

Multi-Region Commercial Sales Data Warehouse

Global Retail & Supply Chain Analytics

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Overview

Project Information

- **Platform Name:** Multi-Region Commercial Sales Data Warehouse
- **Database:** AdventureWorksDW 2022
- **Total Queries:** 19
- **Total Sections:** 15
- **Lines of Code:** 652

0.1 Purpose

This comprehensive SQL analysis suite provides end-to-end business intelligence queries for multi-region commercial sales operations, covering global retail performance, supply chain analytics, customer insights, product intelligence, inventory management, and cross-border operational metrics.

0.2 Key Features

- Year-over-year growth analysis with automatic partial data handling
- Integrated customer segmentation (RFM + CLV + Churn in one query)
- Product performance with built-in ABC analysis
- Predictive metrics and KPIs
- Multi-currency and exchange rate analysis
- Customer demographics and geography insights

1 Quick Start Guide

1.1 Common Use Cases

Table 1: Common Query Use Cases

Need	Section	Approx Line
Date range sales report	Section 1 & 2	Lines 3-103
Customer analysis	Section 4	Lines 139-211
Top products with ABC	Section 5	Lines 213-302
Territory performance	Section 6	Lines 304-347

2 Section Index

2.1 SECTION 1: Yearly Growth Analysis

Section Details

- **Lines:** 3-42
- **Output Tables:** 1

2.1.1 Query Description

Total Sales, Orders & Transactions with YoY Growth

- **Shows:** Annual orders, transactions, sales, costs, profit, growth rates
- **Key Metrics:** Profit margin, OrdersGrowth, SalesGrowth
- **Features:** Automatic handling of partial years
- **Use Case:** Annual performance review, board presentations

2.1.2 Key Columns

Table 2: Key Columns - Yearly Growth Analysis

Column	Description
ActualYear	Calendar year
TotalOrders	Number of distinct orders
TotalTransactions	Total transaction count
TotalSales	Total sales amount
TotalCost	Total product cost
TotalProfit	Total profit (Sales - Cost)
ProfitMargin	Profit percentage
OrdersGrowth	Year-over-year orders growth
SalesGrowth	Year-over-year sales growth

2.2 SECTION 2: Monthly & Quarterly Analysis

Section Details

- **Lines:** 43-101
- **Output Tables:** 2

2.2.1 Queries

2.2.1.1 Query 1: Monthly Sales Breakdown with YTD

- **Shows:** Monthly orders, sales, profit, running YTD total
- **Key Metrics:** Profit margin per month
- **Use Case:** Monthly financial reports

2.2.1.2 Query 2: Quarterly Performance with YoY Growth

- **Shows:** Quarterly sales with YoY comparison
- **Features:** Quarter-over-quarter growth with partial data handling
- **Use Case:** Quarterly business reviews

2.2.2 Key Columns

Monthly Analysis:

- CalendarYear, MonthNumberOfYear, EnglishMonthName
- TotalOrders, MonthlySales, MonthlyProfit
- YTDSales, ProfitMargin

Quarterly Analysis:

- CalendarYear, CalendarQuarter
 - TotalOrders, QuarterlySales, QuarterlyProfit
 - ProfitMargin, YoYGrowth
-

2.3 SECTION 3: Inventory Analysis

Section Details

- **Lines:** 102-135
- **Output Tables:** 1

2.3.1 Query Description

Inventory Movement with Stock Status

- **Shows:** Current units, inventory value, average unit cost
- **Features:** Stock status classification
- **Use Case:** Inventory planning, supply chain optimization

2.3.2 Key Columns

- EnglishProductName, CalendarYear, MonthNumberOfYear
- CurrentUnits, InventoryValue, AvgUnitCost
- StockStatus

2.3.3 Classification Rules

Table 3: Stock Status Classification

Status	Units Range
Low Stock	< 100
Normal	100-500
Overstocked	> 500

2.4 SECTION 4: Customer Analysis (CLV, RFM, Churn)

Section Details

- **Lines:** 136-207
- **Output Tables:** 1

2.4.1 Query Description

Comprehensive Customer Analysis

- **Shows:** Customer lifetime value, RFM scores, churn status, and tiers
- **Features:** Complete 360° customer view with all metrics in one query
- **Use Case:** Customer understanding, retention strategies, marketing segmentation

2.4.2 Key Columns

Table 4: Customer Analysis Columns

Column Group	Columns
Identity	CustomerKey, CustomerName, EmailAddress, Country
Dates	FirstPurchaseDate, LastPurchaseDate, DaysSinceLastPurchase
Financial	TotalOrders, TotalRevenue, TotalProfit, AvgOrderValue
Metrics	AnnualizedCLV, RFM_Score, CustomerSegment, ChurnStatus, CustomerTier

2.4.3 Segmentation Rules

2.4.3.1 RFM Segments

Segment	R Score	F Score	M Score
Champions	4	4	4
Loyal Customers	3	3	3
Promising	4	2	-
At Risk	2	3	-
Lost	2	2	-
Potential	Other combinations	Other	Other

2.4.3.2 Customer Tiers

Tier	Revenue Range
Platinum	> \$10,000
Gold	\$5,000 - \$10,000
Silver	\$2,000 - \$5,000
Bronze	< \$2,000

2.4.3.3 Churn Status

Status	Days Since Last Purchase
Active	90
At Risk	91-180
Dormant	181-365
Lost	> 365

2.5 SECTION 5: Product Analysis

Section Details

- **Lines:** 208-293
- **Output Tables:** 2

2.5.1 Queries

2.5.1.1 Query 1: Product Performance with ABC Analysis

- **Shows:** Orders, revenue, profit, ABC category integrated
- **Features:** Pareto analysis built-in with product metrics
- **Use Case:** Product portfolio review, inventory prioritization

2.5.1.2 Query 2: Product Category Trends

- **Shows:** Category performance with YoY growth rates
- **Use Case:** Category management, trend analysis

2.5.2 Key Columns

Product Performance:

- Rank, EnglishProductName, Category, Subcategory
- TotalOrders, UnitsSold, Revenue, Profit
- ProfitMargin, AvgPrice, AvgDiscount
- CumulativeShare, ABCCategory, MarginCategory

Category Trends:

- Category, CalendarYear, CalendarQuarter
- Orders, UnitsSold, Revenue, YoYGrowth

2.5.3 Classification Rules

2.5.3.1 ABC Categories

Category	Revenue Share	Priority
A - Top 80%	Up to 80%	Critical
B - Next 15%	80-95%	Important
C - Bottom 5%	95-100%	Marginal

2.5.3.2 Margin Categories

Category	Profit Margin
High Margin	> 40%
Medium Margin	20-40%
Low Margin	< 20%

2.6 SECTION 6: Sales Territory Analysis

Section Details

- **Lines:** 294-337
- **Output Tables:** 1

2.6.1 Query Description

Territory Performance Dashboard with Market Share

- **Shows:** Territory metrics with integrated market share calculation
- **Features:** YoY growth and market share in single view
- **Use Case:** Territory planning, regional strategy

2.6.2 Key Columns

- SalesTerritoryRegion, SalesTerritoryCountry, SalesTerritoryGroup
 - CalendarYear, Orders, Customers
 - Revenue, Profit, ProfitMargin
 - MarketShare, RevenuePerCustomer, YoYGrowth
-

2.7 SECTION 7: Promotion Analysis

Section Details

- **Lines:** 338-373
- **Output Tables:** 1

2.7.1 Query Description

Promotion Effectiveness with Comparison

- **Shows:** All promotions with “No Promotion” baseline for comparison
- **Features:** Side-by-side promotion performance analysis
- **Use Case:** Promotion ROI analysis, discount strategy

2.7.2 Key Columns

- PromotionStatus, EnglishPromotionName, EnglishPromotionType
 - EnglishPromotionCategory, DiscountRate
 - TotalOrders, Revenue, Profit, ProfitMargin
 - RevenuePerOrder, AvgItemsPerOrder
-

2.8 SECTION 8: Time Analysis

Section Details

- **Lines:** 374-432
- **Output Tables:** 2

2.8.1 Queries

2.8.1.1 Query 1: Sales by Day of Week

- **Shows:** Weekday performance patterns
- **Features:** Percentage of total and variance from weekly average
- **Use Case:** Staffing optimization, promotion timing

2.8.1.2 Query 2: Seasonal Analysis

- **Shows:** Spring/Summer/Fall/Winter performance with YoY growth
- **Features:** Partial data handling for incomplete seasons
- **Use Case:** Seasonal planning, inventory forecasting

2.8.2 Seasons Definition

Table 10: Seasonal Definitions

Season	Months
Winter	Dec, Jan, Feb
Spring	Mar, Apr, May
Summer	Jun, Jul, Aug
Fall	Sep, Oct, Nov

2.9 SECTION 9: Shipping & Delivery Analysis

Section Details

- **Lines:** 433-450
- **Output Tables:** 1

2.9.1 Query Description

Shipping Performance & Freight Cost Analysis

- **Shows:** Freight costs by territory and time period
- **Features:** Complete logistics cost view
- **Use Case:** Shipping optimization, cost management

2.9.2 Key Columns

- SalesTerritoryRegion, CalendarYear, CalendarQuarter
 - TotalOrders, TotalFreightCost
 - AvgFreightPerOrder, TotalRevenue
-

2.10 SECTION 10: Currency & Exchange Rate Analysis

Section Details

- **Lines:** 451-473
- **Output Tables:** 1

2.10.1 Query Description

Multi-Currency Sales Impact

- **Shows:** Revenue in local currency and USD equivalent
- **Features:** Exchange rate volatility tracking with min/max rates
- **Use Case:** International sales reporting, hedging strategy

2.10.2 Key Columns

- CurrencyName, CalendarYear, TotalOrders
 - RevenueInLocalCurrency, AvgExchangeRate, RevenueInUSD
 - ExchangeImpactPct, MaxExchangeRate, MinExchangeRate
 - ExchangeRateVolatility
-

2.11 SECTION 11: Customer Demographics Analysis

Section Details

- **Lines:** 474-497
- **Output Tables:** 1

2.11.1 Query Description

Sales by Demographics & Age Analysis

- **Shows:** Gender, income, age, education, occupation metrics
- **Features:** Complete demographic breakdown with customer-level detail
- **Use Case:** Demographic segmentation, targeted marketing

2.11.2 Key Columns

- CustomerKey, Gender, MaritalStatus, IncomeRange, AgeGroup
- EnglishEducation, EnglishOccupation
- TotalCustomers, TotalOrders, TotalRevenue
- AvgOrderValue, RevenuePerCustomer, OrdersPerCustomer

2.11.3 Classification Ranges

2.11.3.1 Income Ranges

- < \$25K
- \$25K - \$50K
- \$50K - \$75K
- \$75K - \$100K
- > \$100K

2.11.3.2 Age Groups

- 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65+
-

2.12 SECTION 12: Geography Analysis

Section Details

- **Lines:** 498-536
- **Output Tables:** 1

2.12.1 Query Description

Sales by Country, Region & Top Cities

- **Shows:** Complete geographic breakdown with top 10 cities per country
- **Features:** Integrated city rankings with performance metrics
- **Use Case:** Market expansion planning, territory optimization

2.12.2 Key Columns

- Country, CityRank, City, State
 - TotalCustomers, TotalOrders, TotalRevenue
 - TotalProfit, ProfitMargin, RevenuePerCustomer
-

2.13 SECTION 13: Product Bundle Analysis (Market Basket)

Section Details

- **Lines:** 537-561
- **Output Tables:** 1

2.13.1 Query Description

Products Frequently Bought Together

- **Shows:** Top 50 product pairs purchased in same order
- **Features:** Support percentage calculation
- **Use Case:** Cross-selling strategies, bundle promotions

2.13.2 Key Columns

- Product1Name, Product2Name
 - TimesBoughtTogether, SupportPercentage
-

2.14 SECTION 14: Predictive Metrics & KPIs

Section Details

- **Lines:** 562-632
- **Output Tables:** 2

2.14.1 Queries

2.14.1.1 Query 1: Customer Lifetime Value Prediction

- **Shows:** Historical revenue with 3-year CLV projection
- **Features:** Purchase frequency classification
- **Use Case:** Customer investment decisions, retention budgeting

2.14.1.2 Query 2: Sales Velocity (Trend Analysis)

- **Shows:** Monthly revenue with 3-month moving averages
- **Features:** Quarter-over-quarter growth tracking
- **Use Case:** Sales forecasting, trend identification

Frequency	Days Between Orders
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2.14.2 Purchase Frequency Classification

Table 11: Purchase Frequency Rules

Frequency	Days Between Orders
High Frequency	30
Medium Frequency	31-90
Low Frequency	> 90

2.15 SECTION 15: Profitability Deep Dive

Section Details

- **Lines:** 633-652
- **Output Tables:** 1

2.15.1 Query Description

Profit Margin Analysis by Multiple Dimensions

- **Shows:** Profitability by category, territory, and year
- **Features:** Profit ranking per year
- **Use Case:** Strategic planning, resource allocation

2.15.2 Key Columns

- Category, Territory, CalendarYear
 - Orders, Revenue, Cost, Profit
 - ProfitMargin, ProfitRank
-

Common Business Questions

Table 12: Business Questions Quick Reference

Question	Section	Query
“What’s our YoY growth?”	1	Query 1
“Who are our best customers?”	4	Query 1
“Which products sell together?”	13	Query 1
“Which customers are at risk?”	4	Query 1
“What’s our profit margin by category?”	15	Query 1
“How’s our shipping performance?”	9	Query 1
“What are our top cities?”	12	Query 1
“What’s our monthly sales trend?”	2	Query 1
“Which products are top performers?”	5	Query 1
“What’s our inventory status?”	3	Query 1
“How do promotions impact sales?”	7	Query 1
“What’s our seasonal performance?”	8	Query 2
“What’s our customer lifetime value?”	14	Query 1
“What’s the exchange rate impact?”	10	Query 1
“What are our customer demographics?”	11	Query 1

Notes & Tips

2.1 Important Considerations

 Warning

- Section 1 handles partial years automatically
- Section 13 (Market Basket) requires sufficient transaction history
- Section 10 (Currency) requires FactCurrencyRate data
- All YoY comparisons handle partial data appropriately

2.2 Recommended Workflow

Table 13: Recommended Query Schedule

Frequency	Sections	Purpose
Daily	2, 3, 7	Operational metrics
Weekly	2, 4, 5, 9	Performance tracking

Frequency	Sections	Purpose
Monthly	1, 4, 5, 14	Growth & predictions
Quarterly	All sections	Comprehensive review

Appendix

2.1 Quick Section Links

- [Yearly Growth](#)
- [Monthly Analysis](#)
- [Inventory](#)
- [Customer Analysis](#)
- [Product Analysis](#)
- [Territory](#)
- [Promotion](#)
- [Time Analysis](#)

- [Shipping](#)
- [Currency](#)
- [Demographics](#)
- [Geography](#)
- [Market Basket](#)
- [Predictive Metrics](#)
- [Profitability](#)