



Sales & Order Analysis

NorthWind Traders

Created By,
Abdul Basith K

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PROJECT OVERVIEW

Project

Maven Northwind Challenge

Conducted By

Maven Analytics

Data Source

Maven Analytics Site

(<https://mavenanalytics.io/challenges/maven-northwind-challenge/24>)

This is a challenge conducted by Maven Analytics (Already expired) and the data sets are available in their website.

INTRODUCTION



Northwind Traders is a global import and export company that specializes in supplying high-quality gourmet food products to restaurants, cafes, and specialty food retailers around the world.

OBJECTIVES

Building a top-level KPI dashboard for the executive team to quickly understand the company's performance in key areas



SALES TRENDS



PRODUCT
PERFORMANCE



KEY
CUSTOMERS



SHIPPING
COSTS

DATA SET

No. Of Tables
7



Orders

Order
Details

Customers

Products

Categories

Employees

shippers

Sales & order data for Northwind Traders, a fictitious gourmet food supplier, including information on customers, products, orders, shippers, and employees.

TOOLS

MS Power BI

Data Visualization & Dynamic Dashboard

MS Excel

Exploratory Data Analysis & Data modelling

MS Power Point

Presentation and Insights

MS Power Query

Data Cleaning and Preparation

Power Pivot

Data modelling & Relationships

DAX

Calculated Columns & Measures

DATA MANIPULATION PROCESS

Measures & Calculated Columns

Average Order Value (AOV)

Shipment Cost Per Order (SCPO)

On-time Delivery Rate (OTDR)

Order Fulfilment Time (OFT)

Region of the Customer Country

Exclusions & Filters

Removed Blank Columns from 'Shipped Date'

Filtered 2015 May dates in 'Order Date' for accurate analysis (May data is from 1 to 4 only)

2013 data starts from July only. So, sales growth calculated from July 2013 to April 2015.

INSIGHTS



Key Metrics

Total Sales

1.23M

Sum of Freight

63.86K

Orders

805

Customers

91

AOV

1.53K

Products

77

OTDR

95.40%

SCPO

79.32

OFT (Days)

9

**All figures are in USD (US Dollar)

AOV = Average Order Value, OFT = Order Fulfilment Time, OTD = On-Time Delivery, OTDR = On-Time Delivery Rate, SCPO = Shipment Cost Per Order

Product Performance

Category

8

Products

77

Active

69

Discontinued

8

Top 3 Categories

Beverages

Dairy Products

Confections

Discontinued Products

Alice Mutton

Chef Anton's Gumbo Mix

Guarana Fantastica

Mishi Kobe Niku

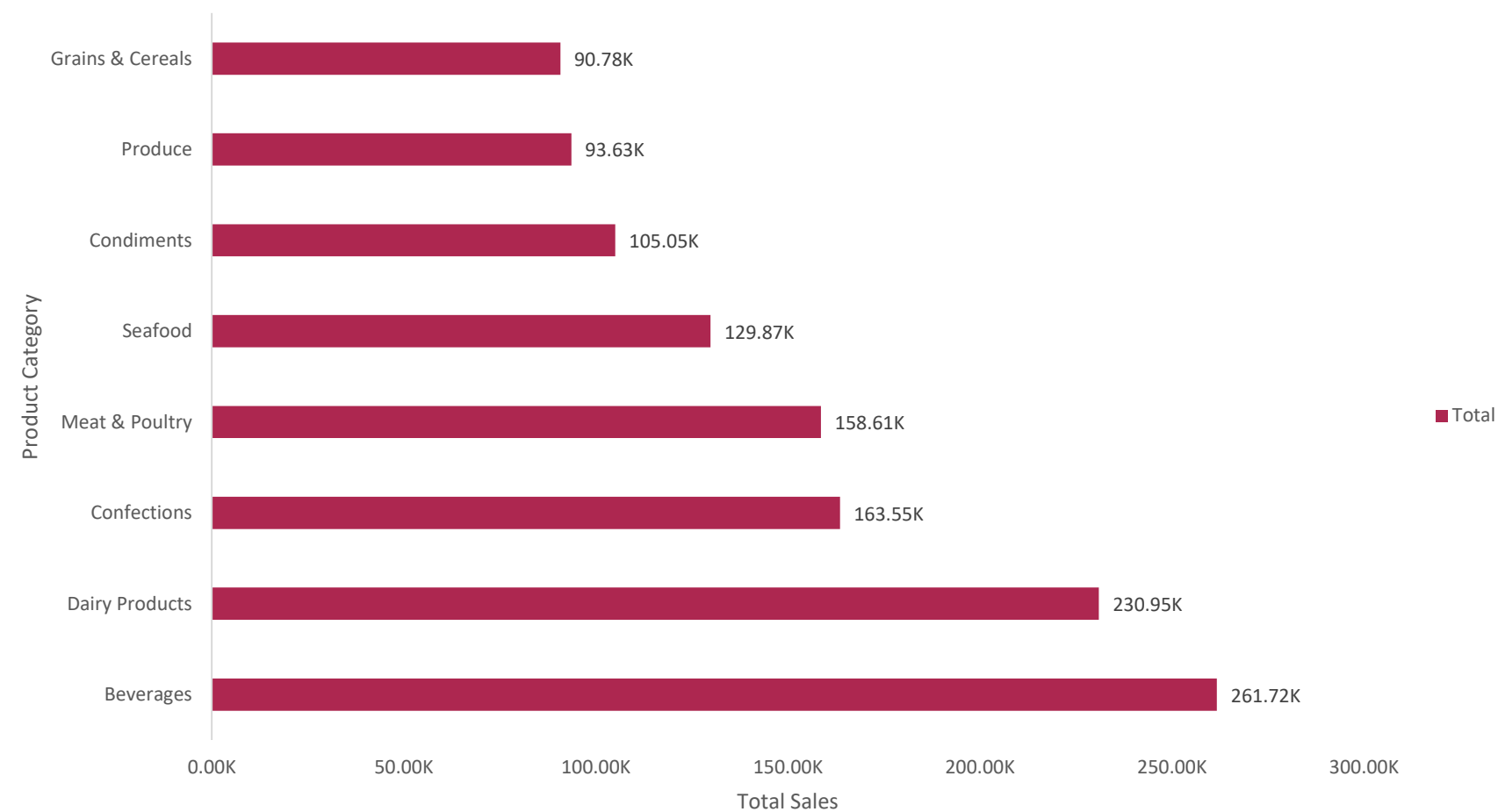
Perth Pasties

Rössle Sauerkraut

Singaporean Hokkien Fried Mee

Thüringer Rostbratwurst

Total Sales By Product Category



**All figures are in USD (US Dollar)

Total Sales By Product Category

Top Sales Category

Beverages

Market Share

21.21%

Top 3 Categories By Sales

Beverages
Dairy Products
Confections

Market Share of
Top 3 combined

53%

Category	Total Sales	Market share
Beverages	261.72K	21.21%
Dairy Products	230.95K	18.71%
Confections	163.55K	13.25%
Meat & Poultry	158.61K	12.85%
Seafood	129.87K	10.52%
Condiments	105.05K	8.51%
Produce	93.63K	7.59%
Grains & Cereals	90.78K	7.36%
Grand Total	1234.15K	100.00%

**All figures are in USD (US Dollar)

Customer Performance

Customers

91

Country

21

City

69

Customers with No Transaction Data

FISSA Fabrica Inter.
Salchichas S.A.

Paris spécialités

Total Sales and Sales % By Countries

Top Sales Country

United States

Total Sales

238.3K

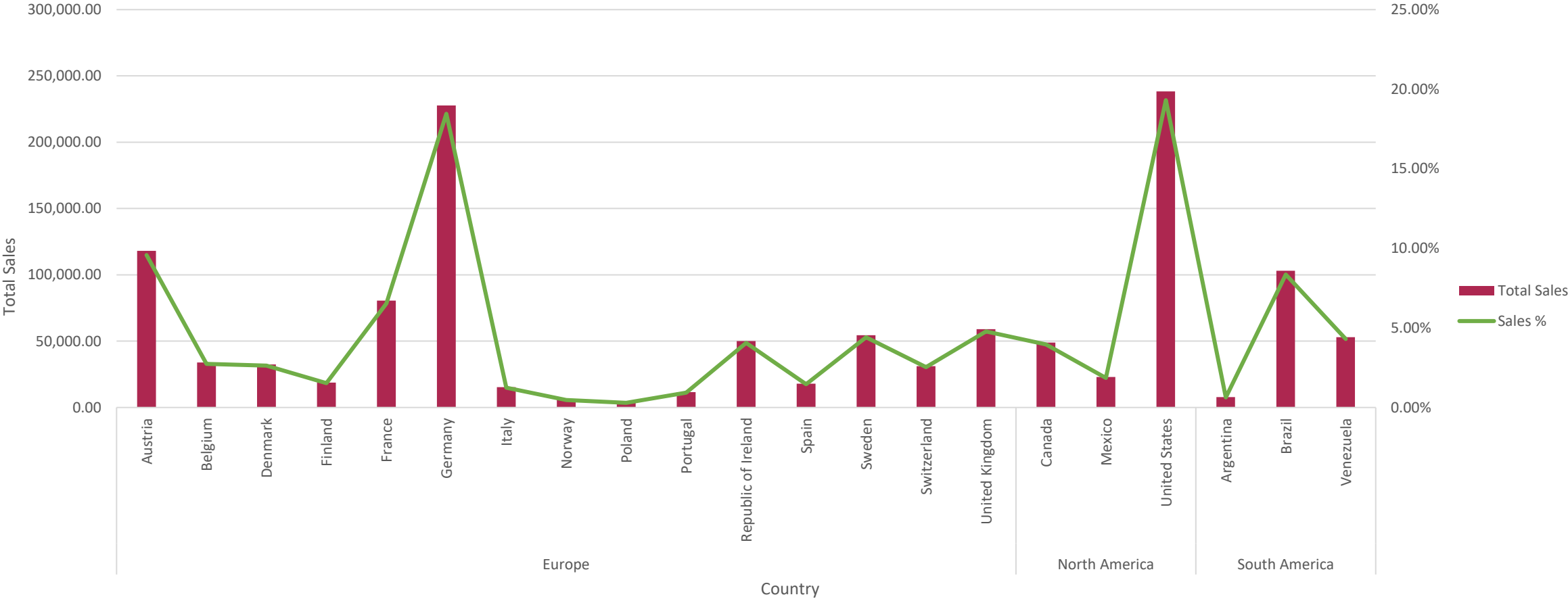
Sales %

19.31%

Country	Total Sales	Sales %
Europe		
Austria	118,104.94	9.57%
Belgium	33,824.86	2.74%
Denmark	32,428.94	2.63%
Finland	18,810.05	1.52%
France	80,529.57	6.53%
Germany	227,709.81	18.45%
Italy	15,363.76	1.24%
Norway	5,735.15	0.46%
Poland	3,531.95	0.29%
Portugal	11,472.36	0.93%
Republic of Ireland	49,979.91	4.05%
Spain	17,983.20	1.46%
Sweden	54,495.14	4.42%
Switzerland	31,194.56	2.53%
United Kingdom	58,971.31	4.78%
Europe Total	0.76M	61.59%
North America		
Canada	48,886.79	3.96%
Mexico	22,922.08	1.86%
United States	238,359.74	19.31%
North America Total	0.31M	25.13%
South America		
Argentina	7,738.10	0.63%
Brazil	103,060.70	8.35%
Venezuela	53,046.71	4.30%
South America Total	0.16M	13.28%
Grand Total	1.23M	100.00%

**All figures are in USD (US Dollar)

Total Sales and Sales % By Countries



**All figures are in USD (US Dollar)

Total Sales, Orders & No. of Customers by Country

Most No. of Customers

United States

Least No. of Customers

Poland

Republic of Ireland

Norway

Countries	No. of Customers	No. of Orders	Average Freight Cost	Total Sales
United States	13	117	116.71	238.36K
Germany	11	119	93.35	227.71K
France	11	75	55.96	80.53K
Brazil	9	81	58.18	103.06K
United Kingdom	7	56	52.75	58.97K
Spain	5	23	37.47	17.98K
Mexico	5	26	41.62	22.92K
Venezuela	4	43	61.78	53.05K
Italy	3	27	30.91	15.36K
Canada	3	29	73.36	48.89K
Argentina	3	14	42.51	7.74K
Denmark	2	17	81.04	32.43K
Sweden	2	37	87.50	54.50K
Switzerland	2	17	80.14	31.19K
Austria	2	38	185.62	118.10K
Finland	2	22	41.40	18.81K
Belgium	2	19	67.38	33.82K
Portugal	2	13	49.50	11.47K
Poland	1	7	25.11	3.53K
Republic of Ireland	1	19	145.01	49.98K
Norway	1	6	45.92	5.74K
Grand Total	91	805	79.32	1234.15K

**All figures are in USD (US Dollar)

Total Sales, Orders & No. of Customers by Country

Insights

Austria has only 2 customers, but 38 orders they have made and stand 3rd position in total sales after USA and Germany.

The Customers from Austria are Ernst Handel and Piccolo und mehr

Out of the 2 customers from Austria, Ernst Handel made significant sale and 3rd position in total sales of all customers.

Republic of Ireland has only 1 customer, though they have made 19 orders resulting almost 50K sales.

The Customer from Republic of Ireland is Hungry Owl All-Night Grocers

Countries	No. of Customers	No. of Orders	Average Freight Cost	Total Sales
United States	13	117	116.71	238.36K
Germany	11	119	93.35	227.71K
France	11	75	55.96	80.53K
Brazil	9	81	58.18	103.06K
United Kingdom	7	56	52.75	58.97K
Spain	5	23	37.47	17.98K
Mexico	5	26	41.62	22.92K
Venezuela	4	43	61.78	53.05K
Italy	3	27	30.91	15.36K
Canada	3	29	73.36	48.89K
Argentina	3	14	42.51	7.74K
Denmark	2	17	81.04	32.43K
Sweden	2	37	87.50	54.50K
Switzerland	2	17	80.14	31.19K
Austria	2	38	185.62	118.10K
Finland	2	22	41.40	18.81K
Belgium	2	19	67.38	33.82K
Portugal	2	13	49.50	11.47K
Poland	1	7	25.11	3.53K
Republic of Ireland	1	19	145.01	49.98K
Norway	1	6	45.92	5.74K
Grand Total	91	805	79.32	1234.15K

**All figures are in USD (US Dollar)

Total Sales and Sales % By Region

Top Sales Region

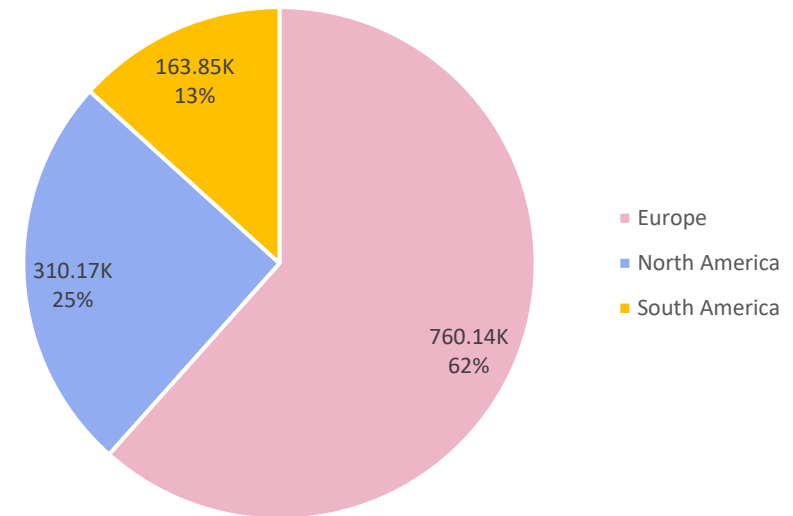
Europe

Total Sales

760.14K

Sales %

62%



**All figures are in USD (US Dollar)

Top 10 Customers By Sales and Order Count

Top 10 Customers By Sales

Customers	Total Sales
QUICK-Stop	110,277.31
Save-a-lot Markets	100,031.55
Ernst Handel	94,976.08
Hungry Owl All-Night Grocers	49,979.91
Rattlesnake Canyon Grocery	49,842.08
Hanari Carnes	32,841.37
Königlich Essen	30,908.38
Folk och fä HB	29,567.56
Mère Paillarde	28,872.19
Frankenversand	26,656.56
Grand Total	553,952.98

Top 10 Customers By Sales

Customers	Order Count
Save-a-lot Markets	30
QUICK-Stop	28
Ernst Handel	28
Hungry Owl All-Night Grocers	19
Folk och fä HB	19
HILARION-Abastos	18
Berglunds snabbköp	18
Rattlesnake Canyon Grocery	17
Bon app'	16
Frankenversand	15
Grand Total	208

**All figures are in USD (US Dollar)

Bottom 10 Customers By Sales and Order Count

Bottom 10 Customers By Total Sales

Customers	Total Sales
Centro comercial Moctezuma	100.80
Lazy K Kountry Store	357.00
Laughing Bacchus Wine Cellars	522.50
North/South	649.00
Galería del gastrónomo	836.70
Ana Trujillo Emparedados y helados	1,402.95
Romero y tomillo	1,467.29
Vins et alcools Chevalier	1,480.00
GROSELLA-Restaurante	1,488.70
Cactus Comidas para llevar	1,509.80
Grand Total	9,814.74

Bottom 10 Customers By No. of Orders

Customers	Order Count
Centro comercial Moctezuma	1
GROSELLA-Restaurante	2
Lazy K Kountry Store	2
Laughing Bacchus Wine Cellars	3
France restauration	3
North/South	3
Consolidated Holdings	3
The Cracker Box	3
Bólido Comidas preparadas	3
Trail's Head Gourmet Provisioners	3
Grand Total	26

**All figures are in USD (US Dollar)

Shipping Performance

Shippers

3

Total Freight

63.86K

Shipment Cost Per
Order

79.32

Shipping Companies

Federal Shipping

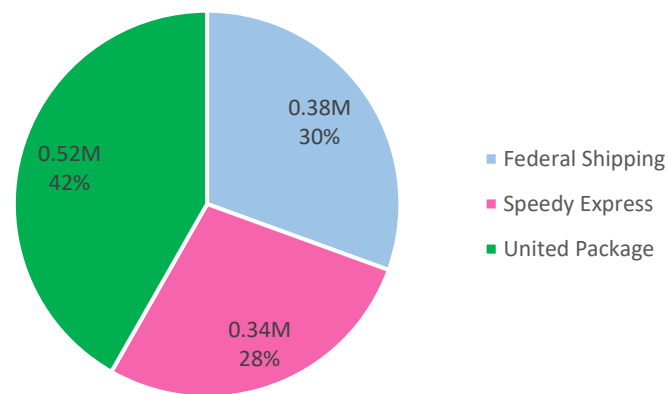
United Package

Speedy Express

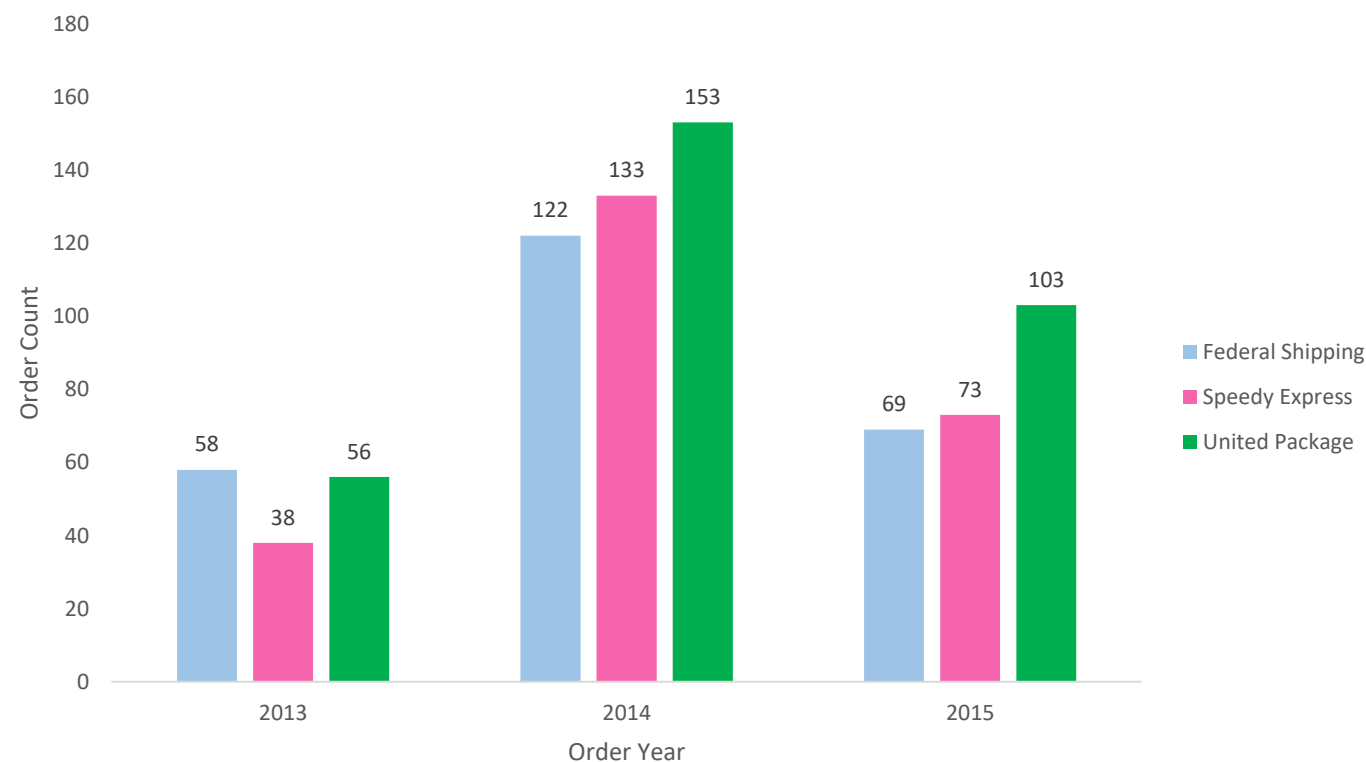
**All figures are in USD (US Dollar)

Total Sales and Order Count By Shippers

Total sales by shipping company



No. of Orders By Shipping Company Over time



**All figures are in USD (US Dollar)

AOV = Average Order Value, OFT = Order Fulfilment Time, OTD = On-Time Delivery, OTDR = On-Time Delivery Rate, SCPO = Shipment Cost Per Order

Order, Sales & On-time delivery details by Shipper

Shipper	Total sale	Total Freight cost	Total Orders	OTD	Delayed	OTDR	Avg freight	OFT
United Package	\$515,204.40	27,488.39	312	296	16	94.87%	88.10	9
Federal Shipping	\$377,044.57	20,363.10	249	240	9	96.39%	81.78	7
Speedy Express	\$341,900.64	16,005.07	244	232	12	95.08%	65.59	9
Total	\$1,234,149.61	63,856.56	805	768	37	95.40%	79.32	9

**All figures are in USD (US Dollar)

Correlation Analysis of Average Shipment cost

Federal Shipping vs Speedy Express

-0.09

Speedy Express vs United Package

0.96

Federal Shipping vs United Package

-0.37

Strong Positive
Correlation

Correlation b/w Average shipment Cost by shippers

1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6



Average Shipping Cost Per Shipper

Federal Shipping

81.78

Speedy Express

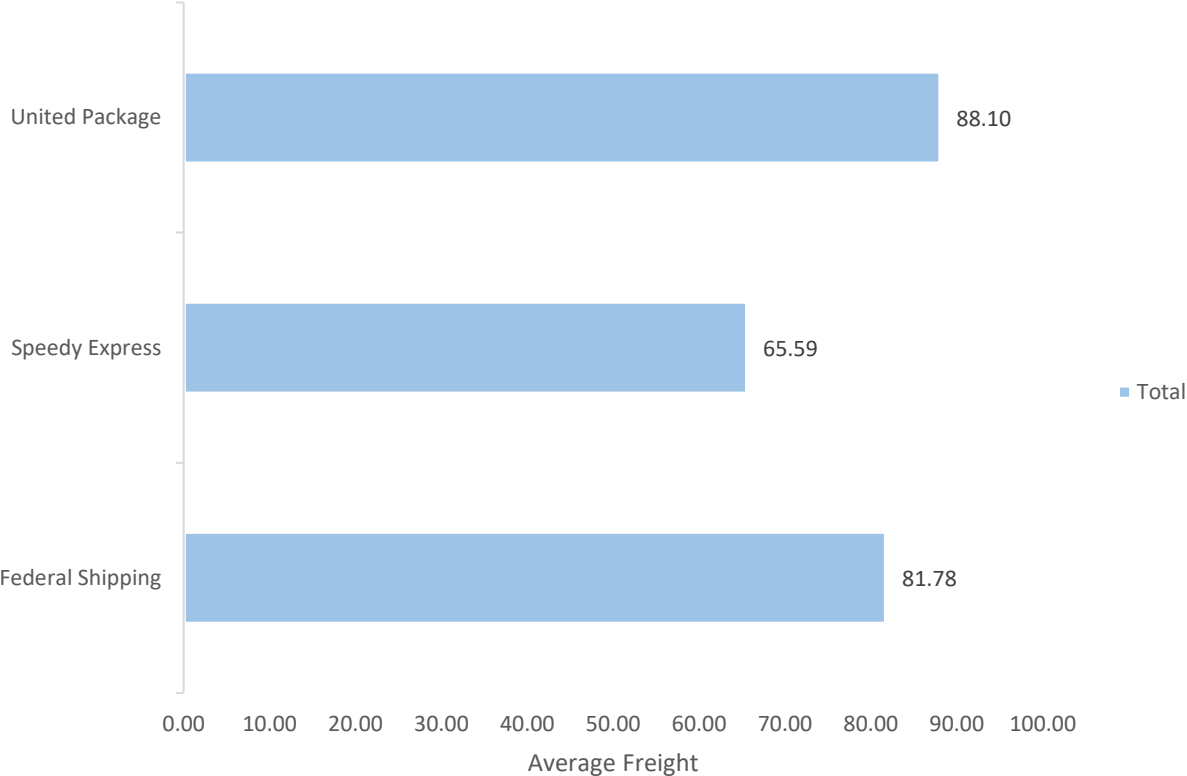
65.59

United Package

88.10

Lowest Price

Highest Price



**All figures are in USD (US Dollar)



Maven Recommended Analysis



Maven Recommended Analysis

- Are there any noticeable sales trends over time?
- Which are the best and worst selling products?
- Can you identify any key customers?
- Are shipping costs consistent across providers?

Are there any noticeable sales trends over time?

27.86K

July 2013 Sales

110.49K

April 2015 Sales

296.6%

Growth



**2015 May data is not complete. So, considering up to 2015 April.

**All figures are in USD (US Dollar)

Which are the best and worst selling products?

Best Selling
Product By
Total Sales

PRODUCT

CÔTE DE BLAYE

TOTAL SALES

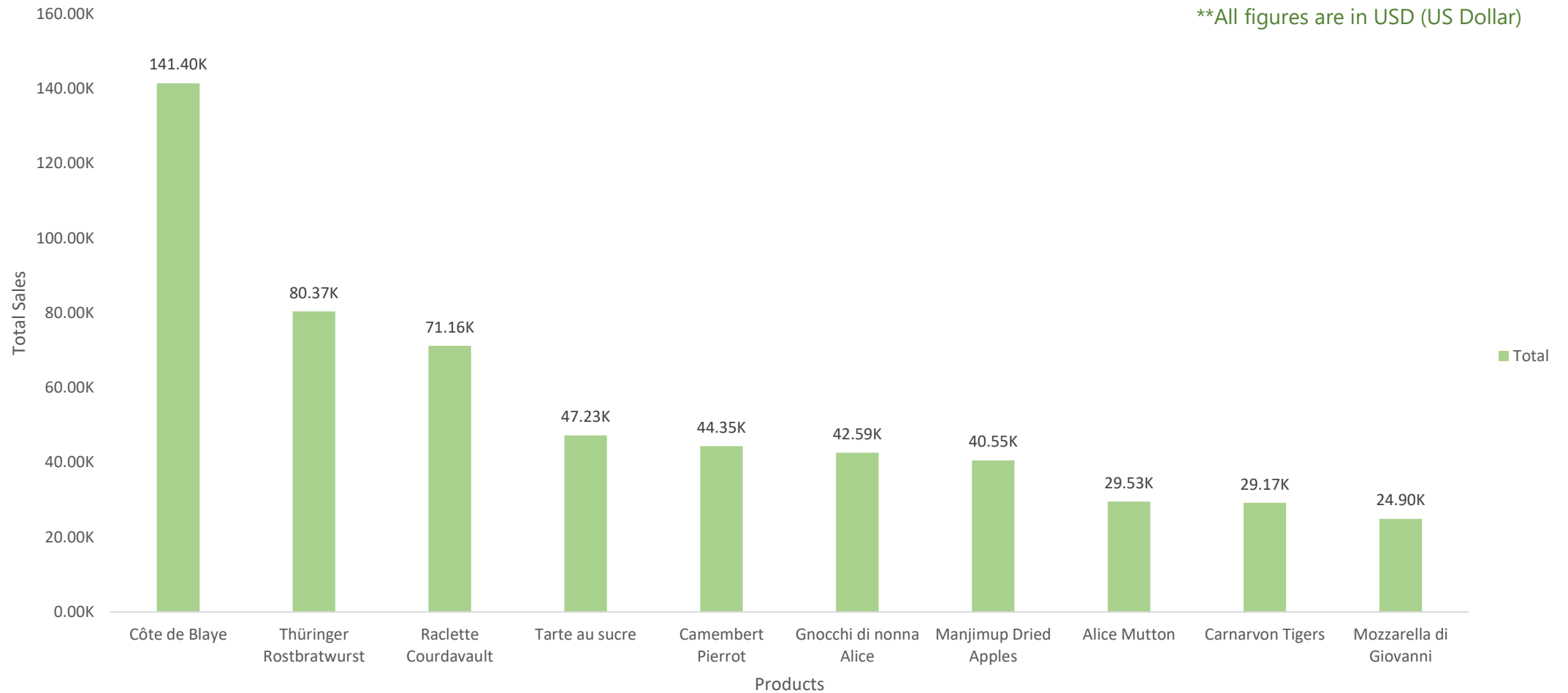
141.40K

MARKET SHARE

11.46%

**All figures are in USD (US Dollar)

Top 10 Products by sales



Best Selling
Product By
No. of Orders

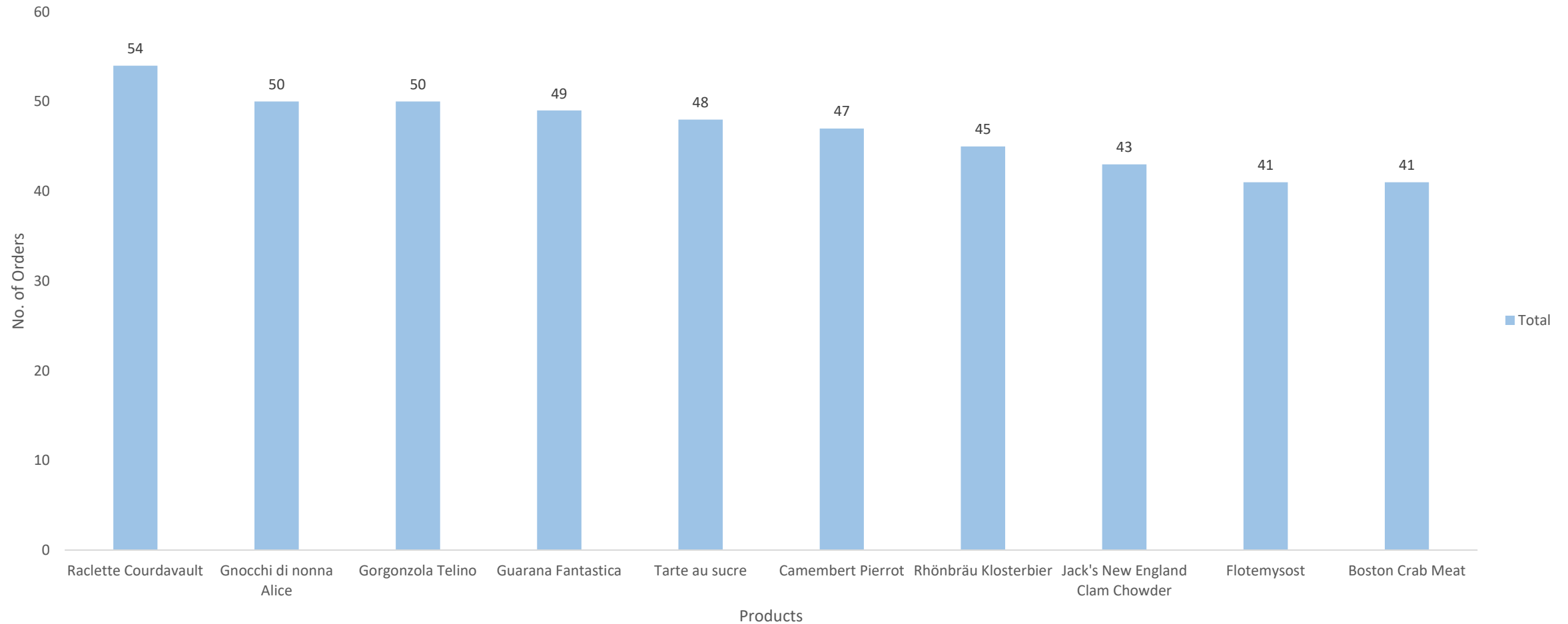
Product

Raclette Courdavault

No. of orders

54

Top 10 Products By No. of orders



Worst Selling Product By Total Sales

Product

CHOCOLADE

Total Sales

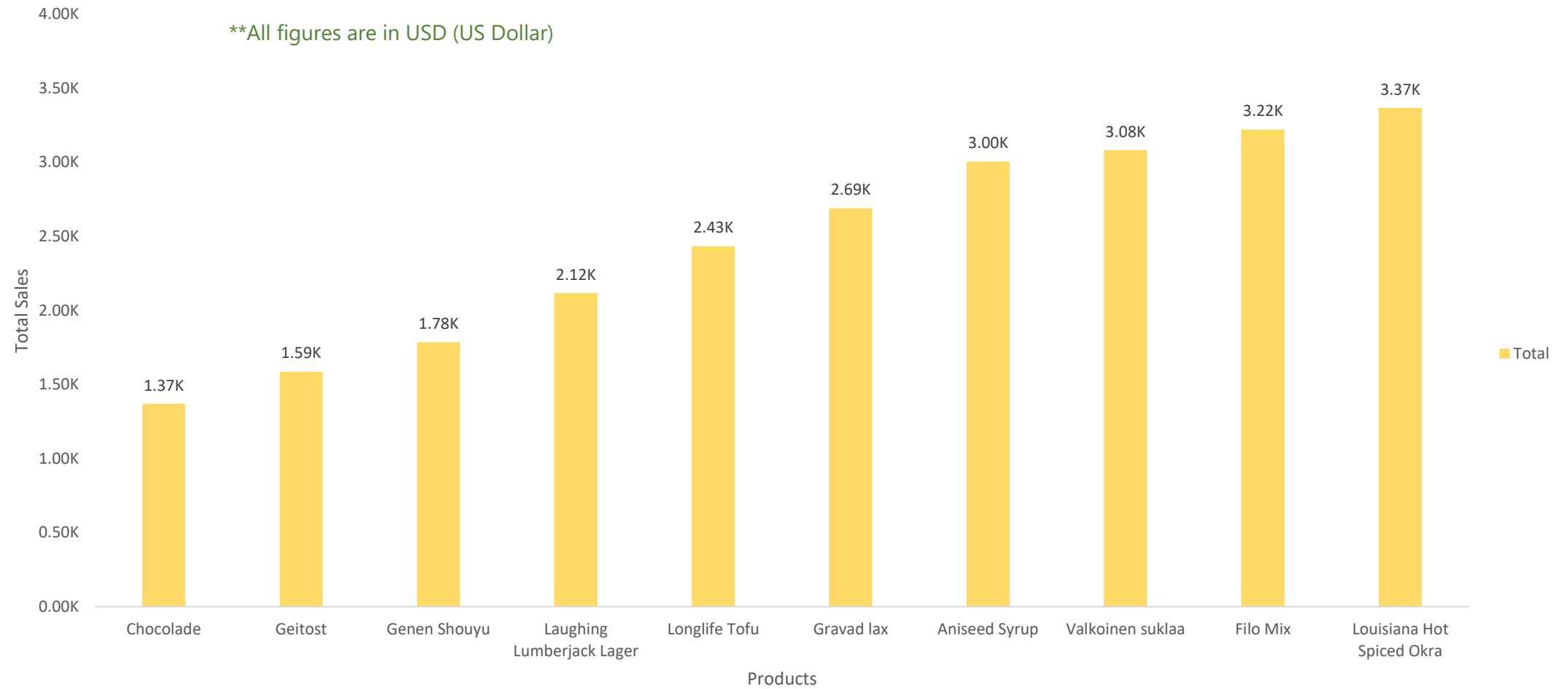
1.37K

Market share

0.11%

**All figures are in USD (US Dollar)

Bottom 10 Products by sales



Worst Selling Product By No. of Orders

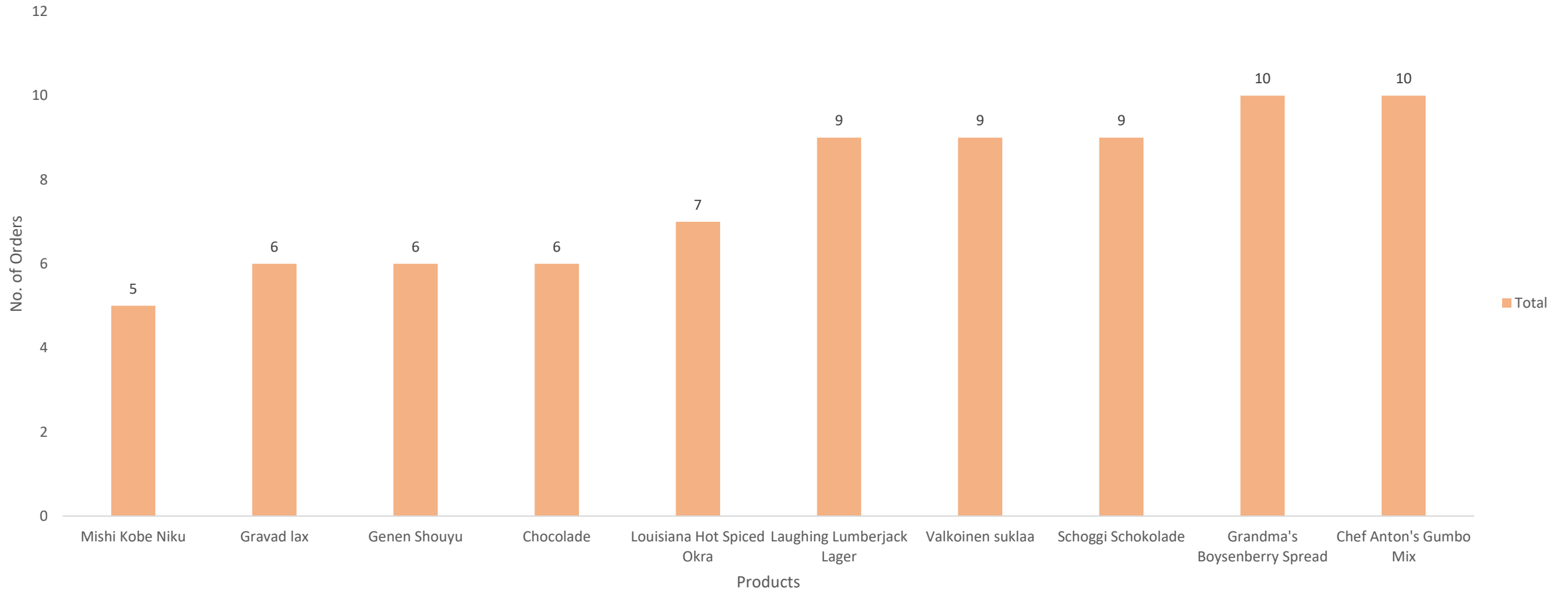
Product

Mishi Kobe Niku

No. of orders

5

Bottom 10 Products by No .of Orders



Can you identify any key customers?

Top 10 Customers By Sales and Sales Growth

Top 10 Customers By Sales Growth_ 2013 to 2014

Customers	Sales Growth 2013 to 2014	Sales Growth 2014 to 2015
Simons bistro	4503.63%	-100.00%
Reggiani Caseifici	3646.37%	18.66%
Antonio Moreno Taquería	1378.37%	-88.93%
Ana Trujillo Emparedados y helados	800.62%	-35.68%
The Big Cheese	779.58%	-97.64%
Wellington Importadora	752.67%	-74.29%
Victuailles en stock	626.93%	-55.63%
B's Beverages	563.22%	-23.54%
La maison d'Asie	505.01%	-82.32%
Königlich Essen	481.69%	102.63%

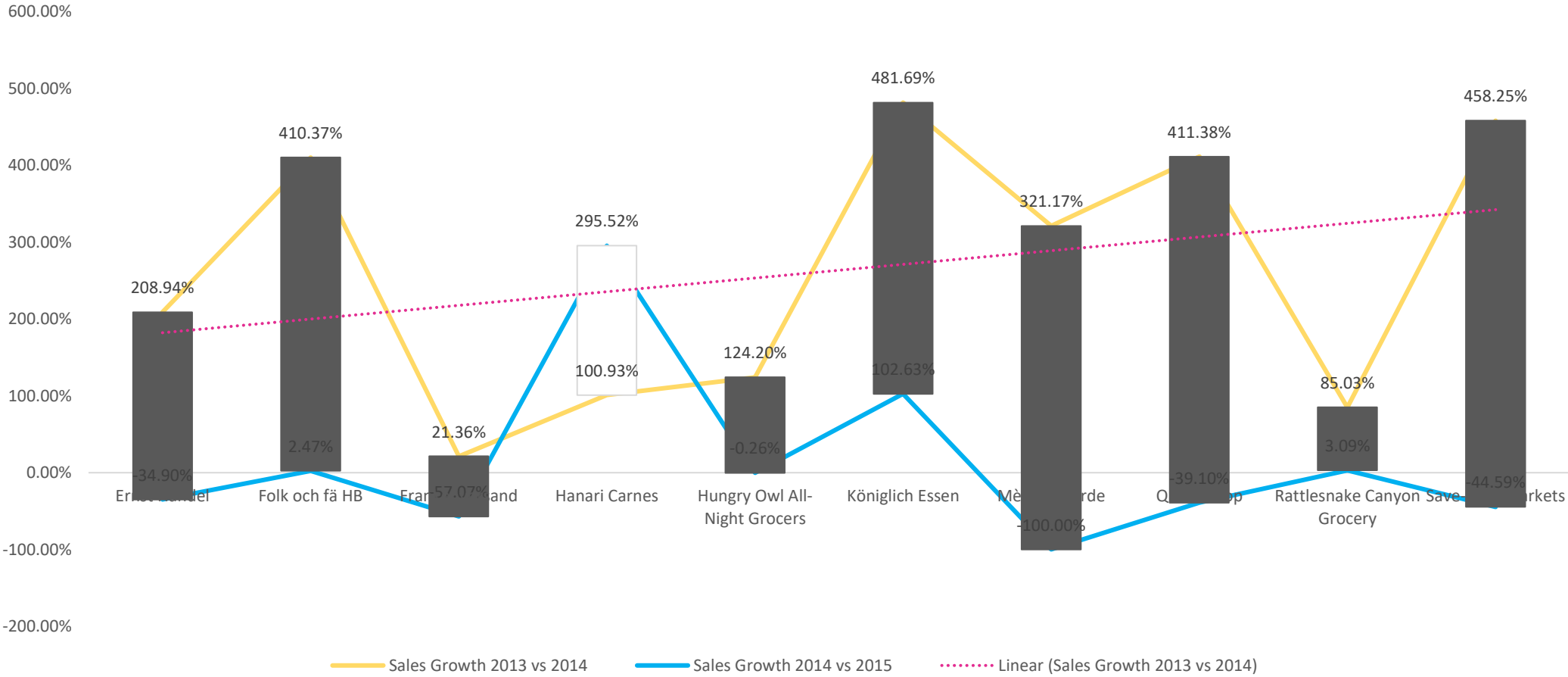
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Grand Total	553,952.98

**4 months data (up to April) only available in Year 2015.

**All figures are in USD (US Dollar)

Top 10 Customers By Sales Growth



**4 months data (up to April) only available in Year 2015.

Upward Sales Growth Difference By Customers

Upward Growth Difference & in Top
10 Sales

Hanari Carnes

Country

Brazil

2013 to 2014 Growth

100.93%

2014 to 2015 Growth

295.52%

List of Customers with Upward Growth Difference

Customers	Sales Growth 2013 to 2014	Sales Growth 2014 to 2015
Spécialités du monde	0%	4429%
Océano Atlántico Ltda.	0%	606%
Drachenblut Delikatessen	-21%	548%
Santé Gourmet	-34%	468%
Cactus Comidas para llevar	0%	434%
Franchi S.p.A.	0%	419%
Hanari Carnes	101%	296%
Tradição Hipermercados	2%	221%
France restauration	0%	145%
Suprêmes délices	-3%	90%

**4 months data (up to April) only available in Year 2015.

Are shipping costs consistent across providers?

Standard Deviation of Average Shipping Cost Over time

Federal Shipping

10.95

Speedy Express

3.44

United Package

18.09

Lowest Standard
Deviation

Speedy Express

Speedy Express maintain consistency in Shipping cost compared to other providers

It has the lowest Standard deviation of average shipping cost from 2013 to 2015

Also has the lowest Average Shipping Cost

Recommendations

Customer Performance

- Based on the customer performance analysis, **Hanari Carnes** from Brazil stands out as a notable success story. Not only did Hanari Carnes exhibit remarkable growth of **100.93% from 2013 to 2014**, a commendable achievement in line with several other customers, but what sets them apart is their consistent excellence. Hanari Carnes is the sole customer within the **top 10 sales list**, signifying sustained high performance.
- Furthermore, the exceptional growth of **295.52% from 2014 to 2015**, especially considering the recorded sales only until April 2015, underscores Hanari Carnes' strong market presence and potential for continued success. This outstanding performance positions Hanari Carnes as a key player, and strategies to foster and capitalize on this success should be a focal point for sustained growth and market influence in the future.
- The success story of **Hanari Carnes** serves as a benchmark for best practices that could potentially be applied to other markets or customers for enhanced overall performance.

Customer Performance

- Based on the customer performance analysis, it is recommended to adopt a targeted approach for both the **Austrian and Irish markets**. In Austria, where **Ernst Handel and Piccolo und mehr** constitute the primary customer base, there's an opportunity to deepen market penetration. Given their significant contribution to the total number of orders, focusing on relationship-building initiatives and tailored marketing strategies can help expand the customer base in Austria.
- Particularly, nurturing the relationship with **Ernst Handel**, who holds the **3rd position in total sales**, is crucial for sustaining and potentially amplifying their valuable contribution to overall revenue.
- Simultaneously, in **Republic of Ireland**, where **Hungry Owl All-Night Grocers** stands as the sole customer yet contributes substantially to sales, it is advisable to explore avenues for customer diversification. Strategically expanding the customer base in Ireland will not only mitigate risks associated with a single-customer concentration but also open avenues for broader market influence

Product Performance

- Based on the analysis of product categories, it is evident that **Beverages, Dairy Products, and Confections** emerge as the top-performing categories, collectively contributing to **53% of total sales**. Among these, **Beverages** stand out as the leading sales category with a substantial market share of **21.21%**. Recognizing the significance of these high-performing categories, a strategic focus on optimizing marketing efforts, promotional campaigns, and inventory management within Beverages, Dairy Products, and Confections could further amplify their success.
- Conversely, **Grains & Cereals and Produce** are identified as the bottom sales categories. To enhance their market presence and contribution to overall sales, it is recommended to explore targeted strategies such as **product diversification, promotional incentives, or market-specific campaigns**.
- A comprehensive understanding of customer preferences and market trends within these underperforming categories can guide the development of tailored initiatives to boost sales and potentially elevate their standing within the product portfolio.

Product Performance

- The product **Côte de Blaye** emerges as the **best-selling product**, commanding both high total sales of **141.40K USD** and a notable market share of **11.46%**. This signifies a strong market demand for this product, and a recommendation is to capitalize on its success by implementing targeted marketing strategies, exploring potential upselling opportunities, and ensuring ample inventory availability to meet customer demand.
- Conversely, products like **CHOCOLADE**, with relatively lower sales of **1.37K USD** and a market share of **0.11%**, suggest potential challenges in market penetration or customer interest.
- A recommendation for **CHOCOLADE** may involve assessing and reevaluating its market positioning, exploring pricing strategies, or implementing targeted marketing campaigns to increase visibility and consumer appeal.

Product Performance

- For **Raclette Courdavault**, which leads in the number of orders (**54 times**), there is an opportunity to leverage its popularity further. It is recommended to explore cross-selling strategies, bundle offers, or loyalty programs to encourage repeat purchases and potentially increase the average order value.
- Similarly, for **Mishi Kobe Niku**, which records the least number of orders (**5 times**), understanding the factors contributing to its lower popularity is crucial. Recommendations may include analyzing customer feedback, exploring potential product improvements or diversification, and devising marketing initiatives to enhance its market presence.
- Overall, these product-specific recommendations aim to fine-tune strategies for each product's unique performance characteristics, ensuring a balanced and optimized product portfolio that aligns with market demands and customer preferences. Regular monitoring and adaptation of strategies based on product performance will be essential for sustained success in the competitive market landscape.

Shipping Performance

- For cost-effective shipments and consistent savings, it is advisable to continue utilizing **Speedy Express**, which has demonstrated reliable and consistently low shipping costs.
- For time-sensitive deliveries and a higher on-time delivery rate, especially when timeliness is critical, **Federal Shipping** stands out with its lowest delivery time and highest on-time delivery rate.
- By strategically combining these shipping providers based on the nature of each shipment, the company can achieve a balanced and optimized shipping strategy, balancing cost-effectiveness and reliable delivery performance. This approach ensures that cost savings are maintained without compromising on timely deliveries when necessary.
- it's observed that **United Package**, despite having a significant sales volume, exhibits challenges in maintaining a satisfactory on-time delivery rate and longer order fulfilment times compared to other companies.



THANK YOU