Project Title

Sales performance analysis using Excel and Power BI

Objectives

To analyze sales data for the year 2024 to identify trends, monitor performance metrics, and provide actionable insights and/or recommendations.

Dataset Description

Source: Practice sales dataset for January to December, 2024, from Tech Command Academy.

Size: 12,000 rows and 16 columns

Key columns

- Transaction Date – The date of the transaction
- Product Name – Name of the product sold
- Sales Representative – Name of the sales representative that made the sale
- Quantity Purchased – Total quantity of product purchased by a customer per time
- Revenue – Total sales value generated from the transaction
- Cost – Amount it cost to purchase/procure the product

Initial observations

There were no missing values in the dataset but had 5 empty columns

Tools used

Microsoft Excel

- Data cleaning with power query (proper dataset/table formatting, removing duplicates)
- Use some Excel aggregate and logical functions to return columns like profit per sales and product name, and further prepare the data for analysis.

Power BI

- Interactive dashboards.
- Advanced data visualization (e.g., slicers, filters)
- Calculated measures using DAX for deeper insights

Methodology

Data cleaning and preparation

- Removed 5 empty columns using power query.
- Corrected 10 outliers in the 'Revenue' column by cross-checking source data.
- Split 'Customer name' column into 'First Name' and 'Last name' for better aggregation
- Used excel logical functions to return product name with the corresponding product code

Exploratory Data Analysis (EDA)

- Used DAX query to create columns categorizing buyers into three (3) age categories (Youth, Adult and Aged) by their date of birth for better insight, and categorizing orders into three (3) categories (Low, Medium and High Orders).
- Detected seasonality in sales, with peak sales running between January to July.

Visualization and insights

Created a Power BI dashboard with the following visuals

- Revenue, Cost and Profit by Product, Buyer Location and Sales Representative (Bar Charts)
- Quantity Purchased/sold by sales representative (Bar Chart)
- Revenue by Age group (Donut Chart)
- Monthly Sales Trend (Line Chart)

Recommendation

- Stock high-demand products (Shortbread, Vanilla wafers and Ginger Snaps) ahead of the school/academic sessions.
- In as much as considerably high revenue was generated from all of the buyer locations, more marketing efforts should be focused on buyer locations with higher revenue generation/sales (San Antonio, San Jose and Philadelphia)
- Improved marketing strategies and adverts should be considered to create awareness in areas/locations with low sales to boost sales/revenue from these locations.

Results and Insights
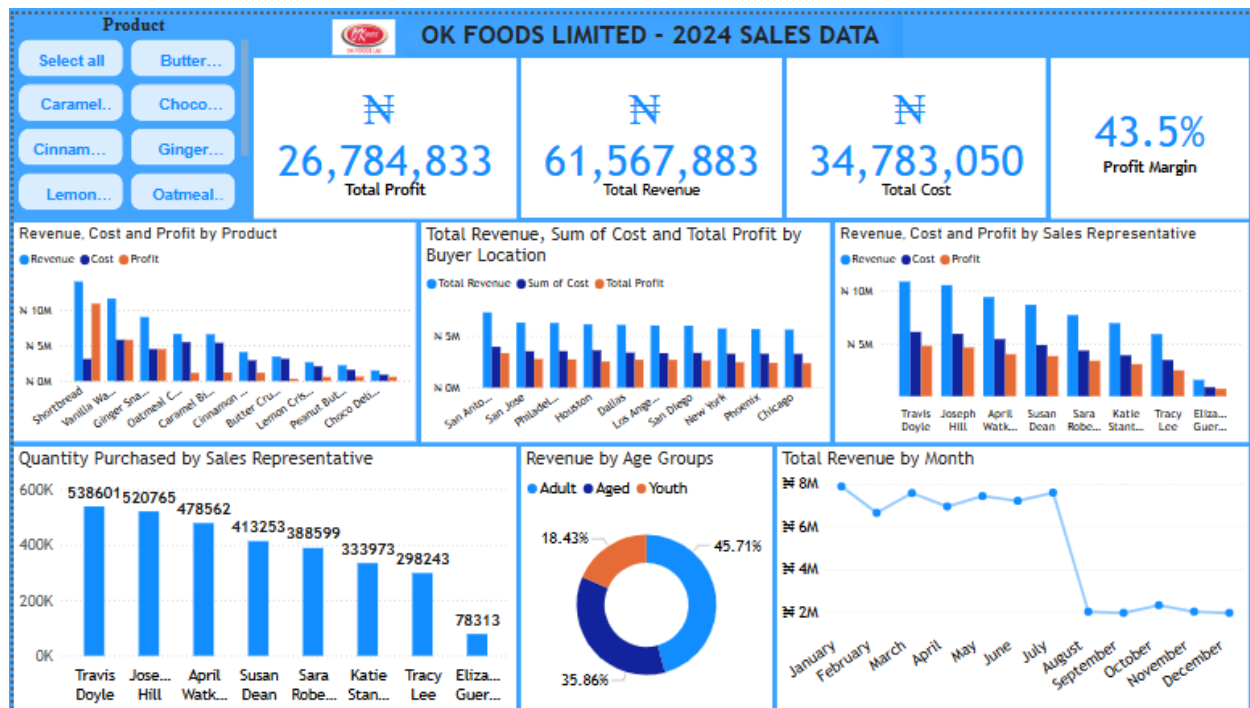
Sales Performance:

- Overall sales increased by 23% compared to the previous year
- The 'Adult' age category/group contributed about 45% of the total revenue generated. The Adult group is the top performing age category and these are within the ages of 31-60. This age bracket are adult male and female that are likely to be involved in retail sales and/or purchases for their family/school children.
- San Antonio, San Jose and Philadelphia are the top three (3) performing customer locations, contributing about 33% of the total revenue generated.

Insights from Performance of Sales Representative:

- Quantity sold/purchased directed affected and reflected on the revenue generated. Travis Doyle, Joseph Hill and April Watkins were sales representatives with higher performance and contributed over 50% of Quantity purchased and Revenue generated. This could be because of their vast network with top purchasing customers in top performing locations.
- Distance/sales representative location could be a factor to low sales/revenue by Elizabeth Guerrero.

Product Performance and Seasonal Trends:

- Shortbread, Vanilla wafers and Ginger Snaps are the three (3) top performing products and contributed over 55% of the total Revenue.
- Product usage, taste and cost might be a factor to low sales/revenue of products like Choco Delight, Peanut Butter and Lemon Crisps.
- Sales peaked in January and remained considerably stable through July, driven by school sessions and ongoing academic activities. Students and school children are most likely to consume more snacks in school during breaks/free periods.
- Sales dip observed in August through December could be attributed to holidays that's often observed during these periods. Students and school children are most like to be at home and consume mostly home-made foods.

Conclusion

The analysis identified that Shortbread, Vanilla wafers and Ginger Snaps are the most profitable products with strong performance in locations like, San Antonio, San Jose and Philadelphia. Sales trends indicate the importance of promotions during schools/academic sessions and in high performance locations. It also showcases the individual strengths of the sales representatives, and gives more insight on who our target audience by age groups/categories are. It is recommended to focus marketing and inventory planning efforts on high-demand products and top sales locations, and improve marketing efforts in locations with low sales to sustain and improve growth.