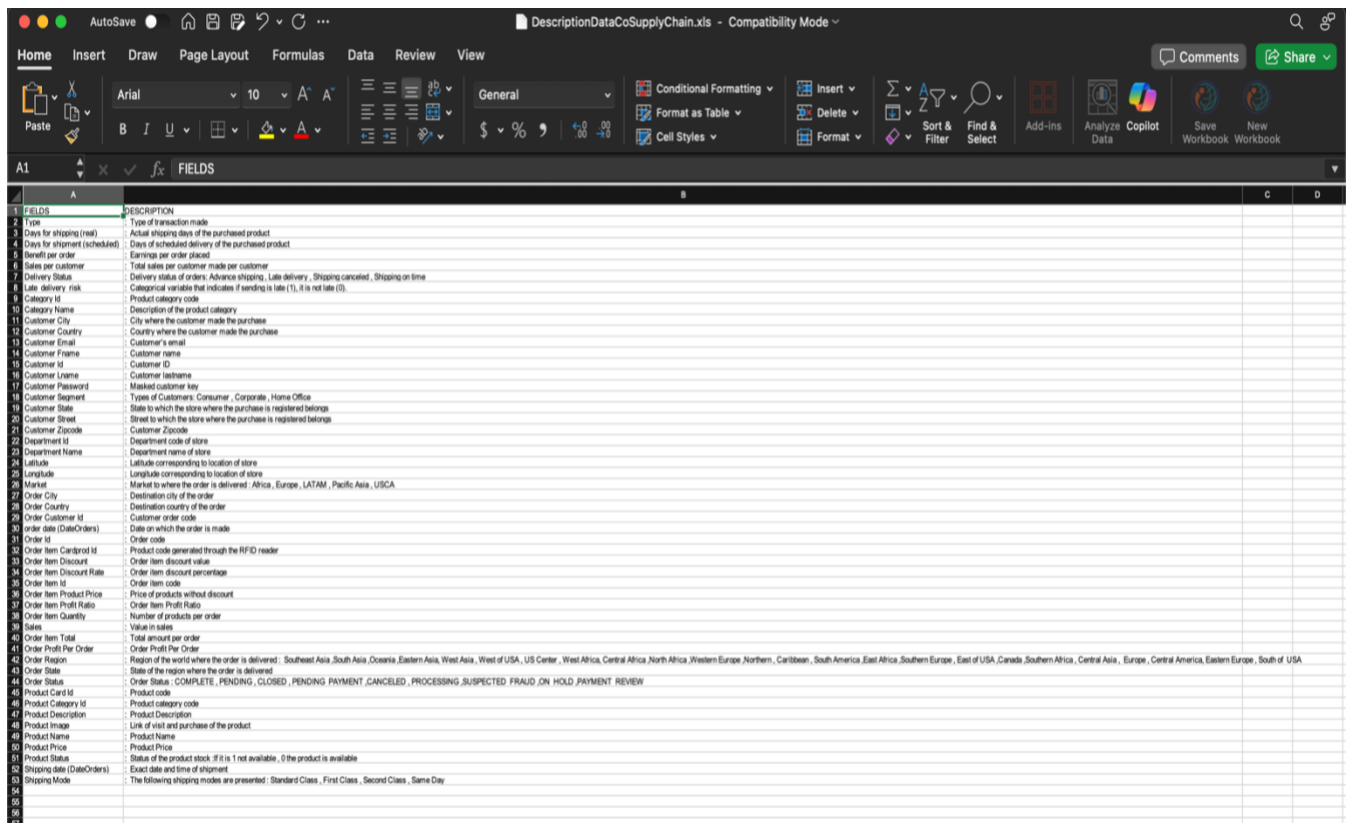


## Supply Chain Performance Dashboard: Insights Into Profitability and Efficiency.

Data source: <https://www.kaggle.com/datasets/shashwatwork/dataco-smart-supply-chain-for-big-data-analysis?resource=download&select=DataCoSupplyChainDataset.csv>

The dataset of Supply Chains used by the company DataCo Global was used for the analysis.

The description of the dataset is described below:



1	A	B	C	D
2	1	DESCRIPTION		
3	2	Type		
4	3	Days for shipping (real)		
5	4	Days for shipment (scheduled)		
6	5	Earnings per order placed		
7	6	Total sales per customer made per customer		
8	7	Delivery status of orders: Advance shipping, Late delivery, Shipping cancelled, Shipping on time		
9	8	Late delivery risk		
10	9	Category Id		
11	10	Category Name		
12	11	Customer City		
13	12	Customer Country		
14	13	Customer Email		
15	14	Customer Name		
16	15	Customer Id		
17	16	Customer Lname		
18	17	Customer Password		
19	18	Customer Segment		
20	19	Customer State		
21	20	Customer Street		
22	21	Customer Zipcode		
23	22	Department Id		
24	23	Department Name		
25	24	Latitude		
26	25	Longitude		
27	26	Market		
28	27	Order City		
29	28	Order Country		
30	29	Order Customer Id		
31	30	Order date (DateOrders)		
32	31	Order Id		
33	32	Order Item Cardroid Id		
34	33	Order Item Discount		
35	34	Order Item Discount Rate		
36	35	Order Item Id		
37	36	Order Item Product Price		
38	37	Order Item Profit Ratio		
39	38	Order Item Quantity		
40	39	Sales		
41	40	Order Item Total		
42	41	Order Profit Per Order		
43	42	Order Region		
44	43	Order State		
45	44	Order Status		
46	45	Product Card Id		
47	46	Product Category Id		
48	47	Product Description		
49	48	Product Image		
50	49	Product Name		
51	50	Product Price		
52	51	Product Status		
53	52	Shipping date (DateOrders)		
54	53	Shipping Mode		

Areas of important registered activities : Provisioning , Production , Sales , Commercial Distribution. This file comes under structured data category.

The products containing in the dataset contains: Clothing , Sports , and Electronic Supplies.

The company is facing low profit margins and inconsistent sales performance, which is affecting overall revenue growth and operational sustainability. Key business areas such as product category performance, regional profitability, and shipping efficiency need a data-driven approach to identify root causes and optimize strategies.

The target variable is Profit, which can be analyzed and predicted based on various independent factors like region, shipping mode, and product category.

PHASE 1:

Data Cleaning process involved removal of variables like Late delivery risk, Category ID, Customer Email, Customer Fname, Customer Password, Customer Segment, Customer Street, Customer Zipcode, Department ID, Latitude, Longitude, Order Customer ID, Order ID, Order Item CardProd ID, Order item ID, Product Card ID, Product Category ID, Product Description, Product image, Product name, Product price, Product Status as they don't affect profit.

## PHASE 2:

To consolidate the data in pivot table, I use the data to calculate the formulaes and create new columns for the following:

a. Delivery Delay(days)=Days for shipping(real)-Days for shipping(scheduled)

b. Profit=Sales\*Order item profit

c. Cost=Sales-Profit

d. Profit margin=(Sales-Cost)/Sales

e. Order Date-Month is extracted from Order Date using formula =TEXT(R2,"MMM")

## PHASE 3:

Now after data cleaning and creating new columns for pivot table and visualizations. We create pivot tables one by one:

a. Profitability per region & shipping mode:

Sum of Profit	Shipping Mode				
Order Region	First Class	Same Day	Second Class	Standard Class	Grand Total
Canada	662.105185	295.0584154	1213.607916	3607.14175	5777.913267
Caribbean	13674.68954	3663.640947	15014.74635	51668.93893	84022.01577
Central Africa	871.177601	2081.203941	788.7820713	7349.44915	11090.61276
Central America	51925.10414	12155.91243	53249.53487	146982.7657	264313.3171
Central Asia	758.567931	609.1389224	1361.652411	2358.005437	5087.364701
East Africa	2813.967923	1404.576819	3886.301993	6974.506949	15079.35368
East of USA	7437.173111	3149.105069	10875.20394	25108.71381	46570.19593
Eastern Asia	15545.16287	5385.531013	9018.370968	31996.80565	61945.87049
Eastern Europe	4781.258479	783.0944239	6541.493789	11790.94723	23896.79392
North Africa	7127.762794	1521.265123	3077.921975	8043.549528	19770.49942
Northern Europe	13671.08348	9296.356915	13718.3066	47581.90696	84267.65396
Oceania	15823.07151	4798.547202	19309.28078	35301.65133	75232.55082
South America	25348.78388	13596.93112	29994.76431	75535.6847	144476.164
South Asia	11327.45813	4196.129404	14886.58893	31270.91944	61681.0959
South of USA	6616.237815	2205.189243	10186.61462	13592.39428	32600.43596
Southeast Asia	18744.49882	4393.759445	15751.89176	41335.4938	80225.64382
Southern Africa	2041.872601	84.408021	756.6908115	6695.273104	9578.244538
Southern Europe	17320.5754	5800.190066	17556.27658	67277.54928	107954.5913
US Center	7836.082881	-737.5565733	10360.70285	20496.05493	37955.28409
West Africa	2966.778813	321.5499294	1010.728156	13448.56671	17747.62361
West Asia	7197.15385	2312.774259	9367.349286	14272.52557	33149.80297
West of USA	6129.468412	3571.010002	11148.28098	32553.96027	53402.71967
Western Europe	55299.85875	11560.87163	72573.4215	145838.7509	285272.9028
Grand Total	295919.8939	92448.68776	331648.5135	841081.5554	1561098.651

b. Profitability per region:

Sum of Profit	
Order Region	Total
Western Europe	285272.9028
Central America	264313.3171
South America	144476.164
Southern Europe	107954.5913
Northern Europe	84267.65396
Caribbean	84022.01577
Southeast Asia	80225.64382
Oceania	75232.55082
Eastern Asia	61945.87049
South Asia	61681.0959
West of USA	53402.71967
East of USA	46570.19593
US Center	37955.28409
West Asia	33149.80297
South of USA	32600.43596
Eastern Europe	23896.79392
North Africa	19770.49942
West Africa	17747.62361
East Africa	15079.35368
Central Africa	11090.61276
Southern Africa	9578.244538
Canada	5777.913267
Central Asia	5087.364701
Grand Total	1561098.651

c. Top 10 profitable products:

Sum of Profit	
Product Name	Total
Perfect Fitness Perfect Rip Deck	246856.4571
Nike Men's Free 5.0+ Running Shoe	202821.7156
Diamondback Women's Serene Classic Comfort Bi	198217.7918
Nike Men's Dri-FIT Victory Golf Polo	177200.9998
Nike Men's CJ Elite 2 TD Football Cleat	148811.2584
Field & Stream Sportsman 16 Gun Fire Safe	130377.4844
Pelican Sunstream 100 Kayak	126481.6791
Under Armour Girls' Toddler Spine Surge Runni	57810.74438
Dell Laptop	31770.00003
Web Camera	17213.68337
Grand Total	1337561.814

Product Name

Sort

Ascending

Descending

Sort by: Sum of Profit

Filter

By label: Choose One

By value: Choose One

Q Search

Equals

Does Not Equal

Greater Than

Greater Than or Equal To

Less Than

Less Than or Equal To

Between

Top 10

Bottom 10

- d. Delayed shipments by ship mode:

Average of Delivery delay(days)	
Shipping Mode	Total
Second Class	1.984623016
First Class	1
Same Day	0.488067744
Standard Class	-0.022961666
Grand Total	0.620065614

- e. Monthly Sales Performance:

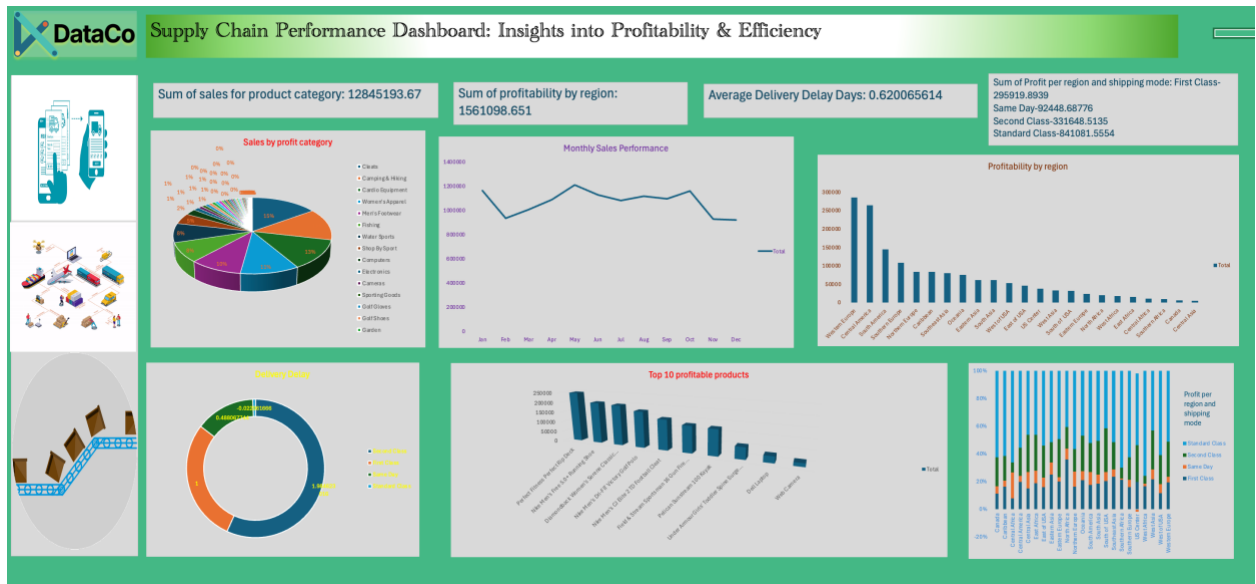
Sum of Sales	
Order Date-Month	Total
Jan	1164550.072
Feb	934914.3092
Mar	1006973.751
Apr	1088415.514
May	1211599.196
Jun	1131216.374
Jul	1081508.972
Aug	1120040.693
Sep	1095890.371
Oct	1160150.577
Nov	929177.6699
Dec	920756.1675
Grand Total	12845193.67

- f. Sales by product category:

Sum of Sales		
Category Name	Total	Percentage
Cleats	1939597.456	15.10
Camping & Hiking	1731184.643	13.48
Cardio Equipment	1643496.841	12.79
Women's Apparel	1388900	10.81
Men's Footwear	1245564.233	9.70
Fishing	1080745.99	8.41
Water Sports	1043547.849	8.12
Shop By Sport	584608.3382	4.55
Computers	318000	2.48
Electronics	167099.4612	1.30
Cameras	125667.1224	0.98
Sporting Goods	117006.75	0.91
Golf Gloves	116695.3904	0.91
Golf Shoes	107998	0.84
Garden	105450.8434	0.82
Children's Clothing	101059.3017	0.79
Crafts	96910.80231	0.75
Girls' Apparel	70355.85029	0.55
Accessories	59701.1094	0.46
Women's Clothing	55249.92187	0.43
Golf Balls	52136.95926	0.41
Consumer Electronics	51081.76099	0.40
Hockey	48360.72974	0.38
Men's Golf Clubs	47035.80052	0.37
Women's Golf Clubs	44545.97013	0.35
Music	41964.64902	0.33
Baseball & Softball	41707.11116	0.32
Health and Beauty	41611.68121	0.32
Kids' Golf Clubs	36263.07974	0.28
DVDs	35670.46106	0.28
Golf Apparel	34969.75004	0.27
Boxing & MMA	34743.55035	0.27
Trade-In	29946.77979	0.23
Hunting & Shooting	24457.67001	0.19
Strength Training	20913.7998	0.16
Tennis & Racquet	19570.65024	0.15
Pet Supplies	18990.00034	0.15
Lacrosse	17095.43985	0.13
Men's Clothing	16024.60046	0.12
Fitness Accessories	15521.21018	0.12
Soccer	13538.50993	0.11
Video Games	13356	0.10
Basketball	10499.71973	0.08
Golf Bags & Carts	10369.39034	0.08
As Seen on TV!	7699.230019	0.06
Toys	6104.659979	0.05
Baby	5671.680176	0.04
Books	5283.599986	0.04
CDs	1219.319996	0.01
Grand Total	12845193.67	

## PHASE 4:

Now after putting data in pivot table, it is ready for dashboard visualization



- Key Metrics Analyzed:
- ✓ Total Sales & Profitability
- ✓ Profitability by Region
- ✓ Delivery Delays by Shipping Mode
- ✓ Top 10 Most Profitable Products
- ✓ Sales Trends Over Time

### Dashboard Insights from Visuals:

- ✦ Sales by Profit Category (Pie Chart): Sales are largely driven by Camping & Hiking, Cleats while Electronics are least.
  - ✦ Monthly Sales Performance (Line Chart): Sales fluctuate throughout the year, peaking mid-year and dropping towards the end.
  - ✦ Profitability by Region (Bar Chart): Western Europe generate significantly higher profits, while others like Central Asia show low returns.
  - ✦ Delivery Delays (Donut Chart): Majority of shipments have no delays.
  - ✦ Top 10 Profitable Products (Bar Chart): Perfect Fitness Perfect Rip Deck is the top product.
  - ✦ Profit Per Region & Shipping Mode (Stacked Bar Chart): First Class is the most profitable shipping mode, while Standard Class incurs the highest losses.
- Key Takeaways:
- ✦ Certain regions dominate profitability, indicating expansion opportunities.

- 📌 Logistics and delivery delays significantly impact sales and customer satisfaction.
- 📌 A handful of top products contribute to the majority of profits, showing the importance of strategic inventory planning.

#### 💡 What I Learned:

- 🚀 Pivot Tables streamline handling large datasets.
- 🚀 Visual storytelling through various charts enhances data insights.
- 🚀 Interactive dashboards to allow a deeper dive into supply chain performance