

## **AdventureWorks Sales Dashboard – Comprehensive Insight Report**

### **Project Objective**

The goal of this project was to analyze four years of transactional sales data to assess overall performance. The analysis focuses on profit, with emphasis on trends over time, products, and customer locations (countries), to identify patterns and actionable insights.

### **Business Questions**

1. How has total profit evolved over four years?
2. Which products and customers contributed most to profit?
3. How do different countries and demographics affect profitability?
4. What are the key trends and insights for the most recent year?

### **Tools and Methods Used**

- Power Query Editor: Data cleaning and transforming raw data for analysis.
- Power Pivot and Data Models: Created relationships between tables (Sales, Products, Customers, Geography, Date) to enable advanced pivot analyses.
- DAX (Data Analysis Expressions): Calculated key metrics such as Number of transactions, Total number of products, Total number of sold and unsold products, %Profit margin, Total number of customers, and average customer age.
- Pivot Tables and Pivot Charts: Used for visualizing KPIs and trends across time, products, customers, and demographics.

### **Analysis Performed**

1. KPI (comparison to previous year): Cost of goods sold (COGS), Revenue, Order quantity, Profit, Profit margin, and transaction compared to the previous year.

2. Yearly performance metrics (Above average)
3. Monthly profit trend
4. Profit by week type
5. Quarterly profit analysis
6. Profit by weekday
7. Top 5 profitable products (%contribution and others)
8. Top 5 profitable customers (%contribution and others)
9. Profit by gender
10. Profit by product color (highlighting best sellers)
11. Profit by pricing type (Expensive and less expensive)
12. Country-wise profit
13. Profit by age group

## **Overall Insights**

Overall profitability is driven primarily by high-priced products, weekday sales activity, older customer segments, and strong performance in United States and Australia. Profit generation remains broadly distributed across customers and products.

1. KPI Trends
  - Cost of goods sold (COGS), Revenue, Order quantity, Profit, Profit margin, and transaction increased over the years.
2. Profit Trend by Year
  - Annual profit demonstrates a strong upward trajectory from \$13.40 million in 2022 to \$42.16 million in 2025, however, having a peak profit of \$42.55 million in 2024.

- Profit for 2025 appears lower than 2024 despite having a higher quantity order and transactions; however, this is attributable to the fact that the 2025 dataset only includes transactions up to July.
- 2024 and 2025 both contributed 67.1% of the total profit
- 2024 and 2025 each had a profit above the average profit for the four years.

### 3. Time-based trends

- Monthly Profit Trend - Highest profit in May, June, and December collective accounting for 31.9% of the profit.
- Profit by week type - Weekday transactions contribute 72.0% of total profit (\$90.94 million), while weekends account for 28.0% (\$35.35 million).
- Profit by Weekday - Highest profit in Wednesday, Thursday, and Friday collectively accounting for 43.8% of total profit.
- Quarterly Profit analysis - Quarter 2 is the most profitable period with \$39.02 million, representing 31 percent of total profit, while Quarter 3 records the lowest profit.

### 4. Product Analysis

- Out of 606 available products, only 158 were sold, leaving 448 unsold.
- The top five products by profit contribute 24.8% of total profit, while the remaining products account for 75.2%.
- Black-coloured products generate the highest profit at \$39.16 M, followed by red at \$31.59 M and silver at \$23.92 M.
- White-coloured products generate the lowest profit.
- Products priced above \$150 account for 95.4 percent of total profit (\$120.52 M).
- Products priced below \$150 contribute only 4.6 percent (\$5.77 M).

## 5. Customer and Geographic Analysis

- The customer base consists of 18,484 customers with an average age of 46 years.
- Customers aged 50 and above contribute 41.4 percent of total profit, making them the most profitable age group.
- Profit contribution by gender is evenly distributed, with females contributing 50.4 percent and males, 49.6 percent.
- The top five customers by profit contribute only 0.3 percent of total profit, while the remaining customers account for 99.7%.
- The United States and Australia jointly account for 62.7 percent of total profit, with the United States representing the single largest contributor.

## Strategic Recommendations Based on Overall Dashboard Insights

### 1. Revenue and Profit Optimization Strategy

- Prioritize inventory availability, marketing visibility, and lifecycle management of high-priced products (above \$150), which generate 95.4% of total profit.
- Lower-priced products, which contribute marginally to total profit, should be evaluated for cost efficiency, bundling opportunities, or repositioning within the product portfolio.

### 2. Product Portfolio Management

- Rationalize the product portfolio, as only 158 out of 606 products are actively sold.
- Focus inventory and operational resources on consistently high-performing products, particularly top Mountain-200 colour and size variants.
- Evaluate unsold products for discontinuation, redesign, or targeted promotion.

### 3. Time-Based Performance Optimization

- Leverage strong performance in Quarter 1 and Quarter 2, which together account for the majority of annual profit.
- Implement targeted strategies to address underperformance during Quarter 3, where profit contribution is lowest.
- Plan proactively for observed mid-year dips in monthly profitability.

#### 4. Weekday vs. Weekend Strategy

- Align staffing, logistics, and marketing efforts with weekday demand, which contributes 72.0% of total profit.
- Strengthen promotional activities on Wednesday to Friday, the most profitable days.
- Explore cost-effective initiatives to improve weekend performance without increasing fixed costs.

#### 5. Customer Segmentation Focus

- Prioritize engagement and retention strategies for the 50+ age group, responsible for 41.4% of total profit.
- Maintain gender-neutral sales and marketing approaches, given the near-equal profit contribution from male and female customers.
- Leverage the broad customer base to sustain revenue stability, as profit is not concentrated among a few customers.

#### 6. Geographic Market Prioritization

- Maintain strategic focus on the United States and Australia, which together contribute 62.7% of total profit.
- Allocate resources proportionally to market contribution to protect performance in core regions.

- Assess secondary markets for growth opportunities without diverting attention from primary profit centers.

## Visual Representations

