Data Selection and Processing

I, Ntouma Olympia, certify that this work is based on data for which I have permission to transfer and process. I also certify that this data complies with all applicable laws and provisions on the protection of intellectual property and personal data.

I used sales and inventory data from a virtual toy store chain in Mexico called Maven Toys. The data also includes information about products, stores, daily transactions, and current inventory levels in each location. I chose this data because as a mother I am interested in trends in the toy market in terms of preferences and seasonality of sales. In addition, as a financial analyst, I am interested in the proper response of the company to market trends.

My analysis will try to answer the following questions:

1. Which product categories drive the biggest profits? Is this the same across store locations?
2. Can you find any seasonal trends or patterns in the sales data?
3. Are sales being lost with out-of-stock products at certain locations?
4. How much money is tied up in inventory at the toy stores?
5. Will inventory meet sales forecasts for the next quarter?

Data source:

https://mavenanalytics.io/data-playground?accessType=open&dataStructure=Multiple%20tables&order=date_added%2Cdesc&page=6&pageSize=5

Data analysis

As mentioned in the previous section of this paper, the data to be analyzed refer to the sales of a toy stores chain in Mexico. Specifically, I studied data from 50 stores selling 35 products, grouped into 5 categories (Toys, Art & Crafts, Games, Electronics, and Sports & Outdoors) in 4 different locations (Airport, Commercial, Downtown and Residential). Sales refer to the years 2022, all year, and 2023 for the first 3 quarters. To analyze the data and visualize the results, I used the Power BI program in which I created the appropriate functions, measures, and columns to answer the questions in the first section.

Presentation of Results

In this section I will present the results of the analysis and the answers to the questions.

1. Which product categories drive the biggest profits? Is this the same across store locations?

As shown in the analysis and visualizations file toysgit.pbix on page p.1, Toys and Electronics generate the highest profits while the one with the lowest is Sports & Outdoors (pie chart). The Toys category is the most profitable in the Downtown and Residential locations, while in the other two locations the first place is occupied by Electronics. Finally, Downtown and Commercial stores show the highest profits (clustered column chart). The doughnut chart shows the Colorbuds product, which belongs to the Electronics category, has the most unit sales, followed by the Deck of Cards, from the Games.

2. Can you find any seasonal trends or patterns in the sales data?

To calculate sales data, I created the Revenue column that counts units sold by the price of each product. According to the line chart of page p. 2, there seems to be a seasonality as sales revenue increases at the end of April and December probably due to the holiday tradition offering gifts to children (Easter, Christmas). The motion scatter chart shows the trend in sales and earnings for each product category, with bubbles growing with the sum of revenue. Toys and Electronics appear to have the greatest fluctuations throughout the period under review.

3. Are sales being lost with out-of-stock products at certain locations?

The answer to the above question came by counting the out-of-stock products and creating the corresponding column. It was found that only 77, out of a total of 1,750, product categories, mainly Toys, are in short supply in all stores and therefore sales cannot be lost as long as the shortage is immediately replenished to satisfy the increased demand in December. If there were data on how long it takes to fill the shortage of each product, I could answer with confidence if sales are lost.

4. How much money is tied up in inventory at the toy stores?

I had to calculate the stock value for products in stock at toy stores by multiplying the inventory quantity by the cost of the product in order to answer the fourth question. The answers are shown with a Treemap, a map, and a card.

5. Will inventory meet sales forecasts for the next quarter?

On p. 5 in the visualization file, there is the line chart with the units of products sold during the period considered and the forecasting assessment for the next quarter. A card shows the sum of available stock. Forecasts for the next quarter show that there will be an increase in sales, mainly due to seasonality, so the available stock will not be able to meet the increased demand. New products should be produced or ordered immediately.