

## Project Summary: Amazon E-commerce Sales Analytics

Developed a comprehensive Amazon-style E-commerce Sales Analytics Report using Power BI and by importing 1M+ records from SQL Server, establishing a scalable foundation for real-time sales, profit, and customer analytics, designed to support data-driven decision-making.

---

### Data Model Overview

The data model follows a classic **Star Schema architecture**, optimized for efficient querying, intuitive reporting, and seamless integration with **Power BI**. It centres around a **FactSales** table, surrounded by multiple **dimension tables** that provide contextual attributes for slicing and dicing the data.

#### Fact Table:

- **FactSales**

This table captures all **sales transactions** and includes key metrics such as:

- SalesID, Quantity, UnitPrice, TotalAmount
- Foreign keys to Date, Customer, Product, Payment, Shipping, and Promotions

#### Dimension Tables:

1. **DimDates**

- Standard calendar table supporting **time intelligence** (Year, Month, Quarter, Weekday, etc.)

2. **DimCustomers**

- Contains demographic and geographic details:
  - CustomerKey, CustomerName, Age, Gender, Segment, City, State/Province

3. **DimProduct**

- Provides product hierarchy and pricing data:
  - ProductKey, ProductName, Category, SubCategory, StandardCost, ListPrice

4. **DimPayment**

- Captures transaction-level payment insights:
  - PaymentKey, PaymentMode, FailureRate

5. **DimShipping**

- Offers shipping and delivery performance metrics:
  - ShippingKey, CourierPartner, DeliveryMode, DeliveryStatus, TimeTakenDays

# Project Summary: Amazon E-commerce Sales Analytics

## 6. DimPromotions

- Represents marketing campaigns and discounts:
  - PromotionKey, PromotionName, DiscountPercent, StartDate, EndDate, PromotionType

### Measures Table:

- Includes calculated KPIs using **DAX**, such as:
  - TotalRevenue, TotalOrders, TotalCustomers, Profit, Profit Margin (%), RepeatPurchaseRate, Recency, AvgOrderValue, OneTimeCustomers

---

### Model Highlights

- Fully normalized with **1:M relationships** (one-to-many) from dimensions to fact
- Enables **Row-Level Security (RLS)** on DimCustomers.State and DimProduct.Category
- Scalable structure supporting **over 1 million sales records**
- Designed for multiple use cases: **Customer Behaviour Analysis, Product Performance, Inventory Forecasting, Regional/Category Access Control, and Price Optimization**

---

### RLS & Slicers

- **Slicers** on every page let users filter by **Date, Category, and State**.
- **Row-Level Security** roles ensure:
  - **Regional Managers** see only their assigned state(s).
  - **Category Owners** see only their product lines.

---

### Key Insights

- **Total Revenue: \$822 M**  
Demonstrates strong top-line performance over the two-year period, validating successful market expansion and marketing strategies.
- **Average Order Value: \$825**  
Indicates customers are making high-value purchases, reflecting effective upselling/cross-selling initiatives.

## Project Summary: Amazon E-commerce Sales Analytics

- **Profit: \$637 M**  
Reveals robust absolute profit, showing that core operations and cost controls are yielding substantial returns.
- **Profit Margin (63.71%)**  
Highlights healthy profitability—well above industry norms—underscoring efficient pricing and supply-chain management.
- **Profit Trends by Category**
  - Electronics grew from \$200 M → \$230 M, remaining the dominant category.
  - Clothing and Home & Kitchen saw moderate gains.
  - Books remained flat, suggesting a stable but saturated sub-market.
- **Top 10 Products**
  - Men's Jeans led with \$49 M, followed by Women's Dress (\$44 M) and OnePlus 12 (\$43 M).
  - Apparel occupies the majority of top-seller slots, indicating fashion drives high unit volumes.
- **Total Sales Forecast**  
Projects revenue rising to over \$1 B by 2026, signalling continued growth and a healthy sales trajectory.
- **Monthly Sales Trend**
  - Peaks consistently in October (holiday season).
  - Noticeable mid-year troughs in June/July, suggesting off-peak windows for targeted promotions.
- **Total Orders by Month**  
Monthly orders accelerated from 10 K to 100 K, reflecting rapid customer acquisition and platform adoption.
- **Category-Wise Sales Trend**
  - Electronics' share climbed from 40% → 45%.
  - Books held steady at 10%.
  - Home & Kitchen and Sports contributions remained consistent, indicating mature segments.
- **Revenue by Age**  
The 20–40 age group generates the lion's share (~\$30 M), pinpointing them as the core purchasing demographic.

## Project Summary: Amazon E-commerce Sales Analytics

- **Revenue by Gender**  
Males account for 60% of revenue, suggesting a male-skewed customer base and potential to tailor marketing to female shoppers.
- **Revenue by Segment**  
Premium customers, though only ~20 K strong, contribute \$412 M—outperforming Regular (49.97 K customers) and corporate segments in revenue per customer.
- **Customer Count by Segment**  
Regular customers are the largest cohort, but Premium users deliver disproportionate value, underscoring the business case for loyalty programs.
- **Revenue & Orders by Region**  
Texas and California lead in both metrics, identifying them as strategic markets for inventory allocation and localized campaigns.
- **Average Recency:**  
Indicates how recently customers buy; a midpoint that guides timing of re-engagement campaigns.
- **One-Time Customers: 33**  
Extremely low, signifying outstanding repeat engagement—focus on upsell rather than acquisition.
- **Repeat Purchase Rate: 99.97%**  
Exceptional loyalty metric; nearly all customers return, validating retention strategies.
- **Average Delivery Days by Courier**  
UPS (2 days) and FedEx (3 days) outperform others; targeting these partners can improve customer satisfaction.
- **Total Orders by Delivery Status**  
70% delivered, 10% returned, 5% delayed—return and delay rates highlight process improvement opportunities.
- **Total Revenue by Promotion**  
New Year Sale drives the most revenue (\$329 M), followed by Clearance (\$246 M) and Black Friday (\$124 M), guiding future campaign prioritization.
- **Discount Percentage by Promotion**  
Black Friday at 30% discount delivers mid-range revenue, while New Year's 10% yields the highest revenue—illustrating price elasticity.
- **Revenue by Delivery Mode**  
Standard shipping (54%) slightly outpaces Express (46%), but Express shows strong premium-service adoption.
- **Promotion Type Performance**  
Seasonal promotions generate higher total revenue at moderate discounts compared to flash or holiday promotions, informing marketing mix decisions.