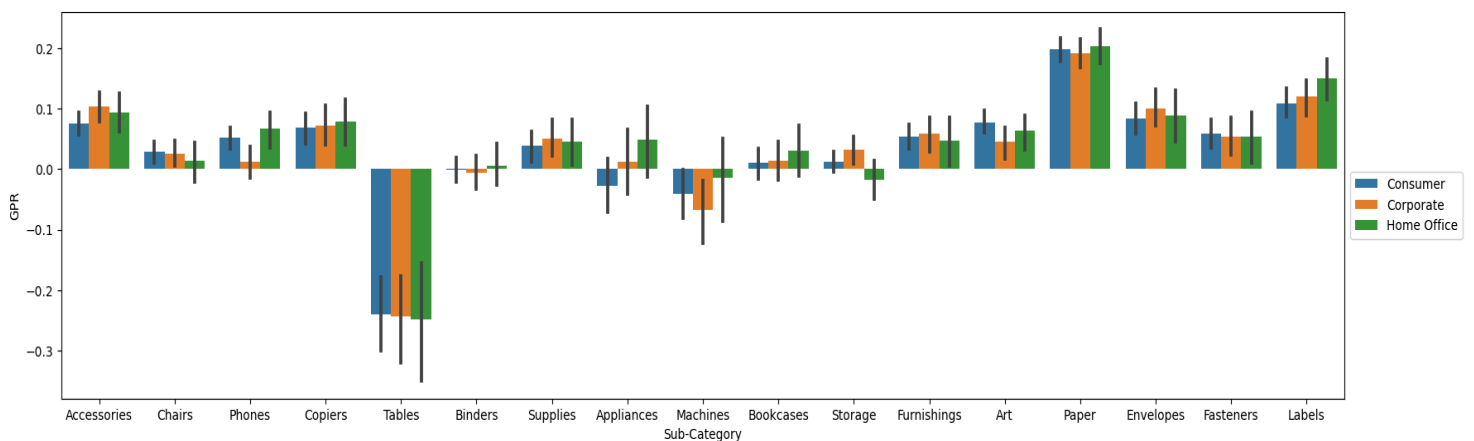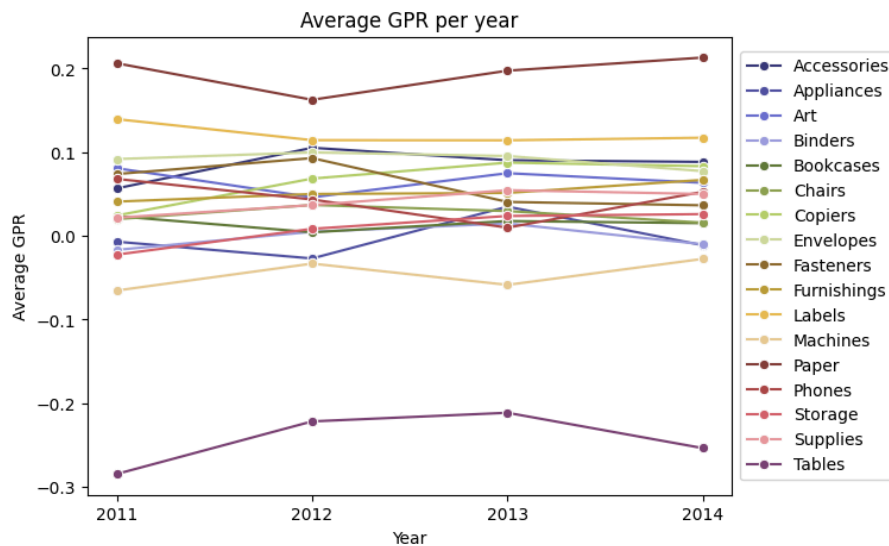
# Strategies For Expansion and Maximizing Profits

Expansion in Canada

❖ The low sales and profit figures in the Canadian market can be attributed to the significantly low customer base.

❖ The mean GPR is the highest for the Canadian market in the span of three years. Also, it is able to maintain almost constant GPR over time.

❖ The average PPQ has been the highest for the Canadian market in the consumer and corporate segments in the span of three years.

All these show that there is a very high potential for expansion in the Canadian market. The trend also shows that there is scope for expansion in almost all customer segments and product categories.
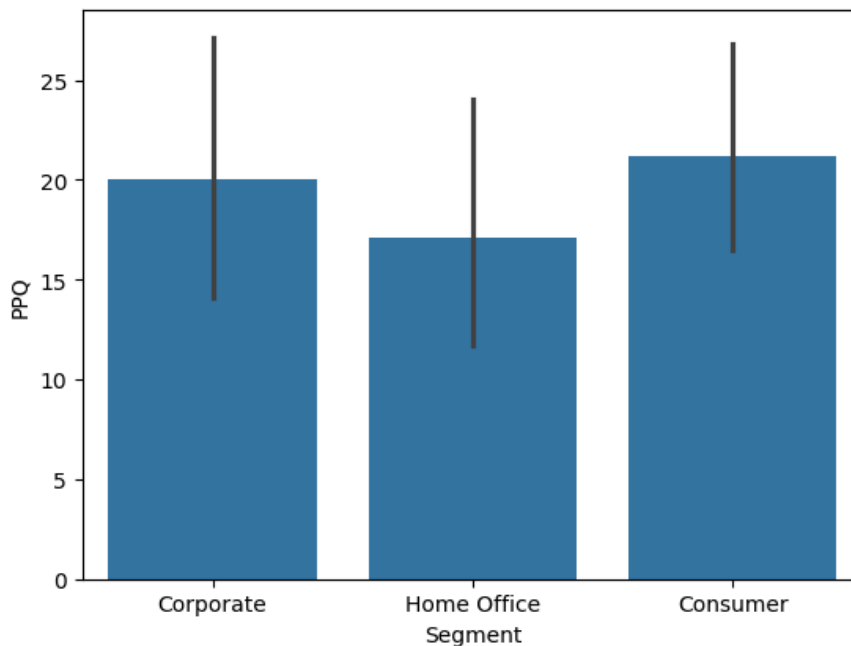
Need for focus on African and EMEA market

❖ The African and EMEA markets have almost the same customer base as the European and US markets, but their profits and sales are significantly lower. *The gross profit ratio (GPR) has remained low and negative for both the markets.* ***This shows that the African and EMEA markets are currently very inefficient for company operations.***

❖ However, the mean GPR and PPQ for African markets have increased over the span of three years, while they have remained constant or slightly increased in other markets, including EMEA.

❖ This shows that the African market, though currently inefficient, may have potential for growth and higher profits, similar to present day EU and US markets. ***Engaging the customer base and increasing the sales of product subcategories with high GPR and PPQ values will help achieve this.*** *But EMEA is expected to remain inefficient, despite still generating profits for the company. The company should remain vigilant regarding the EMEA market.*
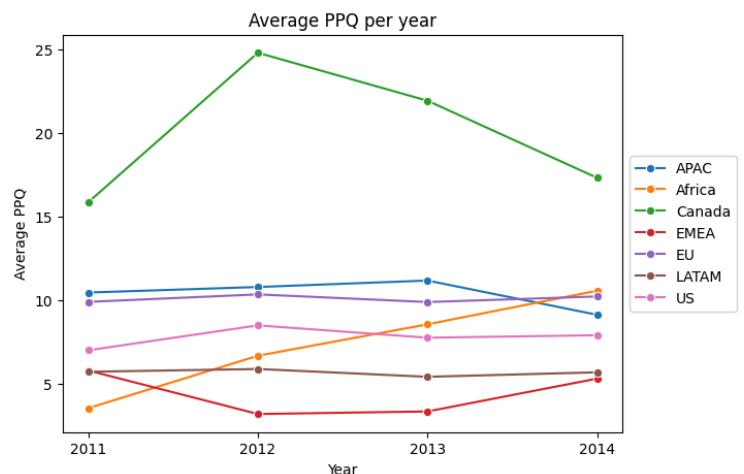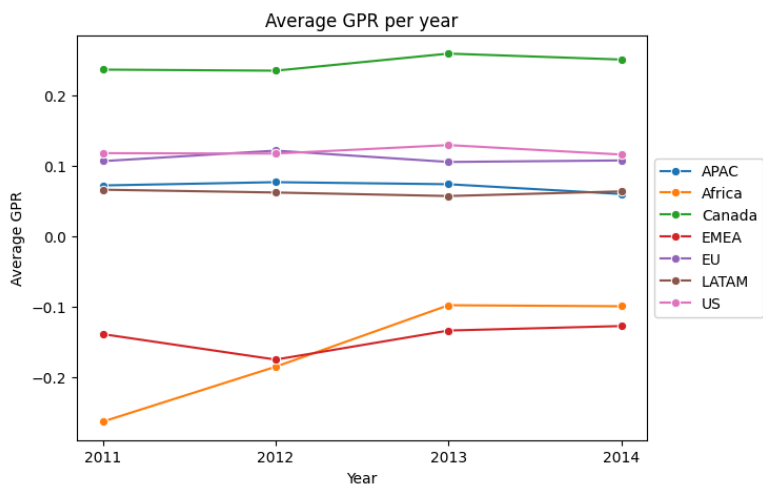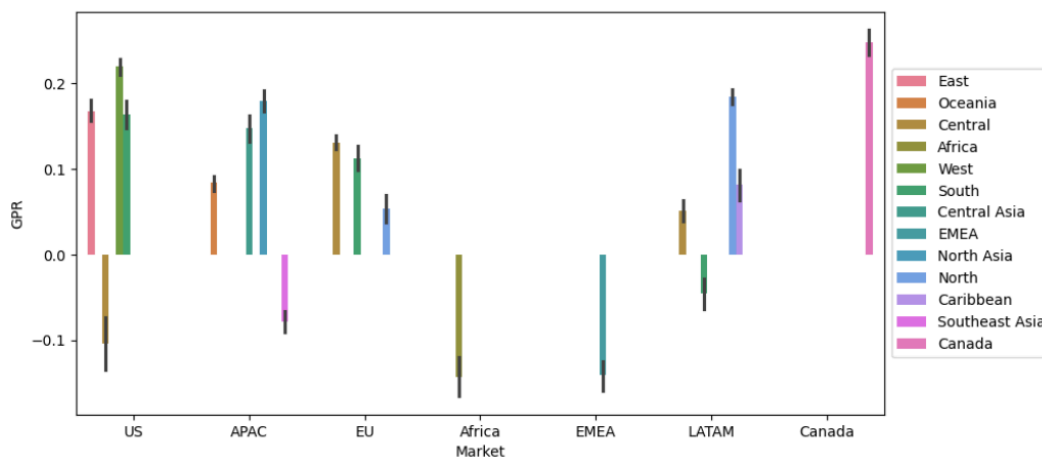
Segment-wise focus on certain categories of products

❖ The mean GPR, NPR and PPQ of the **Home Office** *segment have shown a significant increase over the past three years.* As there is a lower consumer base in this segment, these stats show this segment offers a good scope of expansion in all the markets.

❖ The PPQ and GPR have shown a declining trend over the last three years for the **corporate segment**. *This may lead to reduced profits and even losses in the future. Thus there is a need to be vigilant here and try expanding in other two segments.*
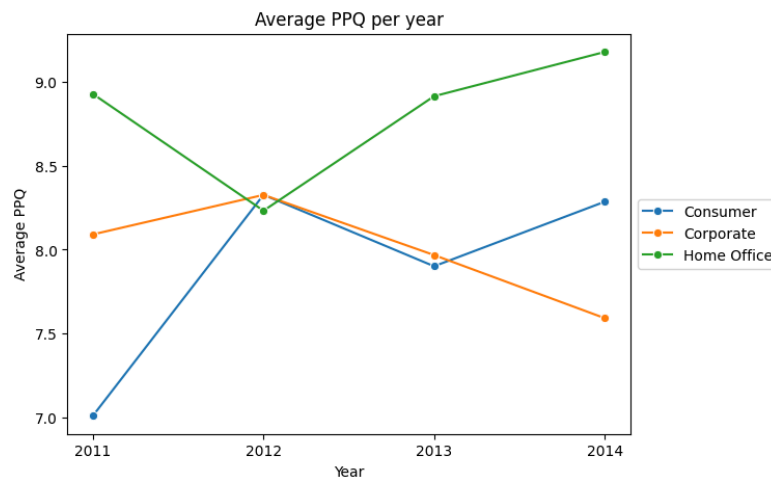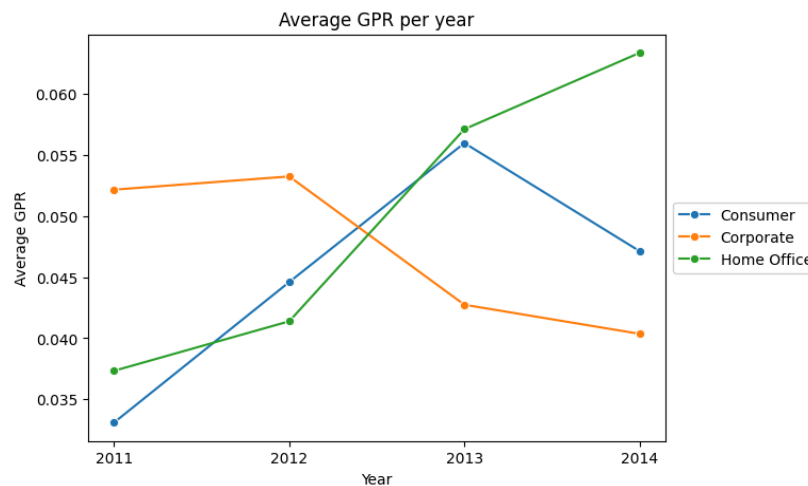
❖ The **subcategory of Tables** displays negative figures for both GPR and PPQ. Its average GPR and PPQ have remained the lowest for the last three years. This implies that the sale of table products results in losses. Thus, they can be removed from the subcategory of products. ***The company is advised not to sell tables, or to sell only those brands where they don't encounter losses, especially in the markets of the US, APAC and EU, where losses are considerably high.***